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THE
ARCHITECT
AND
CONTRACT REPORTER.

VOL. LXXVII.

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THE
ARCHITECT

AND
Contract Reporter.

A WEEKLY
ILLUSTRATED JOURNAL
OF
ART,
CIVIL ENGINEERING,
AND
BUILDING.

Of all the arts of ornamentation, the one which (to borrow a well known phrase from the Utilitarian school) affords the greatest happiness to the greatest number, is beyond all question that which is always called the Queen of the Arts—Architecture; provided, of course, it is good architecture.—
E. B. DENISON (LORD GRIMTHORPE).

VOL. LXXVII.

JANUARY TO JUNE 1907.

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THE ARCHITECT AND CONTRACT REPORTER. A JOURNAL OF ART, CIVIL ENGINEERING & BUILDING.

THE WEEK.

THE name of the late Lady BURDETT-COUTTS, who died on Sunday last, deserves respectful mention in an architectural journal. Her long life was devoted mainly to benevolent objects, and it was hardly possible for her to avoid a recognition of the necessity of special buildings. As a Churchwoman she endowed the bishoprics of Cape Town, Adelaide and British Columbia. Sixty years ago Westminster, although it possessed the Houses of Parliament and the Law Courts, was one of the most abandoned parts of the Metropolis. As an effort towards the reformation of the people, Miss BURDETT-COUTTS resolved to erect a large church, in which the seats were to be all free. The commission was given to BENJAMIN FERREY, and the work was commenced in 1846. It was consecrated in 1850, and at the time was regarded as a remarkable example. In connection with the Church various buildings arose at her expense. Another church, also dedicated to St. Stephen, was erected in a poor part of Carlisle. She munificently contributed to the establishment of churches in many places. Lady BURDETT-COUTTS at a later period made the experiment, by means of secular buildings, of aiding in the civilising of London. Moved with pity for the costermongers and their customers in the east of London, Columbia Market was erected, where poor people could buy and sell while protected from the weather. The Gothic style was adopted, and ignorant people imagined that the market was a trap to bring them under ecclesiastical influence, and neither tenants nor purchasers were to be found to fill it. Afterwards the property was made over to the Corporation to serve as an eastern fish market. Nevertheless, again it was a failure. Adjoining the market the Baroness provided some model dwellings, also in the Gothic style. They were unlike any others in England. In their original condition, before they had suffered from inappreciative tenants, the rooms were adapted for a superior class of occupiers, and, indeed, if a reasonable return on the outlay was sought, high rents would have to be charged. No other woman has expended such large sums for the benefit of the poor, and the value of her disbursements was enhanced by the generous spirit which inspired them.

WE lately described the building in Paris which was known as the Archbishop's Palace. After his eviction the prelate went to reside at the house of M. DENYS COCHIN. Another mansion has, however, been obtained which is not without some interest. The building which is occupied by the French representatives is generally known as the Palais Bourbon. Formerly it was a part of the Pré-aux-Clercs. It was purchased for the purpose of erecting a barrack for the musketeers. Instead, the Dowager-Duchess of BOURBON had a mansion set up in 1722 from the designs of the Italian architect, GIRARDINI. Her grandson thought the building unworthy to be his residence. He purchased more ground and expended about twenty millions of

francs in building. At the time of the Revolution the palace was seized and was turned into a meeting-place for the Council of Five Hundred. NAPOLEON had the Greek peristyle constructed, which is the most remarkable feature of the exterior. The architect of the Prince DE CONDÉ was JEAN DE JOLY. He was able to obtain a site for a house from his patron, and the building which he erected in order to be able to superintend the works has been secured for the use of the Archbishop of PARIS. The alterations of the palace, which were ordered by the Revolutionary authorities and by NAPOLEON, were not carried out by DE JOLY, but two other architects bearing his name were afterwards connected with the building.

ABOUT 1835 a small oratory was discovered at a place called Perranporth, on the north-western coast of Cornwall. It had been overwhelmed by sand five or six centuries before. The parish was known as Perranzabuloe, and under that name it became known through the efforts of a clergyman who attached greater importance to it than it really deserved, for he claimed it to be the only surviving example of the primitive British church. He was not restrained in his language, and he excited the scorn of MATTHEW ARNOLD and other lovers of measure and restraint in literature. The church was only 25 feet in length if measured within; it was $12\frac{1}{2}$ feet in breadth and $12\frac{1}{2}$ feet in height. At the east end was a stone altar 4 feet long. The chancel was 6 feet in length. The congregation sat on stone seats 12 inches wide and 14 inches high, which were attached to the west, north and south walls. There was no trace of a window, and it was assumed the services were held by candle-light. St. PIRAN, according to the legend, came from Ireland, having been carried over the waves on a millstone. The oratory still exists. In order to preserve it, for which purpose it will be necessary to drain the site, Mr. EDMUND SEDDING estimates that a sum of about 500*l.* will be required. One Cornishman has offered 10*l.* if nine others will do the same. The oratory is certainly one of the most ancient Christian buildings in the country, and it will afterwards be regretted if it should be so far neglected as to become a ruin.

At the monthly meetings of the Society of Architects during the ensuing quarter papers will be read by Mr. G. E. BOND on "The Practice of Architecture in our Smaller Cities and Towns;" by Mr. W. A. SCOTT on "Byzantine Architecture," and by Mr. ELIS MARSLAND on "Fire-resisting Properties of Materials of Construction." There will be a smoking concert on January 18. The papers to be read in April and May will be announced. The Society will be represented at the Congress of the Royal Sanitary Institute, to be held in Dublin in June, by Mr. ROBERT WALKER and Mr. A. SCOTT. At the School Hygiene Congress in August the delegates will be Mr. A. E. PRIDMORE and Mr. W. SCOTT DEAKIN. The annual general meeting will be held on October 17.



COMMERCIAL EUROPE—CORN AND WINE.

ARCHITECTURE IN 1906.

THE event of the year that has now passed has undoubtedly been the

INTERNATIONAL CONGRESS OF ARCHITECTS, held in London under the direction and organisation of the Council of the Royal Institute of British Architects. We are happy to know that, as such assemblies go, this was admittedly one of the most successful of the series, of which this was the seventh instance, of international congresses of architects. Nearly 1,700 members, of whom 700 were visitors to England from the continent of Europe, from America, from the British dominions beyond the sea, and even from far-off Japan, took part in the social functions and deliberative assemblies that went to make up the programme of the Congress.

The inaugural meeting was, by permission of the Right Hon. the Lord Mayor and the Corporation of the City of London, held at the ancient Guildhall, and was honoured by the presence of H.R.H. the Princess LOUISE and His Grace the Duke of ARGYLL, the Lord Mayor and Lady Mayoress and the Sheriffs, members of the Diplomatic Body, leading representatives of the Royal Academy and of the architectural profession, both in Great Britain and abroad.

On the social side of the proceedings there were a soirée given by the President and members of the Royal Academy at Burlington House, a reception by the Lord Mayor at the Mansion House, an evening garden party given by the Royal Institute of British Architects at the Botanic Gardens, Regent's Park, and a farewell banquet at the Hôtel Cecil, at which nearly 500 ladies and gentlemen were present.

Excursions and visits were made by large parties to Hatfield House, Hampton Court, Cambridge, College of Science and Victoria and Albert Museum at South Kensington, Greenwich Hospital, Buckingham Palace Gardens, Westminster Abbey, Messrs. HOLLOWAY's and Messrs. DOULTON's works.

On the business side papers were read on "The Château of Saint-Germain-en-Laye," "The Execution of Important Government and Municipal Architectural Work by Salaried Officials," "Steel and Reinforced Concrete," "The Use of Burned Clay Products in the Fireproofing of Buildings in the United States of America," "The Conduct of International Architectural Competitions," "The Ownership of Architects' Drawings," "The Conservation of National Monuments," "Architecture and Craftsmanship," "The Planning and Laying-out of Streets and Open Spaces," "Artistic Copyright," "The Architect's Control over Artists and Craftsmen," "The Education of the Public in Architecture," "The Tomb of AGAMEMNON," "Statutory Qualification for Architects."

Numerous resolutions were passed and recorded on most of the above-mentioned subjects as the matured and deliberate opinions of the architects of the world, and "nobody seemed one penny the worse."

The main object of these congresses was doubtless attained and with conspicuous success—the interchange of social intercourse, the increase of a spirit of "camaraderie" and "entente cordiale" between members of the profession from different countries; but, as may be gathered from the list of subjects discussed,

polemical and political questions predominated, and mutual improvement in knowledge, either practical or æsthetic, was far to seek.

From an educational point of view, by far the most valuable feature of the Congress was the remarkable exhibition of drawings illustrating the historical development of English architecture, and divided into four sections—Norman and Early Gothic, Middle and Late Gothic, Early Renaissance and Later Renaissance. This exhibition was admirably arranged under the direction of Mr. HARRISON TOWNSEND and Mr. FORSYTH, and comprised not only drawings and water-colour paintings, but a wonderful collection of very fine examples of furniture and silverwork.

The past year has been notable for the latest phase in the development within the ranks of the Royal Institute of the question of

REGISTRATION,

or the statutory qualification for architects.

This latest phase is essentially a compromise between the extremist views of those who would advocate the "registration" of all "architects," and of those who pin their faith to "education" of future aspirants to the profession and non-interference with present-day practitioners. Briefly, the proposal is that Parliamentary recognition should be sought for the Royal Institute as the statutory authority for the granting of diplomas to qualified practitioners in architecture and for the regulation of a definite course of architectural education. It is also proposed that the Institute scale of charges should be legalised for all of its professional members, and that increased disciplinary powers should be obtained for the regulation of professional conduct. Incidentally it is suggested that the Royal Institute should in future become the "Royal College of Architects," but this hardly appears material to the scheme as a whole, and is probably viewed unfavourably by the majority of members of the present Royal Institute.

The proposal, as far as its general principle is concerned, has been received with striking unanimity by the general meeting before whom it was laid, and has been referred to the Council for the elaboration of details and preparation in form for submission to Parliament and the Privy Council.

Thus peace, for the present at any rate, has been concluded between the opposing parties that have till recently troubled the affairs of the Royal Institute. The wise compromise on which this peace is founded is due doubtless in no small degree to the joint committee of leaders of the two antagonistic factions, which, having taken the evidence of a large number of representative architects, has agreed to recognise that there is much to be said both for and against out-and-out registration.

If the scheme that has been provisionally adopted is carried through it appears likely to produce the beneficial effects that the advocates of registration expect from the adoption of the principle without the manifest drawbacks that the anti-registrationists emphasise; it also makes for the further improvement of the education of embryo architects, and undoubtedly lifts the Royal Institute to a higher and better recognised plane of existence than it has hitherto enjoyed.

Therefore the unanimity with which the scheme has

been received is not surprising, conciliating as it does the three dominant shades of opinion existing amongst the members of the Royal Institute. With these conditions in its favour it can hardly evoke any organised opposition outside the ranks of the Royal Institute sufficiently powerful to jeopardise its ultimate acceptance by the Legislature.

The resolution adopted at the meeting of the Royal Institute on February 29, 1904, by which admission to

FELLOWSHIP OF THE ROYAL INSTITUTE

should be, save in exceptional instances, restricted after the close of the year 1906 to those who had passed an examination, has naturally caused a rush of candidates for election under the regulations existing before the closure became operative. Amongst these candidates were undoubtedly some who might reasonably be expected to submit themselves to examination and others whom many Associates felt were being more leniently treated than themselves. Hence a practical protest by the use of the ballot and black ball on the part of younger members resulted in the exclusion of some quite worthy candidates and a certain amount of heated feeling. The amendment of the by-law consequent on the resolution of February 29, 1904, not having been submitted to and approved by the Privy Council, it was at the December business meeting resolved that the date December 31, 1906, in the resolution of February 29, 1904, be extended to December 31, 1907, so that admission to the ranks of Fellows still remains open for another year on the old lines, but with the proviso that the Council has pledged itself to act in accordance with the spirit of the proposed amended by-law.

An excellent action of the Council of the Royal Institute, and one that should prove of very great value to architecture, has been the constitution of a

JOINT COMMITTEE ON REINFORCED CONCRETE,

composed of representatives of the Royal Institute, the District Surveyors' Association, the Institute of Builders, the Incorporated Association of Municipal and County Engineers, the War Office, and comprising the names of Sir HENRY TANNER (chairman), H. D. SEARLES-WOOD (hon. secretary), A. T. WALMSLEY, WILLIAM DUNN, MAX CLARKE, T. H. WATSON, E. DRU DRURY, BENJAMIN I. GREENWOOD, FRANK MAY, A. E. COLLINS, J. W. COCKRILL, Colonel C. B. MAYNE, Major E. M. PAUL, R.E., Professor W. C. UNWIN, CHARLES F. MARSH.

The Royal Institute has also been able to make its influence felt by the advice tendered to and accepted by the London County Council relative to the form of the forthcoming

COMPETITION FOR NEW COUNTY HALL FOR LONDON, which, as described in the issue of *The Architect* for December 21, 1906, is intended to be conducted in two stages—the first, open and international, by which a limited number of architects, not less than ten and not more than fifteen, is to be selected to compete in the second stage with eight invited architects, viz. Mr. JOHN BELCHER, Mr. W. FLOCKHART, Mr. ERNEST GEORGE, Mr. H. T. HARE, Mr. T. G. JACKSON, Mr. E. L. LUTYENS, Mr. E. W. MOUNTFORD and Messrs. NICHOLSON & CORLETTE. Following the present trend of opinion in the architectural profession, it is proposed that the ultimate competition shall be judged by a jury of assessors.

The scheme promoted by the ex-president, Mr. BELCHER, for obtaining a

NEW HOME FOR THE ROYAL INSTITUTE,

although approved in principle by a business meeting of members held on January 8, has been abandoned, owing to the impossibility of settling in a satisfactory manner questions of ancient lights dominating the proposed site.

The past year has seen the commencement of the operation of the

LONDON BUILDING ACTS (AMENDMENT) ACT, 1905, with its drastic and retrospective effect on existing property, and a new department has been created on the staff of the London County Council to deal with the procedure of enforcing the provisions of the Act.

Repeated attempts by the Building Act committee of the London County Council to change the present

SYSTEM OF PAYMENT TO DISTRICT SURVEYORS

by a fixed scale of fees into one of salaried officials have been defeated, as much from considerations of finance as from the equally if not more important question of efficiency; and on this latter ground we cannot but feel that the best interests of the public, whether as rate-payers or as building owners, are far better served by the maintenance of the present system than by the introduction of the proposed innovation.

THE STATE OF TRADE

during the past year has apparently shown considerable improvement in most spheres of activity throughout the country; but up to the present this improvement has not been reflected to any appreciable extent in architecture. The monthly returns as to the conditions of employment in the building trades have been invariably discouraging, though showing a slight improvement as compared with corresponding periods in the year previous. The optimistic assertion of the President of the Local Government Board in the House of Commons on May 23, that the condition of the building trade was improving rapidly, and that everything pointed to the industry joining in the increased prosperity of other trades, has not been justified by events; on the contrary, even speculative building in the London suburbs has shown considerable diminution. Two dominant factors have exerted a potent adverse influence on the prosperity of the building trade—firstly, the dearness of money produced by the scarcity of the gold reserve in this country, as evidenced by the abnormally high Bank rate; and secondly, the wave of economy that has swept over the ratepayers, as shown by the displacement of the "wastrels" or Progressive party in the borough elections of the last autumn, resulting already in the abandonment or postponement of the erection of public buildings for which measures had already been sanctioned and the designs of architects selected and approved.

The lack of prosperity in the architectural profession is further demonstrated by the preponderance in number of

IMPORTANT BUILDINGS COMPLETED

during the past year over that of those commenced. Amongst the most prominent architectural works finished may be mentioned the Belfast City Hall, erected at a cost of over 300,000*l.*, the architect for which fine building is now Sir A. BRUMWELL THOMAS. The new Sessions House for the City of London has been practically completed from the designs of Mr. E. W. MOUNTFORD, and takes high rank amongst the notable buildings of the Metropolis. Another notable achievement of modern architecture is the group of buildings erected for new law courts and municipal buildings at Cardiff, from the designs of Messrs. LANCHESTER & RICKARDS. The first part of the scheme for municipal buildings and town hall at Barry has been completed by the erection of the public library from the designs of Messrs. C. E. HUTCHINSON & E. HARDING PAYNE. New public offices in Pontypridd have been opened, the designs of Mr. H. T. HARE having been carried out at a cost of 16,000*l.* The town hall at Sutton Coldfield has been opened on completion of the design of Mr. A. R. MAYSTON. The new municipal buildings for Woolwich have been completed from the designs of Sir A. BRUMWELL THOMAS, and were opened on January 13. The important Government buildings for the War Office in Whitehall have been practically completed from the designs of the late Mr. WILLIAM YOUNG, carried out under the direction of his son, Mr. CLYDE YOUNG. Another Government building

finished during the past year has been the new electro-technical building at the National Physical Laboratory, opened by Mr. HALDANE on June 25. The extension to New Scotland Yard, the headquarters of the metropolitan police, has also been completed. A considerable number of buildings have been erected for the Crown Post Office, amongst which may be mentioned the extension of the Edinburgh General Post Office, at a cost of 50,000*l.*, designed by Mr. W. T. OLDRIEVE, of H.M. Office of Works, and the new post office at Aberdeen at an expenditure of 52,000*l.* Amongst the works completed for the London County Council was the first moiety of the great electricity generating station at Greenwich, and Vauxhall Bridge.

Several extensive buildings for the relief of the sick and poor have during the past year become ready for occupation. The first part of the Leeds workhouse extension, costing 100,000*l.*, has been completed from the plans of Messrs. THOMAS WINN & SON. The asylum at Naburn for the York City Council, necessitating an expenditure of 133,000*l.*, has been finished, and so also has that at Caerleon, for Newport, Mon., erected for 116,000*l.*, from the designs of Mr. A. J. WOOD.

The King's Sanatorium, at Midhurst, erected from the designs of Mr. H. PERCY ADAMS, has been opened by His MAJESTY. A sanatorium for consumptives at Barrasford, North Tyne, has been completed from the designs of Messrs. NICHOLSON & DOTCHIN, at an expenditure of 20,000*l.*; and the first part of the extension of the sanatorium at Blackpool, costing 16,500*l.*, has been finished, Mr. F. T. WADDINGTON being the architect. Messrs. YOUNG & MACKENZIE'S designs for the new infectious diseases hospital at Purdystown, Belfast, have been carried out, and the building has been opened by the Lord-Lieutenant of Ireland and the Countess of ABERDEEN. The opening of the new buildings for the North London or University College Hospital was honoured by royalty in the persons of the Duke and Duchess of CONNAUGHT, the architects in this case being the late Mr. ALFRED WATERHOUSE, R.A., and his son, Mr. PAUL WATERHOUSE. The poorhouse erected for the Aberdeen City Council at Oldmill, from the plans of Messrs. BROWN & WATT, has been completed at a cost of 120,000*l.* The Andrew Gibson Home for Seamen's Widows at Liverpool, designed by Mr. ARTHUR P. FRY, and costing 30,000*l.* to build, has been finished and opened, whilst the Union Jack Club in Waterloo Road, London, is also practically complete, having been erected from the plans of Mr. H. B. MEASURES for 85,000*l.*

Several large educational buildings have been finished during the past year. King Edward VII.'s Grammar School at King's Lynn has been built from the designs of Mr. BASIL CHAMPNEYS, and was opened by His MAJESTY in person. New schools for the Birmingham City Council, both secondary and elementary, have been erected in the City Road from the designs of Messrs. BUCKLAND & FARMER, and have cost 45,000*l.* The Armstrong College, Newcastle-on-Tyne, has been completed by the addition of the main building costing 60,000*l.* to the two earlier blocks, each of which was built for about 20,000*l.*, Mr. W. H. KNOWLES being the architect. Amongst Council schools finished during the past year have been those at Calton Road, Gloucester, designed by Mr. WALTER B. WOOD, and costing 14,000*l.*; those at Chatham, of which Mr. HERBERT H. DUNSTALL was the architect, the expenditure being 11,635*l.*; Oaklands Road School, Hanwell, built for 18,250*l.* from the plans of Mr. W. PYWELL; those at Carter Knowle, Sheffield, completed for 15,220*l.* from the designs of Messrs. HOLMES & WATSON. Mr. F. L. PEARSON'S designs for St. Helen's Girls School, Abingdon, have been carried out for about 30,000*l.* University College, Reading, has been completed from designs prepared by Mr. W. RAVENSCROFT and Mr. C. STEWARD SMITH, assisted by Mr. H. HUTT

and Mr. W. R. MORRIS. The inauguration of the additional buildings of Aberdeen University by their Majesties the KING and QUEEN became a national event. Mr. A. M. MACKENZIE, A.R.S.A., is the architect.

Amongst commercial and business undertakings we have to record the completion of the new Liverpool Cotton Exchange, erected at a cost of 200,000*l.* from the designs of Messrs. MATEAR & SIMON, selected in a competition restricted to Liverpool architects. An important addition to the Glasgow Stock Exchange has been carried out from the designs of Mr. J. J. BURNET. An extensive building is that for the new head offices of the North-Eastern Railway Company, erected at York from the designs of the joint architects, Mr. HORACE FIELD and Mr. W. BELL. The city of Norwich has had added to its architectural attractions the new head offices of the Norwich Union Life Assurance Company, designed by Messrs. G. J. & F. W. SKIPPER. In the Metropolis we have seen the new offices of the Hearts of Oak Benefit Society erected from the designs of Messrs. ESSEX, NICOL & GOODMAN, and opened by His Majesty the KING. Messrs. WARING & GILLOW'S new premises in Oxford Street, built from Mr. R. FRANK ATKINSON'S designs, have been opened with a cleverly-worked boom of public interest. Caxton House, Westminster, a notable piece of office building, has been completed from the designs of Mr. J. S. GIBSON. Another great caravanserai has been added to London in the Ritz Hotel, Piccadilly, built from the plans of Messrs. MEWES & DAVIS, in collaboration with Mr. BISHOP.

An interesting essay in the use of coloured material for external architecture has been brought to fruition in the erection of a house in Addison Road, Kensington, from the designs of Mr. HALSEY RICARDO.

Amongst buildings erected for the amusement of the public may be mentioned the King's Theatre, Edinburgh, completed at a cost of 50,000*l.* from the designs of Messrs. JAMES DAVIDSON & J. D. SWANSON; the Marine Palace, Clacton-on-Sea, built for 40,000*l.* from plans by Messrs. SPENCER & TIGHE; and the New Theatre at Cardiff, of which Messrs. ERNEST RÜNTZ & FORD were the architects.

IMPORTANT BUILDINGS COMMENCED

during the last year include the South Wales University College, for the first portion of which has been accepted the tender of Messrs. E. TURNER & SONS to carry out the designs of Mr. W. D. CARÖE. A commencement has been made with the first part, costing 25,000*l.*, of the scheme planned by Messrs. H. & A. P. FRY for the Liverpool County Hospital for Children, the ultimate estimate for which is 60,000*l.* A greatly reduced version of Mr. W. G. HUNT'S original 100,000*l.* design for new municipal buildings at Acton, Middlesex, has been started at a contemplated outlay of 35,000*l.* The foundation-stone has been laid of the new Ossett town hall, which is being built from the designs of Messrs. W. HANSTOCK & SON at an estimated cost of 20,000*l.* The tender of Mr. F. G. MINTER at 18,793*l.* for new municipal buildings at Bromley, Kent, has been accepted, Mr. R. FRANK ATKINSON, whose designs were selected in open competition, being the architect. New Y.M.C.A. premises at Leeds to cost 49,000*l.* have been commenced from the designs of Mr. W. H. THORP. An extension of the Glasgow Post Office estimated at 80,000*l.* has been begun from plans prepared by Messrs. W. W. ROBERTSON and W. T. OLDRIEVE, of H.M. Office of Works. A commencement has been made with the extensive new buildings for King's College Hospital at Denmark Hill, for which Mr. W. A. PITE'S designs involving an expenditure of between 300,000*l.* and 400,000*l.* were selected in a limited competition. The foundation-stone has been laid of a new episcopal residence at Southwell, of which Mr. W. D. CARÖE is the architect.

The general slackness in architectural activity has been strikingly illustrated by the insignificance of the

COMPETITIONS

decided during the past year, with the single exception of the international competition for the Peace Palace at The Hague. In this English architects were singularly unsuccessful, the first place being gained by M. L. M. CORDONNIER, of Lille; the second by M. F. A. MARCEL, of Paris; the third by Herr FRANZ WENDT, of Charlottenburg; and the fourth by Herr OTTO WAGNER, of Vienna, whilst premiums were also awarded to Mr. HOWARD GREENLEY and Mr. H. S. OLIN, of New York, and to Herr FRANZ SCHWECHTER, of Berlin. Purely British open competitions have been almost confined to schools and public libraries; indeed, but for the Education Act and Mr. CARNEGIE, the opportunities for ambitious assistants to test their untempered swords in the arena of open competitions would be practically nil.

In each year it seems to be almost a regular occurrence for some one of our

CATHEDRALS

to present an alarming state of insecurity for the sympathetic concern and help of the public. This last year it has been the turn of the great metropolitan cathedral of St. Paul, the immortal work of Sir CHRISTOPHER WREN. All at once with dramatic suddenness the public is informed that the building is in imminent danger, and that 40,000*l.* is wanted to save it from falling into the street. We are, however, to have a careful inspection and report from a triumvirate of eminent architects, Sir ASTON WEBB, Mr. T. E. COLLCUTT and Mr. JOHN BELCHER, so that we may believe that the mischief which has doubtless been developing for years will be calmly investigated, and that panic is unnecessary.

The Dean and Chapter of Gloucester have wisely taken early steps to prevent more serious mischief to their cathedral, and, on the advice of Mr. F. W. WALLER, have started works at an estimated expenditure of 8,150*l.* The restoration of the north transept of Peterborough Cathedral has been commenced under the direction of Mr. G. F. BODLEY, R.A. Fresh trouble has appeared at Winchester Cathedral, this time to the south aisle of the nave, for which an expenditure of another 5,000*l.* is deemed necessary. On October 17 occurred the interesting celebration of the 800th anniversary of the consecration of Ely Cathedral.

A national calamity has been the disastrous fire at Selby Abbey, from which it may be hoped that guardians of our great masterpieces of architecture will learn two important lessons—that proper and adequate precautions against fire should be their imperative duty, and that sufficient provision should be made by insurance to restore the ravages of the devouring element should such occur.

Earthquakes in San Francisco and Valparaiso have caused immense havoc in the architecture of those cities, but have fortunately not been accompanied by any serious manifestations of earth tremors in this country, though they may remind us that as some sixty earthquake shocks occur in each year at some part or other of the world, we cannot always expect complete immunity. Indeed, only last week it has been suggested by Professor BELAR, of Laibach, the eminent seismologist, that the trouble at St. Paul's Cathedral may be due to earth tremors.

An interesting scheme, and one the achievement of which will be of great value, is that proposed by Mr. R. PHENÉ SPIERS for a

NATIONAL COLLECTION OF DRAWINGS OF ARCHITECTURE.

This scheme has so far materialised that the authorities of the Victoria and Albert Museum at South Kensington have agreed to take over and house the collection in their art library, and to afford due facilities for purposes of study.

APPOINTMENTS

of an important character during the past year have been those of Mr. MERVYN MACARTNEY as consulting architect to the Dean and Chapter of St. Paul's Cathedral, in succession to Mr. SOMERS CLARKE; of Mr. W. R. LETHABY as surveyor of the fabric of Westminster Abbey, consequent on the death of Mr. J. T. MICKLETHWAITE; and Mr. C. DE GRUCHY as Master of the Royal Academy Architectural Schools.

HONOURS

worthy of note have been the knighthood bestowed upon Sir A. BRUMWELL THOMAS; and the award by the American Institute of Architects of their first gold medal to Sir ASTON WEBB, whilst the Royal Gold Medal has, on the recommendation of the Royal Institute of British Architects, been given to Sir L. ALMA-TADEMA.

OBITUARY.

Comparatively few architects of the first rank have passed away during the past year, but the list includes the names of Mr. J. P. SEDDON, Mr. ZEPHANIAH KING, Mr. ERNEST GODMAN, Mr. F. WHITTINGHAM, Mr. ADAM HUNTER, Mr. J. I. FRANKLIN, Mr. W. FRAME, Mr. R. A. BRYDEN, Mr. W. GOLDSMITH, Mr. THOMAS GARNER, Mr. E. WOODTHORPE, Mr. GEORGE LOW, Mr. E. SALOMONS, Mr. E. E. SCRIVENER, Mr. A. MOSELEY, Mr. H. W. COLLINS, Mr. PHILIP WILKINSON, Mr. W. D. CHURCH, Mr. J. H. CHRISTIAN, Mr. JOHN WILLS, Mr. W. J. GANT, Mr. T. BARNES-WILLIAMS, Mr. JOSEPH GALE, Mr. F. W. LEDGER, Mr. CHARLES LONG, Mr. JOHN H. DAVIES, Mr. J. T. MICKLETHWAITE, Mr. H. A. PROTHERO, Mr. E. L. TARBUCK, Mr. H. S. LEGGE.

THE PREVENTION OF CORRUPTION ACT, 1906.

By PROFESSOR W. S. HOLDSWORTH, D.C.L.

WE suppose that no one will deny the prevalence of the habit of taking secret commissions, or the advisability of rooting out, if possible, this insidious form of commercial dishonesty. If the law on this subject can be so strengthened that it is able to deal with this evil effectually, it ought without doubt to be so strengthened. This Act, which came into force on January 1, 1907, is an attempt to accomplish this worthy object. It is, as is well known, intended to render criminal all corrupt transactions with agents, whether employed by the Crown or by any other public authority, or by a private person. Both the giver and the receiver of a secret commission are made guilty of the same offence, and subjected to the same penalties. We propose, in the first place, to discuss the meaning of the Act; in the second place, to consider how far it adds anything to the existing law; and, in the third place, to consider whether it is likely to carry out the intentions of the Legislature.

(i) As a necessary preliminary to the discussion of the meaning of the Act we must set out its operative clauses, all of which are contained in the first section:—

1. If any agent corruptly accepts or obtains, or agrees to accept or attempts to obtain, from any person, for himself or for any other person, any gift or consideration as an inducement or reward for doing or forbearing to do, or for having after the passing of this Act done or forborne to do, any act in relation to his principal's affairs or business, or for showing or forbearing to show favour or disfavour to any person in relation to his principal's affairs or business; or

If any person corruptly gives or agrees to give or offers any gift or consideration to any agent as an inducement or reward for doing or forbearing to do, or for having after the passing of this Act done or forborne to do, any act in relation to his principal's affairs or business, or for showing or forbearing to show favour or disfavour to any person in relation to his principal's affairs or business; or

If any person knowingly gives to any agent, or if any agent knowingly uses with intent to deceive his principal, any receipt, account or other document in respect of which

the principal is interested, and which contains any statement which is false or erroneous or defective in any material particular, and which to his knowledge is intended to mislead the principal; he shall be guilty of a misdemeanour, and shall be liable on conviction on indictment to imprisonment, with or without hard labour, for a term not exceeding two years, or to a fine not exceeding five hundred pounds, or to both such imprisonment and such fine, or on summary conviction to imprisonment, with or without hard labour, for a term not exceeding four months, or to a fine not exceeding fifty pounds, or to both such imprisonment and such fine.

2. For the purposes of this Act the expression "consideration" includes valuable consideration of any kind; the expression "agent" includes any person employed by or acting for another; and the expression "principal" includes an employer.

3. A person serving under the Crown or under any corporation or any municipal, borough, county or district council, or any board of guardians, is an agent within the meaning of this Act.

It will be seen at once that the provisions of the Act are very comprehensive. Their exact interpretation cannot, of course, be certainly known until cases have arisen for decision. But we may say at once that we think that a great deal that has been spoken and written about the scope of the Act is founded upon a misconception. It has been commonly said that the person who gives postmen or tradesmen or customers the customary gift at Christmas, or the person who gives the customary tip to the porter who carries his bag, or to the waiter who waits upon him at dinner, will render both himself and the recipient of his present liable to the penalties contained in the Act. We do not think that this is correct. It might be correct if the Act had run, "If an agent accepts or obtains from any person any gift, &c.," but the Act does not so run. The Act says, "If any agent *corruptly* accepts or obtains from any person any gift, &c." In the same way, in the third paragraph of section 1, subsection 1, which deals with the giving of incorrect receipts, accounts or other documents, the document must have been given knowingly, and the intent must have been to mislead. In all these criminal statutes we must rely on our adverbs to distinguish between conduct which falls within the statute and conduct which does not. "Actus non facit reum, nisi mens sit rea"—the mere act will not make a man a criminal without the criminal intent. It should be perfectly obvious that a man who gives a trifling gift out of good feeling, or from a sentiment of gratitude, does not corruptly give, nor does the person who receives it corruptly obtain. On the contrary hypothesis, it would be wholly impossible to make any present to any person, however great a friend he might be, with whom one had business relations. It would be wholly impossible, or at least very risky, to reward any other person's employé who had done one services in the course of his employment, even though those services had been such, or performed in such a way, that exertions so great could not have been compelled or reasonably expected under the bare terms of his contract of employment. It would be, in short, monstrous to suppose that the Act was intended to create an absolute divorce between the relations of business and the relations of friendship—to make the possession of a business friend a criminal offence.

What then should be understood by "corruptly" accepting or obtaining or giving? We think that an agent corruptly accepts or obtains a gift if his object in accepting or obtaining the gift is to influence his judgment in relation to his principal's affairs, and to substitute for that impartial exercise of his discretion upon his principal's affairs, which every principal has a right to expect, either a partial exercise of his discretion or the exercise of no discretion at all. Similarly, we think that a third person corruptly gives to an agent if his object in giving is to induce the agent to come to some conclusion favourable to the giver in relation to the principal's business, without

exercising an impartial judgment upon the matter. We imagine that in a case of this kind a judge should direct a jury somewhat as follows:—"If, gentlemen, you think that the accused made this present after the completion of this business with no object in view except to show his appreciation of the manner in which the business has been done; if you think that the accused had no thought or expectation that his gift would influence this agent in any other business he might have with this principal, then you ought to acquit. If, on the other hand, you think that the accused gave or agreed to give this gift before the business was complete, in order that the agent might not take that care of his principal's affairs which he would otherwise have taken; or if the accused was accustomed to or intended in the future to do business frequently with this principal, and you think that he gave this gift after this particular piece of business was concluded in order that in the future the agent might not take that care of his principal's affairs which he would otherwise have taken, then you ought to convict."

It is, of course, obvious in this case as in all others where the intent with which an act is done is at issue, that all the circumstances of the transaction and the relations existing between the parties are facts which are relevant to the proof or disproof of the intention in question. We may suppose that the Act will be interpreted in some such way as this. We think, therefore, that there is very little ground for many of the really superficial objections which have been taken to it. They are based to a great extent upon a misreading of its terms.

(ii) We now pass to the second question, how far this Act adds anything to the existing law. Before this Act came into operation the law was by no means powerless against the corrupt agent or the agent's corrupter. If it could be proved that an agent received a bribe in order to defraud his principal, or that anyone knowingly gave to an agent with intent to defraud his principal any false document, and if the agent used that document, both agent and principal could be prosecuted for a conspiracy to defraud. The civil remedies also of the principal are very complete. The principal can compel an agent to pay over to him any secret commission which he may have received as money had and received to his (the principal's) use. If there is any reason to think that the receipt of the commission has in any way interfered with the proper conduct of the agent's duty, the principal can decline to pay the agent his commission, or, if he has already paid it, he can recover it from the agent. This Act seems to add to the existing criminal remedies possessed by the principal in two ways:—(1) Whereas before the Act the principal must have proved a conspiracy between the corrupter and the corrupted agent, now he need prove no conspiracy. All he need show is either that a third person has given, or that the agent has received or agreed to receive, a gift corruptly. (2) Probably before the Act was passed an attempt to bribe an agent which failed, or an attempt by an agent to give a bribe which failed, would not have been a criminal offence. Now such attempts are made crimes of the same magnitude as the completed offence. We must conclude, therefore, that the Act does give a sharper edge to the criminal law dealing with this very prevalent offence. But to admit that it adds a sharper edge to the existing law by no means concludes the question whether this Act, or any Act, will effect what is desired. To determine this question we must discuss the third of the questions which we have proposed for consideration—whether this Act is likely to carry out the intentions of the Legislature.

(iii) The difficulty of dealing with such offences as those dealt with by this Act is the difficulty of detection. In the case of most ordinary crimes, such as murder or theft, it is to the direct interest of the injured person or his family to make every effort to detect the criminal. There is an immediate and apparent injury. There is

the strongest incentive to bring the criminal to justice. But in the case of offences of this nature there is, in the first instance, no apparent injury to anyone. No doubt the principal is injured—but he does not know it. There is therefore no immediate and powerful incentive existing in some definite person to bring the criminal to justice. On the contrary, there is every inducement to the two guilty persons to conceal their offence; and, as one of these guilty persons is a trusted agent, there is every facility for making this concealment effective. Trade could not go on unless credit were given and trust confided in many different directions; and so long as this necessary trust is confided this offence is almost impossible to be detected. In fact, the detection and suppression of this offence is almost as difficult as the detection and suppression of many other offences against morality which the legislator, though he deplures their existence, hesitates to bring within the scope of the criminal law, because the attempt to do so would, as BENTHAM long ago pointed out, cause more evil than it prevented. But it may be said, "When thieves fall out honest men come of their own"—if the corrupt agent or his corrupter fall out there is a chance for the principal; and this Act will considerably add to his powers in this event. In answer to this it may be said that the Act will therefore tend to draw tighter the links which unite a confederacy of thieves, and to render more difficult still the work of detection and suppression. We do not, however, think that this objection is a strong one. In spite of the Act differences will arise between these dishonest persons, and other circumstances beside such a difference of opinion may put the principal on the track. The real objection to the Act, we think, lies in quite another direction. It is not unlikely that it may be used wrongly for purposes of persecution and revenge. Suppose a case of this kind:—A principal knows that his agent is in the habit of receiving commissions from third persons, and either so acts as to cause the agent to conclude that he (the principal) does not mind, or deliberately chooses to take no notice of the practice. Differences arise between the principal and the agent, or between the principal and the third person who has been paying the commission. These differences become acute, and the principal institutes a prosecution under this Act. It will be said that the clauses of the Act which make the consent of the Attorney or Solicitor General necessary before instituting a prosecution; which put the prosecution of an offence under the Act under the restrictions of the Vexatious Indictments Act; which require that every information for an offence under the Act shall be upon oath—will make it impossible for the Act to be thus abused. No doubt these provisions will do something to mitigate the evil which we are considering. Whether they will be sufficient is another question. We cannot expect the Attorney or Solicitor General to do more than satisfy himself that there is a good *prima facie* case; and when the desire for revenge is strong a good *prima facie* case may be made without much difficulty. We always suspect a criminal statute if elaborate precautions against its misuse are needed. It often happens that such a statute does more harm than good—a fact which this Act may unhappily illustrate. We do not think that the Act will touch any but a small fraction of cases in which secret commissions are given and received. We believe that it may lead to the institution of prosecutions from unworthy motives. In proposing to suppress prevalent abuses of this kind by the help of the criminal law, the legislator would do well to keep before him some wise words which BENTHAM wrote upon this matter:—

The penal system, though it be made as perfect as possible, is defective in several respects. (1) The evil must exist before the remedy can be applied. The remedy consists in the application of punishment, and punishment cannot be applied till offence is committed. Every new instance of punishment inflicted is an additional proof that

punishment lacks efficacy, and leaves behind it a certain degree of danger and alarm. (2) Punishment itself is an evil, though necessary to prevent greater evils. Penal justice, in the whole course of its operation, can only be a series of evils—evils arising from threats and constraints of the law, evils arising from the prosecution of the accused before it is possible to distinguish innocence from guilt, evils growing out of the infliction of judicial sentences, evils from the unavoidable consequences which result to the innocent. (3) The penal system is not able to reach many injurious actions, which escape justice either by their frequency, the facility of concealing them, by the difficulty of defining them, or finally, by some vicious turn of public opinion by which they are favoured. Penal law can operate only within certain limits, and its power extends only to palpable acts susceptible of manifest proof.

We are confident that BENTHAM would have condemned the Act upon these principles. He would have said that an Act which would probably be unable to touch the large mass of cases which it was meant to touch—which obviously gave an opportunity to persons to put it into force for unworthy motives—was calculated to do more harm than good. All punishment is, as he rightly says, an evil. It can only be justified if it makes in the long run for the greater happiness of the greater number. We must be careful to see when we inflict new punishments that they will fall upon those whose conduct we wish to penalise. We must not allow our indignation at certain wrongs to so blind us that we make new crimes and threaten new punishments which may not only fail in their object in suppressing wrong, but also make it possible for unscrupulous persons to use the criminal law to gratify their desire to revenge or to oppress.

NATIONAL TRUST FOR HISTORIC PLACES.

IN the next session of Parliament a Bill is to be promoted for incorporating the National Trust for Places of Historic Interest or National Beauty. The Trust is to be established for promoting the permanent preservation, for the benefit of the nation, of lands and tenements (including buildings) of beauty or historic interest, and, as regards lands, for the preservation (so far as practicable) of their natural features and animal and plant life. The present property of the Association is to be invested in the National Trust, which will be divided into (a) ordinary members, (b) life members, (c) honorary members, and (d) local corresponding members. On the Council two members are to be appointed by the Trustees of the National Gallery, two by the President of the Royal Academy, one by the President of the Royal Society of Painters in Water-Colours, two by the Trustees of the British Museum and one each by the Society of Antiquaries, the Royal Institute of British Architects, the Linnæan Society, the Entomological Society, the Royal Botanical Society, the Universities of Oxford, Cambridge, London, Edinburgh, Glasgow, St. Andrews and Dublin; the Commons' Preservation Society, the Kyrle Society, the Selborne Society, the County Councils Association, the Society for the Protection of Ancient Buildings and the Trustees of Public Reservations, Massachusetts, U.S.A. Twenty-five properties now in the possession of the Association are scheduled as to be held and preserved for the benefit of the nation.



EUROPE.



COMMERCIAL EUROPE—WOOL.

THE NEW WAR OFFICE, WHITEHALL.

(See Illustrations.)

"PEACE has its victories as well as war," and we may justly affirm that, in the instance of the new War Office, a victory has been achieved; and this has been obtained in face of many difficulties, many obstructive factors, so that in the successful completion of this fine block we are presented with a curious blending of peace and strife. It is an interesting commentary, too, on any speculation as to the advent of the millennium that this vast building, entailing considerable expenditure, should be erected in the Metropolis of the world in the opening years of the twentieth century. Perhaps, however, it is a wise expenditure, on the assumed wisdom of the dictum that those who seek peace must be prepared for war.

It is well known (and yet must be repeated in any article dealing with these buildings) that the fertile brain responsible for the design of the War Office belonged to the late WILLIAM YOUNG, who unhappily did not live to see even the commencement of his matured scheme translated into permanent materials. It was a sad coincidence that both the new blocks of Government offices should be thus deprived of the services of their respective authors. But though WILLIAM YOUNG was called away, we cannot see any signs that the completed work has suffered under the superintendence of Mr. CLYDE YOUNG (the capable son of a capable father), who has fully justified the confidence reposed in him by the authorities. He has been assisted in his duties by Sir JOHN TAYLOR, K.C.B., of the Office of Works. Mr. FRANK WOODWARD acted as clerk of the works, with Mr. HENRY GRACE as his assistant.

Before attempting a description of the buildings, we would revert to a remark made above as to difficulties and obstructive factors. On the basis of planning, an irregular site of the area under consideration is, perhaps, innocent of giving trouble. It is in the treatment of the elevations and in the consideration of perspective effects that such irregularities are apt to cause difficulties. It may be said at once that the architect has skilfully masked this incipient unsightliness by his treatment of the angles, where the circular towers flanked by square projections and crowned by open stages beneath massive hemispherical cupolas give weight, dignity and a play of chiaroscuro at these angles, thus serving to divert the eye from dwelling on the want of rectangularity of the site. We shall have some further remarks to offer presently concerning these angle blocks.

The desirability of artistic consideration for the Banqueting House has also not been overlooked by the architect; and though this gem of INIGO JONES is of necessity somewhat dwarfed, it is not rendered insignificant by the new buildings, for, as far as internal arrangements permitted, Mr. WILLIAM YOUNG aligned the columns and the main cornice of his structure with

those of the Palace. Indeed, it may be observed generally regarding the completed Government buildings in this thoroughfare, that no one block preponderates unduly, and this is a happy consummation.

The works in foundations were contracted for by Messrs. MOWLEM & Co., who commenced operations in 1899 and completed their contract in March 1901. The entire site was excavated to a depth of 30 feet below the roadway, a concrete tank being formed, 6 feet thick over the base and with walls varying from 3 feet to 7 feet in thickness; the size of this tank may be conceived when the dimensions of the building are considered. The principal (west) front is 250 feet long, the south, east and north fronts being respectively 320 feet, 370 feet and 500 feet in length, the last facing Whitehall Place. The main line of building shows a height of 80 feet above the roadway.

The exterior of the War Office is of best Portland stone, supplied from the quarries of the Bath Stone Firms and specially selected by a Government inspector. All the stone was worked at the Chelsea yard of the contractors for the superstructure, Messrs. FOSTER & DICKSEE. In evidence of the thoroughness with which they entered into the matter, we may note that they had special machinery of the most modern type erected in their yard, including diamond saw, electric cranes and travellers, thus enabling the transmission of the very largest blocks of stone, these being conveyed on motor lorries to the Works, enabling the masonry to be carried out well within the contract time.

The design is Renaissance, dignified and restrained in its tendencies, with due consideration paid to the claims of chiaroscuro. Frankly, however, we must demur, even though the latter quality be the moving factor, to the alternating square blocks and circular drums of the shafts of the columns; the result is an air of restlessness, where one of solid repose is peculiarly desirable. The only other adverse criticism we feel called upon to advance respecting the exterior is in regard to the area gates in the balustrades; instead of endeavouring to treat these as an integral part of the balustrade design, it would have been preferable, both practically and aesthetically, to define their position clearly.

The architectural carving on the façades has been executed by Mr. GEORGE MABEY, and is well worthy of note, and we would call attention to the very happy effect produced by the Ionic colonnading.

Reference was made earlier to the angle treatment. Perhaps it is somewhat of a misnomer to use the term "tower;" derivatively it is decidedly wrong, and in any case it is undesirable. But having so far cleared the ground of misconception, we may remark that whatever term be employed, the effect is admirable. All the fine principles of art in design seem to be concentrated here—mass, proportion, scale effect, chiaroscuro, variegated unity and contrast. The ground and mezzanine floors show a rusticated front, and act as a fitting support for the columnar treatment over, which again adequately supports the superstructure. The main interest attaching to the rectangular flank supports is centred in the sculpture groups, the work of Mr. ALFRED



WAR OFFICE: ANGLE TREATMENT. [Photo by S. B. Bolas & Co., London.]

DRURY, A.R.A., and it is pleasant to observe the seemingly firm foothold devised for the figures; for customarily pedimental figures are—again seemingly—for ever straining to maintain their position on the curved surface. Mr. DRURY has executed eight groups in all, the subjects selected being connected more or less directly with the central *motif* of the buildings; he has designed and executed his work in a thoroughly masterly manner.

The War Office comprises seven storeys from the basement to the so-called fourth floor, and is planned to accommodate some 2,300 officials. Since its in-

the Staff, situated on the Horse Guards Avenue front; indeed, the latter room possesses the finest of the transferred chimney-pieces, and we would call attention to the pleasing carved oak enrichment to the skeleton oval panels intended for the reception of portraits; the frieze in this room would be suitably treated with decorative painting.

As regards the general appearance of the offices, all that can be said is that the treatment has been purposely simple; the rooms for heads of departments are oak-panelled to a height of 4 feet, and every attention has been paid to the adequate convenience and



WAR OFFICE: INNER COURT.

[Photo by S. B. Bolas & Co., London.]

ception changes in the administrative machine of the Department have brought about the abolition of the office of Commander-in-Chief, with the result that the fine suite of apartments overlooking Whitehall Place on the principal floor, destined for that functionary, are now to be devoted to the use of the Council of War and committees; this suite is handsomely panelled in oak from floor to ceiling, and has some fine marble chimney-pieces, transferred from the old War Office. Similar treatment as regards panelling and chimney-pieces is accorded to the Secretary of State's suite overlooking Whitehall, and to the room destined for the Chief of

comfort of all officials. For all the internal wood and stone carving and for the marblework of the principal staircase Messrs. FARMER & BRINDLEY are responsible. A few words should be devoted to this staircase, with its arcade and surrounding gallery at the top. It forms a very fine feature; due mainly to its structural stonework, executed in Painswick stone, the effective alabaster used for imposts and balusters, and the Piastraccia marble steps; we are not so pleased with the effect produced by the Brescia balustrade capping and the Brescia columns at the foot of the staircase, as the contrast is too vivid, but we can con-

ceive nothing happier than the alabaster decoration as employed.

The principal suites are situated on what architects call the first floor, though the Department prefers to call it the second floor (reserving the earlier number for the mezzanine over ground floor), and they are approached by the principal and five other staircases, each of the latter enclosing a passenger lift. There are twenty-two lifts of various kinds (five worked electrically for passenger traffic), and all these have been supplied by Messrs. WAYGOOD & Co.

Enriched ceilings in fibrous plaster, the work of Mr. JAMES ANNAN, are used in the principal rooms; and for the artistic grates two firms have been requisitioned, namely, Messrs. M. FEETHAM & Co. and Messrs. ELSEY. Some of the fine steel grates to be seen are further relics of the old War Office. The stoves and chimney-pieces generally have been supplied by Messrs. YATES, HAYWOOD & Co. The Art Pavements Company supplied the mosaicwork, and Mr. BURGESS (of Liverpool) the wood-block flooring.

The Intelligence Department has been carefully considered, with a view to its isolation, and will be guarded by special gates and officials.

There is complete provision for luncheons, and a mere walk through the rooms devoted to this purpose will convey some idea of the magnitude of the Department. The kitchen and offices, situated at the top of the building, are commodious, and are capable of providing and serving 1,000 luncheons per day; indeed, in times of stress they might negotiate double the number. It may be readily surmised that, everything else being so well considered, the sanitary arrangements are of the most modern type, a commendable feature being the means taken to air-lock the lavatory suites by means of special corridors, cross ventilation and air-extract trunks and flues. Messrs. MATTHEW HALL & Co. were entrusted with this work.

On the occasion of our visit to the new building we found the librarian engaged, like DOMINIE SAMPSON, in the prodigious task of grappling with books and documents; their arrangement will entail considerable time and labour being devoted, but will be facilitated in view of the excellent accommodation provided both in the top-lighted library and in the sub-ground repository, 25 feet high, the latter being situated beneath the quadrangle. Underneath this quadrangle is also to be found the boiler-house, fitted with three boilers, each 25 feet long by 7 feet diameter, and supplied by Messrs. BEELEY & SONS. For ordinary purposes one boiler will suffice, and its use will be alternated with a second, the third being held in reserve. Special provision has been made against the draughts to which stokers are usually exposed. The heating apparatus has been supplied by the Brightside Foundry and Engineering Co. Messrs. SIEMENS BROTHERS were contractors for the electric cables, and Messrs. F. A. GLOVER & Co. for the installation of lights and telephones. Attention may be directed to the interesting brass electroliers in some of the principal rooms, replicas of a chandelier in Hampton Court Palace.

Within the compass of the buildings are residences for five of the officials. In conclusion we may observe that the whole work reflects the greatest credit upon all concerned, our Metropolis being the richer by a magnificent block of buildings.

ROMAN MANCHESTER.

THE excavation sub-committee of the Manchester and district branch of the Classical Association are appealing for funds to continue the excavations now in progress on the site of the Roman fort Mancunium. Between 70 and 80 feet of the foundation of what was apparently the western rampart of the fort (they are not yet far enough advanced to say this positively) and some foundations within the Castellum have just been uncovered in the timber yard

in Duke Place, off Duke Street, which leads out of Liverpool Road, on the left-hand side proceeding from Deansgate. The excavations were undertaken at very short notice on a site which was to be built upon almost immediately. The trenches will have to be filled in by January 5 at the latest.

The work is important. (1) Because the exact position of the western rampart has not hitherto been known (no two maps agreeing on the subject), though fragments of the northern, southern and eastern walls can be located. The discovery of the western boundary therefore determines the dimensions of the fort. (2) Because the remains shown give a clearer idea of the construction of the foundations of the walls of Roman Manchester than was obtainable from the fragment of walling in Messrs. Southern's yard. (3) Because foundations were struck within the enclosure which seem to indicate that the fort had stone buildings. Further details will be given with pleasure to any persons who are sufficiently interested to visit the site. To prevent disappointment, however, it may be better to state that only the foundations remain, and that much has necessarily been obliterated for the time by the snow.

The committee take this opportunity of publicly expressing their thanks for the facilities and kind assistance granted (1) by the officials of the Ship Canal Co. (Bridge-water Undertaking), who own the land; (2) by Mr. Hodgkinson (of Messrs. J. Wainwright & Son, timber merchants), who has hitherto rented the site; (3) by Messrs. E. & F. Beattie, carriers, of Rice Street, to whom they are especially indebted for kindly allowing them to continue the excavation at great inconvenience to the firm.

The depth to which the trenches have to be taken, and the hardness of the material through which they are cut, make the expense of the work very great, and already the funds at disposal are nearly exhausted. They are unwilling to draw upon this year's resources, as they are anxious thoroughly to explore another important site in the summer.

It is not every great city that can boast that the walls of the Roman station to which it owes its name still exist under its busiest streets and the tangle of its many railways. The work now doing is only the beginning of a scheme for gradually piecing together the remains of Roman Manchester that still lie undisturbed beneath the accumulations of many centuries. It is unnecessary to enlarge upon the importance of this work for archæology, for history, and especially in the interests of the rising generation of Mancunians. But the expense is not small, and the sub-committee venture to hope that the results already obtained may induce many who have not yet subscribed to the fund to do so. The expense of publishing such results, with adequate illustrations, is also great, and though there are generous offers from the Lancashire and Cheshire Antiquarian Society and from the Derbyshire Archæological Society, other help is needed. In the temporary absence of the honorary treasurer, Mr. Harold Williamson, donations would be thankfully received by the honorary secretary, Mr. F. A. Bruton, at 2 Clyde Road, West Didsbury.

Mr. Charles Roeder, to whose patient labour for many years it is due that so much of what remained of Roman Manchester has not been irretrievably lost, is not only watching the work with interest, but has voluntarily placed at the disposal of the committee wonderfully detailed knowledge of the site which his long experience and study of it have given him.



AMERICA.

NOTES AND COMMENTS.

THE origin of the name of Liverpool, about which both archæologists and linguists differ, was once more discussed by Mr. SHONE, F.G.S., in a lecture at Chester. It is commonly supposed that the arms express the significance of the title, for a bird is introduced which is popularly called a liver, and the name is therefore the pool of the liver. But the heralds describe the bird as a cormorant having a piece of the seaweed known as laver in its beak. The late Sir JOHN PICTON, the architect, maintained that the bird was the eagle of St. JOHN the Evangelist. Mr. SHONE considers it is more like a herring-gull than an eagle. It is, however, plain that there is no connection between the arms and the title of the city. It has been said the word "Liverpool" is derived from the Cymric "Llyvrpwl," which would signify a pool where rivers joined. According to Mr. SHONE the word was derived most probably from the word "Llifer," which was defined by Dr. W. OWEN PUGHE in the National Dictionary of the Welsh language as a "flux, flow or confluence," and the word "pwl" was a small pool, so that, the letter "f" being equivalent to the English "v," Liverpool would mean exactly what would be the description of the then physical conditions which seemed to be indicated by the geology of the area—a pool in which there was a meeting of the fresh waters and the tidal waters. No doubt the place was known by some name at an early time. But it does not occur in a written deed until the end of the twelfth century, where the place is described as "Liverpul"; the same spelling is adopted in a charter of King JOHN. It is not of much importance to discuss the etymology of Liverpool or the reason for adopting the peculiar coat of arms. But as long as the city exists we suppose the subject will have interest for those who consider the past to be as important as the present.

THERE was a time when Canon GEORGE VENABLES was a familiar figure at archæological meetings. His addresses were anticipated with pleasure, for it was known that he possessed a thorough knowledge of ecclesiology. His death on Sunday will cause regret to all who have heard him or were acquainted with his writings. Born in 1821, after studying at Oxford he was ordained in 1852. He was fortunate in having his merits recognised, and was appointed vicar at Chatham in 1854. From 1874 to 1886 he was vicar of Great Yarmouth, and he aided in the restoration of the church there. Since 1888 he was rector of Burgh Castle, Suffolk. He was the author of several books and very numerous articles relating to church matters. He was an excellent type of the old clerical archæologist—a class of man that is not numerous at the present time.

THE present Italian Government have resolved to adopt stringent methods in order to prevent the sale of examples of ancient art and the destruction of historic remains. Since 1820 regulations have existed for the same purpose. But they were inoperative, for Western Europe and America have been enriched by Italian spoils. It is now proposed to form a Superior Council of Antiquities and Fine Arts, consisting of twenty-one members. All works of art belonging to private possessors will be registered. Should an owner be desirous of selling his property the State will have the right to purchase it within three months. Works of architecture and remains of historic interest are also to come under the protection of the proposed edict. It will become impossible to build on ground which is supposed to have been the site of some historic building or the residence of some ancient worthy. The State will also acquire the right to undertake excava-

tions in any part of the country by paying compensation to the owners of the ground. Associations can also be authorised to embark upon excavations. But if foreigners perform the work they will not be allowed to remove any treasure-trove from Italy. There are other provisions which will also tend towards the retention of works of art within the country.

AN Association has been formed in Paris of former students of the ateliers of the Ecole des Beaux-Arts. The first meeting was held on December 22 with M. BONNAT, the present director of the school, as president. The object of the Association is to endeavour to preserve the fellow-feeling between artists who once were comrades, and wherever practicable to come to the aid of those whose careers have not been fortunate. The Association will also consider questions relating to the Ecole des Beaux-Arts, the salons and other exhibitions, and it is hoped money will be provided for travelling studentships as well as a benevolent fund. Prior to the first meeting, more than 300 applications for membership were received. One lady has presented 500 francs, and Baron EDMUND DE ROTHSCHILD has given 3,000 francs. M. FERNAND SABATTE, who has organised the Association, is honorary secretary. His address is 35 rue Gros, Paris.

It is understood that the recent robberies in the Louvre have led to the adoption of new rules and regulations which are not unlikely to cause some inconvenience to those who visit the galleries with an honest intention. Entrances and exits are to be guarded with more care than formerly. There will be only four doors for admission. But that must mean only to the great galleries. Every door in the interior which is not considered to be necessary for visitors will be kept closed, or, in other words, it will be necessary to follow a certain definite route. Regulations of that kind might be worse, especially as visitors must realise that the treasures cannot be too well guarded. But a rule which gives the officials authority to treat the visitors in the manner that is familiar at the Customs barriers will give rise to much grumbling. The police probably can discover no other way. The select class of artists and scholars who have been allowed special facilities for their studies will find that their privileges have been curtailed.

THE French Government are fortunate in having gained possession of the old château of Azay-le-Rideau. It is situated no doubt at some distance from Paris, in the beautiful district between Tours and Chinon. The château dates from 1520 and was erected by the treasurer of FRANCIS I. The salamander which is associated with the king is therefore prominent on the façade. The L-shaped plan with turrets at the angles is suggestive of a time when defence had to be considered. But the other parts of the building are evidently suggestive of a peaceful age. As a transition example it becomes one of the most interesting among the numerous French châteaux. Unfortunately the name of the architect who designed it cannot be discovered. The sculptors engaged must have possessed extraordinary skill, but not one of their names has survived. From its character and age it is especially suited to become a Renaissance museum, to which use the French Government have assigned it. But what are the limits of that period? The question has been discussed at a meeting of a special commission, and it has been decided that the Renaissance period is to be taken as extending from the end of the Middle Ages to the period of LOUIS XIII. Arrangements will accordingly be made to furnish Azay-le-Rideau with objects belonging to that time.

ILLUSTRATIONS.

A ROOM IN A WEST-END HOUSE.

THE HORNBY LIBRARY, LIVERPOOL.

THIS building, as well as collections of books, prints and drawings, form the gift of the late HUGH FREDERICK HORNBY to the city of Liverpool. The collections were described in an article published in *The Architect* on October 19, 1906.

THE NEW WAR OFFICE, WHITEHALL.

(See page 8.)

MANCHESTER ROYAL INFIRMARY.

THE Royal Infirmary (the General Hospital of the city of Manchester) consists of some forty-four buildings, covering an area of about 14½ acres, having frontages to Oxford Road, Nelson Street, York Place and Berlin Street, its main frontage being nearly opposite the Whitworth Museum. We publish the west elevation and ground plan of the staff home, one of three buildings forming the main façade, the others being the administration block in the centre, and the teaching department forming a corresponding block to that of the staff home. We intend to publish the similar plans and elevations of those buildings in our succeeding issues.

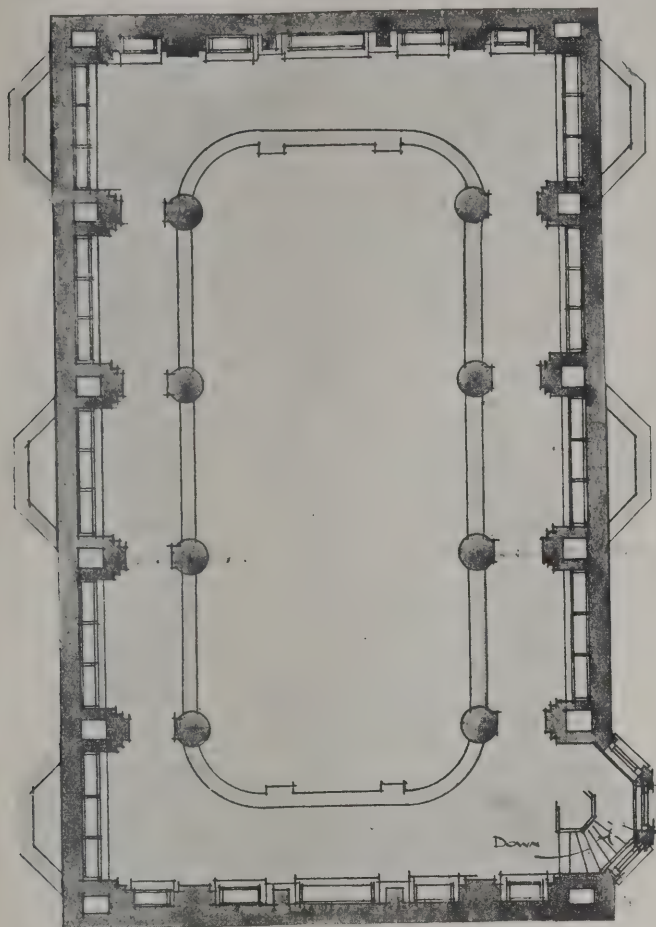
The total cost of the hospital, including the out-patients', casualties', pathological departments, &c., will be between 300,000*l.* and 400,000*l.* The buildings are of red brick and Portland stone, and of fire-resisting construction throughout. The staff home contains about 350 rooms, and each nurse has a separate bedroom. The architects are Mr. EDWIN T. HALL, of London, and Mr. JOHN BROOKE, of Manchester. The contractors are Messrs. ARNOLD & SON, of Doncaster, and the clerk of works Mr. ALFRED TURNER.

LANCASHIRE CROSSES.*

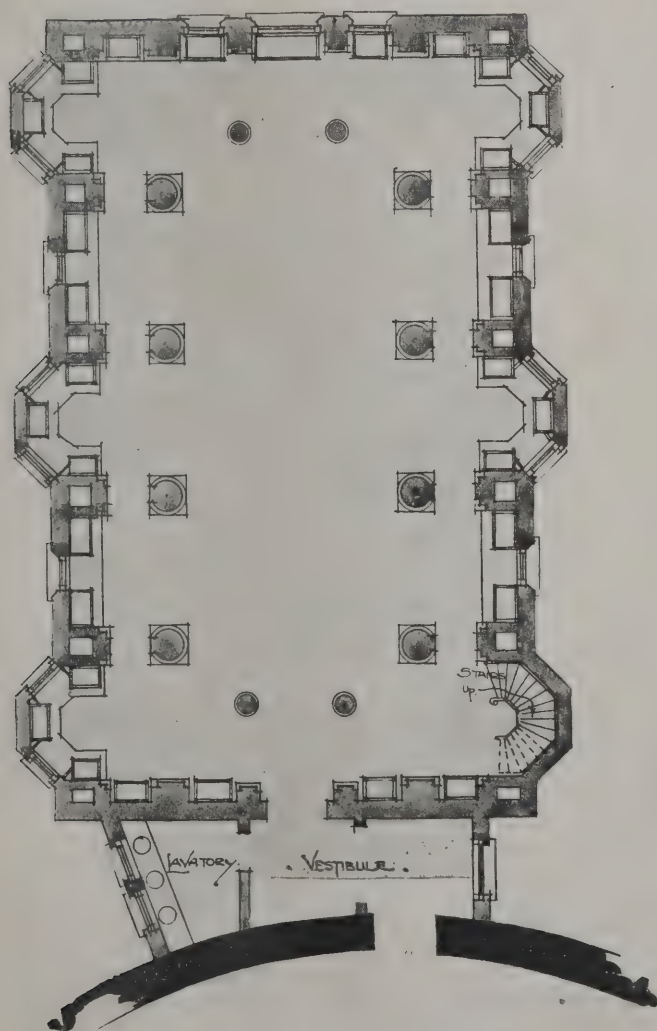
IT may be difficult to deprive religious objects of their material character, but they can easily lose their original and essential interest. Removed from their associations they are transformed. The vandals who in the time of HENRY VIII. and CROMWELL destroyed a vast number of works of art, which they considered to be aids to superstition, would have served their purpose equally well if they deposited their objects in museums. In a glazed receptacle the most prized reliquary rarely attracts any reverence. The difference between past and present is nowhere better exemplified than in one of the foreign museums of religions, or in a section of a general museum which is assigned to that subject. The majority of visitors give no greater attention to the cases than they bestow on those containing miscellaneous articles. Vandalism, in fact, attains only negative results, and far more effective substitutes can be found for it.

We cannot therefore help pitying the waste of both physical and mental energy displayed in smashing stone crosses early in the nineteenth century by one of the Lancashire vicars. We are told by Mr. TAYLOR that "he was a vehement Protestant, and owing to his notoriety as a prophet, allowed to do much as he liked with these ancient monuments. Many crosses, indeed, it is said, were pulled down with his own hands." The good people of the district did not realise, nor did the clergyman himself, that there was more debasing superstition in supposing that he was a prophet, and was to be dreaded as a wizard, than in allowing a cross to remain as a relic of the past. Yet it may be doubted whether complete destruction was not preferable to degradation.

* *The Ancient Crosses and Holy Wells of Lancashire*: with Notes on the Pre-Reformation Churches, Monastic Institutions and Superstitions of the County Palatine. By Henry Taylor. (Manchester: Sherratt & Hughes.)



THE HORNBY LIBRARY—GALLERY PLAN.



THE HORNBY LIBRARY—GROUND PLAN.

To break up an old cross for the repair of the streets could hardly be worse than turning one into a lamp-post, as was done in Leyland. In other places the whipping-post and the stocks were supposed to be suitable adjuncts to the cross. Indeed, it may be said that the crosses of Lancashire have been treated like the religious objects in gold, silver and ivory which we see in museums. Their original character is ignored, and if they are regarded at all, it is with wonder that they could at any period have exerted the influence which imaginative people describe as inevitable.

The subject of crosses has received some attention from ecclesiologists, if not from ordinary archaeologists. It is impossible to say to what extent they were scattered over these islands. But there is sufficient evidence to prove they were numerous along the eastern part of England and in the Isle of Man. In Ireland also several still remain, and although they were obnoxious to Scotsmen at the time of the Reformation, when many were likely to have been destroyed, some interesting examples still exist in the north. From the character of the ornamentation it was supposed they were likely to be carved by Northmen or by Celts. But of late years resemblances have been traced between the patterns and some of those found in various parts of Europe, and the circumstance has enabled a theory to be created that the English crosses were inspired by Roman or other Italian influence. One of the examples in Whalley churchyard has been used to support that theory, for it is described in the following words by Mr. HENRY TAYLOR:—

Monument "B" is in a fair state of preservation, although a portion of the shaft (apparently about 2 feet in length) has been lost. Its total height must originally have been some 9 or 10 feet. The arms of the cross (which was about 2 feet in diameter) are missing, but the characteristic central boss at their intersection is present. Sometimes the central boss is plain; in this case it is carved. All four sides are richly ornamented with varying patterns of foliated scrollwork, as shown in the accompanying illustration. The principal ornament on the east and west faces springs from a central rounded shaft or pole, itself rising from the apex of a gable. These two faces are considerably varied one from the other in the character of the ornament. The cross shaft, which measures at the bottom 21 inches by 10 inches, is socketed into a carved base stone. The Bishop of Bristol sees in this ornamentation a resemblance to the work on the roof of the alcoves in the mausoleum of Galla Placidia at Ravenna. He goes on to suggest that this design may have been brought by Wilfrith of Ripon, York and Hexham from Rome and Ravenna, and that it is only a shortsighted view to attribute such work only to Hibernian designers and their imitators.

To ornamentists the scrolls on the stone will appear to have at least as much analogy with the carvings and tattooings of the New Zealanders and other peoples in a primitive state as with Byzantine or Italian patterns. The symmetrical arrangement is so simple it must have been adopted in the earliest attempts at composition. On that account it is difficult to imagine the forms could have had any symbolic signification.

The Whalley example is not to be accepted as a general type of the ornamenting of the Lancashire crosses. There are many varieties, although it cannot be said that the sculpture is ever remarkable for beauty. To be enabled to write Mr. TAYLOR's large volume on the crosses, whatever may be their artistic value, has required several years of close labour. It was necessary not only to seek out the places where crosses or their remains are to be found throughout the county, but, in addition, records and other sources of information had to be carefully studied. Mr. TAYLOR has had the advantage of assistance from local authorities, and his work with its numerous maps and illustrations is one which all Lancashire men, as well as archaeologists, should be proud to own.

It has long been a subject for debate whether the majority of English crosses were not erected prior to the Norman invasion. The general character of the

ornamentation and the inscriptions would support that theory. But there are occasional records which show that examples were raised at a later time. They were intended to serve several purposes. Mr. TAYLOR classifies those found in Lancashire as follows:—(1) Preaching crosses, (2) churchyard crosses, (3) roadside or weeping crosses, (4) market and proclamation, (5) boundary crosses and meare stones, (6) the cross at cross-roads, (7) crosses at holy wells, (8) sanctuary crosses, (9) crosses as guide-posts, memorial and murder crosses. It is not to be supposed that crosses erected at an early date were intended to serve secular purposes. For instance, on some of the Scottish stones battles are represented, and on that account it was concluded that the crosses indicated battlefields. But it is more likely that the rude, warlike scenes referred to some of the Jewish contests, from which at the time spiritual meanings were drawn. The crosses were placed in positions which were supposed to have advantages, and it was not surprising if subsequently one became the centre of a village. They were not always far apart. Some were used to mark the boundaries of churchyards or monastic property. There are, for example, three crosses in the churchyard of Whalley, but we are told "their original position is uncertain," and it is likely there were others, and all may have helped to define limits.

Mr. TAYLOR is of opinion that prior to the Reformation the crosses were intended to recall the Crucifixion. When one had to be rebuilt the style of Gothic then practised was adopted. In the sixteenth century, especially with market crosses, a suggestion was taken from Italy, and "in many cases the structure took the form rather of an obelisk than of a cross, but was often surmounted by an orb with a small, plain, Latin cross on the top of it." In the eighteenth century a crown was substituted for the orb and cross, as in the Salford Proclamation cross and the Manchester Market cross.

The crosses in each of the six Hundreds of Lancashire are described in order, and illustrations are given of typical examples. Although people are becoming more enlightened about the past and the remains relating to it which have survived, there are no traces now of several crosses which must have existed when the Ordnance Surveyors were at work in 1848, for their positions are shown on the maps. It is to be hoped that Mr. TAYLOR's admirable descriptions will prevent further vandalism. When it is remembered that some of the carved stones are a thousand years old, it seems to be almost inhuman to treat such relics as if they had been just taken from the quarry. The holy wells possess less architectural interest than the crosses, but in some cases crosses were found near them, and the legendary lore collected about them has much attraction for archaeologists. The information is not confined to crosses and wells. Particulars are also given about the religious houses which once were numerous in Lancashire, and by the law of association the settlements of northern invaders, the positions of camps, barrows and Druidical remains and much else has had to be considered, and in that way the volume becomes a necessary supplement to the ordinary histories of Lancashire.

M. Philippe Chaperon, who was the senior among the scene-painters of Paris, has died in his eighty-fourth year. For many years examples of his art were sought for the principal theatres of Paris, including the Opéra and Comédie-Française.

The French Academy of Fine Arts have decided that the prize founded to commemorate Achille Leclerc will be given this year for the best design for a metropolitan railway terminus.

Mr. W. Woodward has given notice that at the meeting on Monday of the Royal Institute of British Architects he will direct the attention of the R.I.B.A. to the terms of the competition for the new London County Hall, with especial reference to the proposal to invite certain architects to submit designs in the final stage of the competition.

THE EMANUEL HOSPITAL, WESTMINSTER.

WESTMINSTER is deservedly famous for the number of its charities—quaint abodes of peaceful rest for the aged, and of learning for the young. Not by any means the least amongst Westminster charities was the Emanuel Hospital, standing in a street then known as Little James Street, but now called Buckingham Gate. Passing from Victoria Street to Wellington Barracks it stood on the left-hand side of the road.

On entering the gateway, a fine spacious quadrangle laid out with lawn and gardens, with paved pathway all round, met the view, on three sides of which stood the red brick Queen Anne buildings, the fourth side being screened from the road by high wrought-iron railings with gates of good design; the whole formed a very secluded, picturesque and historically interesting part of old London.

This charming relic of bygone years must indeed have been a harbour of refuge to its inmates, and a pleasant surprise to the wayfarer in what was then a by-street of Westminster.

Emanuel Hospital was originally founded in 1594 by Anne, Lady Dacre, widow of the last Lord Dacre of the South, sister of the poet-statesman Lord Buckhurst, and maid-of-honour to Queen Elizabeth. Lord Dacre's mansion stood close to the site of the hospital, and in the early days of the charity only "decayed and distressed servants of Lady Dacre, former servants of the family who have grown poor, lamed or diseased in the service of their Prince, or without their own default; any poor, godly, honest people past labour, those born blind, or lamed or disabled in the service of their Prince, and those brought down from riches to poverty without their own fault," were eligible.

Lady Dacre's will was proved on June 6, 1595. It provided for the erection of a suitable building on land selected by the testator in Tothill Fields, "about four acres," with habitation for twenty poor aged folk and twenty poor children, and it was to be called "Emanuel Hospital." By the will it was also directed that a charter should be applied for, incorporating the hospital under the name and for the purposes designated.

This charter was granted in 1601, and the almspeople by it were constituted "as a body corporate of themselves for ever, under the name of the Poor of Emanuel Hospital, with faculty to purchase lands, to have a common seal, to sue and be sued." After the death of the surviving executor the Lord Mayor and Aldermen of the City of London were made the governing power in perpetuity.

The first beneficiaries were to be selected to the number of seventeen from Westminster, two from Chelsea and one from Hayes in Middlesex. The two from Chelsea were appointed on condition that the tomb of the foundress and her husband in Old Chelsea Church should be kept in good repair; failing this being done, after due notice being given, the right of Chelsea was to lapse.

The first hospital was erected in 1605; about 100 years later it was rebuilt, and in 1732 the chapel was erected—to which the apsidal chancel was added in 1846. Oddly enough, while expressing the desire that "the children should be brought up in virtue and good and laudable acts whereby they may the better live in time to come by their own honest labour," Lady Dacre did not seem to contemplate a school for the children, but rather a cluster of industrial homes in which each aged pensioner should "bring up and instruct in virtue, and good and laudable acts," one child. However, a school was founded and the first clerical master appointed in 1735.

The Rev William Beloe, the translator of Herodotus, was master of the hospital from 1783 to 1808, when he was appointed rector of Allhallows, London Wall, and assistant librarian in the British Museum.

In 1873 the Endowed Schools Commission carried in Parliament a "scheme" for the reconstruction of this hospital and the separation of the schools from the almshouse branch of charity. Under the provisions of this scheme the endowments of four hospital schools in Westminster were to be united under the management of one body of governors, and out of these endowments it was

proposed to establish three large middle-class schools—two in Westminster, each providing accommodation for 300 boys, of whom 200 in each should pay a small sum for their education, and one a boarding school, which was



erected at Wandsworth and is now known as the Emmanuel College for Boys.

The old "Emanuel Hospital" was pulled down a few years ago and a large block of buildings erected on the site.



COMMERCIAL AMERICA—TOBACCO.

THE LATE J. S. M'CAIG.

THE result of the appeal in the action relating to the will of the late Mr. M'Caig, who left his fortune for the erection of towers and statues, was reported last week in *The Architect*. The *Dundee Advertiser* gives the following account of the testator:—

For many years John Stuart M'Caig and John Stuart Blackie were the two notable figures in Oban. Though they had little in common, they were both somewhat eccentric. John Stuart M'Caig was a striking personality. Tall and portly, a burly man with a majestic presence, a stentorian voice and a forceful style of speech, he was one that could not be overlooked in any company. Though not deeply learned, he was well read, and took special interest in the history of art, frequently visiting the chief continental galleries, and by no means ignorant of both ancient and modern pictures. As might be expected, he was an ardent Gael, even his speech retaining to the last a faint flavour of the pure West Highland accent. One of his sisters conducted for many years a successful west-end millinery establishment in Sauchiehall Street, Glasgow, and he was a frequent visitor there. To those who knew Mr. M'Caig's love of the Highlands and Highlanders it was often matter of surprise that he spelled his middle name "Stuart" in the French style, and not with that multiplicity of superfluous consonants which the Gaelic language demands.

It is probable that only the wide circle of John Stuart M'Caig's friends knew that he was both a poet and an art critic; for the book which he published many years ago, under the title of "Notes on Painters and Painting, with a Poetical Introduction," was never intended for the world at large. As a poet he was not in the front rank. Indeed, much of his verse was not better than fluent doggerel, however sincere were the thoughts he strove to express. A few quotations from his poem on "The Rise of the Fine Arts" will enable readers to judge of its value. It is intended to show the civilising influence of poetry, music, the drama, painting, architecture and sculpture as displayed in the history of Greece, Italy, France and our own country:—

Well and truly are the arts pronounced fine,
For they are the fruit of a breath divine;
By which wit and wisdom to man are taught,
And those wondrous marvels of perfection wrought.
They are the products of that light and love
Which descend on man from the realms above,
And with softer feelings his heart bedew,
And scenes more fair and bright unroll to view,
And with skill and cunning endow his hand
To reproduce those scenes like magic wand;
With song and music to attune his tongue,
So as to enchant and please old and young.

A long passage describes how those gifted mortals, artists and poets, transcend the meaner mortals who have no gleams of genius. Some of the statements, however, may not meet general acceptance, as when he writes:—

Artists and poets have a sense of right,
A keen sense of virtue and honour bright.
Artists and poets, with their feelings keen,
Distinguish the right and wrong in the scene.

After telling how the primitive man gradually came under the influence of the earlier ballad singers and developed more elaborate poetry, he proceeds:—

Then arise at last the masters of song,
Whose rolling verses the ages prolong.
Then Homer, Virgil, and Milton appear,
Whose pages nor death nor decay can fear;
Horace, Burns, and Béranger—full of fire—
Strike with cunning and with rapture the lyre.

Here the poet is somewhat mixed in his chronology, for there are vast tracts of time between Virgil and Milton, as between Horace and Burns; but Æschylus, Sophocles and Euripides are joined with Corneille, Racine, Molière and Shakespeare in an equally rapid survey. Painting begins with Apelles, sculpture with Phidias, and architecture with the builders of the Pyramids and the Parthenon. When dealing with architecture the poet selects Bramante, Michel Angelo and Sir Christopher Wren for special laudation:—

In London Sir Christopher Wren designed
Saint Paul's with the skill of a master mind;
Built in the metropolis of the earth
This temple as a central home and hearth,
Vast and solid in its bulk and structure,
Emblem of the people and their nurture.

The poem concludes with a prophecy and a prayer. The first has not been fulfilled as yet, nor the latter answered:—

Beauty and music shall yet be the poles
On which the world in sweet harmony rolls,
And love shall yet be the atmosphere pure,
In which men shall live happy and secure;
And life eternal shall be the goal,
The end and reward of the pious soul.
And may this my song be the morning star
To herald this glorious dawn from afar.

Mr. M'Caig's "Notes on Painters and Painting" deal with twenty-four of the most famous artists, from Fra Giovanni, Bellini and Da Vinci to Rubens and Domenichino. When noticing some of the works of art in the galleries at Rome and Florence he makes curiously naïve remarks about them. Thus, Jupiter Serapis he describes as "a striking likeness of Mr. John M'Kay of Glenure, Argyllshire." Again he writes:—"The best idea of the handsome figure of ancient Hercules is that of my friend, Mr. G. G. Mackay of Glengloy." Still further, the West Highland eye detects strange resemblances:—"The bust of Zeus is one of the finest and most celebrated extant. It is very like one of the handsomest red-whiskered fishermen of Lochfyne—well-proportioned head with a calm composure." There is a dash of malice in another criticism:—"The statue of Diogenes is a most striking one, and almost a perfect likeness of the late Mr. Potter, Director of the City of Glasgow Bank." The busts of Vespasian and Titus at Florence provoke the remark:—"Both busts have a striking resemblance to the head of the late Mr. M'Calman of Ardochattan." In St. Peter's at Rome he examines "the statue of Paul III., designed by Michel Angelo—a perfect likeness of Professor Blackie of Edinburgh." When enlarging upon the beauties of the bronze statue of Narcissus at Pompeii, the art critic suggests that "the enterprising Oban Railway Company should get a copy put up in their fine glass station at Oban Bay." Quaint, candid, eminently natural are the criticisms of the greatest works of art in the world; not without an untutored perception of beauty, and ever ready, with Celtic fervour, to correlate the best in the ancient European cities to his own distant but well-beloved West Highland home. Peace to the ashes of John Stuart M'Caig. At least he meant to assist in the development of native Scottish art, however whimsical and egotistical were the methods he adopted. The Court of Session has now decided that the Scottish artists must take the will for the deed.

The Anglo-American Executive Committee for the Keats-Shelley memorial have purchased the house in the Piazza di Spagna, Rome, where Keats died. The price paid was 2,400*l.*, besides 240*l.* already paid for the purchase option. A further sum of 1,600*l.* must be raised in order to free the house from mortgage.



COMMERCIAL AFRICA—HUNTING LIFE.

HOLYCROSS ABBEY.

THE Cistercian Abbey of Holycross, which stands on the banks of the river Suir, is one of the most interesting of the monastic ruins of Ireland. It is among the ancient and national monuments in the charge of the Commissioners of Public Works in Ireland, and in the last report there is a history and description of the building.

The abbey is said to have been founded in the year 1169 by Donald O'Brien, king of Thomond, for Cistercians, a reformed branch of the Benedictines, and was the daughter or branch of Nenay (Monasternenagh), county Limerick. It subsequently became a place of great importance. The abbot was styled Earl of Holycross. He was a Baron of Parliament and usually Vicar-General of the Cistercian Order in Ireland. The lands belonging to the monastery formed an earldom.

The ancient name of the monastery of Holycross was Monastair Ochterlamhain. It is said that the change of name to "Holycross" was due to the gift of a portion of the true cross by Queen Eleanor, wife of Henry II., and that one of her six sons, owing to the pious care of the monks, found a place of burial there.

To show the extent and importance of this monastery we find it recorded that, "in 1563 this abbey, with its appurtenances, containing 160 acres of arable land, 60 of pasture, and 2 of wood in the town of Holycross, one ruined messuage, 60 acres of land in the town of Kilkenny, 16 acres in Ballykelly, 2 messuages, 4 cottages, and 24 acres of land in Lisnegonok, 30 acres in Kilcolman, 30 acres in Thurles, in this county, 1 messuage, 62 acres of arable, 6 of pasturage in Ballentenra, county Kilkenny, one close near the town of Carlow, containing a garden, an orchard, and 3 acres of pasture, and 7 acres in Ballysheen and Maynooth, in county Kildare, were granted to Thomas Earl of Ormonde *in capite*, at an annual rent of 15*l.* 10*s.* 4*d.*"

The abbey was legally dissolved in 1536 by the Act passed for the dissolution of the monasteries, but the monks had possession of it at intervals for a considerable time after, ministering in the church until 1633. About this time the abbot, Luke Archer, accompanied by some of the monks took up residence at Kilkenny, taking with them the relic (the portion of the true cross) above referred to. The last abbot was Bernard Lahy (about 1724). At his death one of the monks, named Cormack, claimed the office as his in right of his Order, but his claim was not admitted. He retained a cell in the building until his death in 1572. He was the last of the monks of Holycross Abbey. The seal of this monastery is attached to a deed in Kilkenny Castle, bearing date 1449.

There have been so many alterations and additions from the thirteenth century to the sixteenth, that there is very little of the original work discernible in the church except some portion of the south wall, and the doorway in north-east of cloister, entering the south aisle. The most prosperous period in the history of the abbey appears to have been from the thirteenth century to the fifteenth, and the principal additions were made during that time.

The abbey church consists of a chancel, choir, nave, north and south transepts (with two chapels opening off each transept), north and south aisles and a tower at the intersection of the nave and transepts. The chancel is 23 feet 9 inches long by 22 feet 8 inches wide, and has a groined ceiling with moulded ribs. The east window of the chancel has six lights with tracery heads as shown on the drawings. The sedilia are in the south wall of the chancel. It is sometimes called the founder's tomb. The

latter, however, is on the north side of the chancel. The tower is 22 feet 3 inches by 13 feet 6 inches, and has a groined ceiling with moulded ribs. The choir is 31 feet by 22 feet. The nave is 61 feet by 22 feet 6 inches. The aisles extend from west end of nave to the transepts. The north aisle was lighted by four windows. The south aisle had only one window in the west end. The north transept, 26 feet 9 inches by 16 feet 9 inches, has a groined ceiling similar in character to the ceiling of the tower. Opening eastwards off the north transept are two chapels, 12 feet by 8 feet 8 inches and 11 feet 7 inches by 9 feet 1 inch, with groined ceilings and moulded ribs. The south transept, 26 feet 2 inches by 14 feet, had not a groined ceiling. Opening eastwards off the south transept are two chapels 10 feet 8 inches by 10 feet 5 inches, with groined ceilings and moulded ribs. Between these two chapels is a space formed by a double row of arches and columns erroneously supposed to have been used for waking the bodies of departed monks. There is a detail drawing of this and the sedilia in the Board's annual report for the year 1881-2, and the so-called "waking bier" has recently been reproduced in plaster for the National Museum in Kildare Street, where it may be now seen. There are rooms over the chancel, north transept and the chapels in north and south transepts—the two latter had fireplaces.

The chancel, transepts, chapels, tower, choir and north aisle wall all appear to have been built about the same period—early in the fifteenth century. The doors and windows in the west gable and in the buildings surrounding the cloister garth appear to be of the same date, except the door at east end of the south aisle, which is of a distinct Norman character and probably belonged to the early building of the twelfth century. The windows and door of the west gable and the openings in the buildings at the east and west sides of the cloister garth were insertions, as also the door from the cloister to the west end of the south aisle.

Some time in the nineteenth century the south wall of nave having shown signs of falling southwards, some buttresses and arches were built to keep it secure. The outlines of two of the three original windows which have been built up are seen in the west gable of the nave; they probably belonged to the twelfth century. The wall of the north aisle is of a better class of masonry than that of the older work in the south aisle and is 6 inches thicker. The smaller windows in the north aisle are similar to those in the west gable at the ends of the north and south aisles; they appear to have been built in with the walling, and are not insertions, like the windows of the west gable. The wall of the south aisle is part of the original twelfth-century work; there is a modern buttress built against it, and there are four semicircular arches springing from this wall to the nave wall for the purpose of supporting the nave wall, which was falling southwards. The buttress and arches were, it is believed, built about fifty years ago by the owner of the surrounding property. Two arches of a similar character were built across the north aisle.

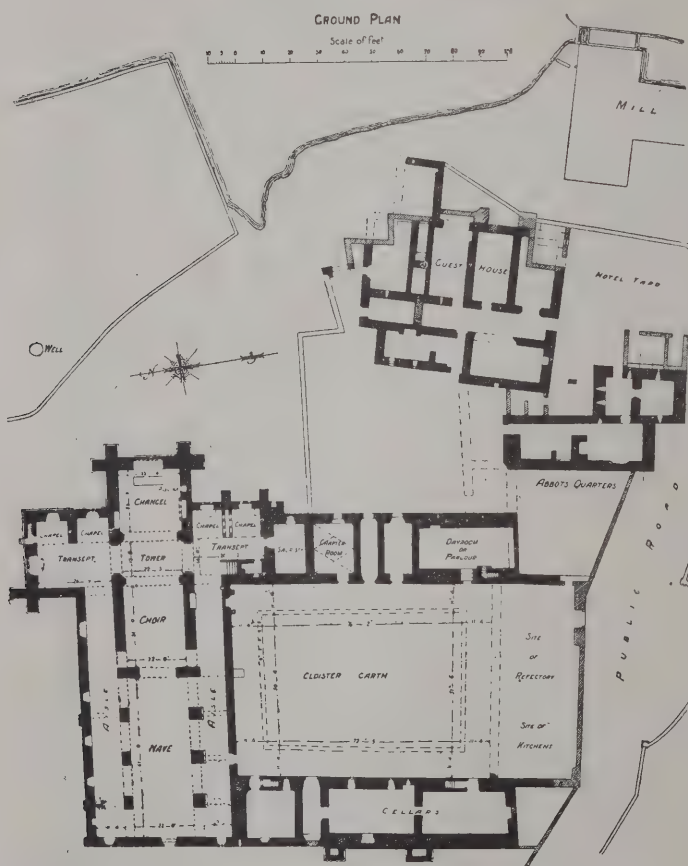
The range of buildings on the western side of the cloister garth contained the dormitory of the lay brethren, with stores and cellars under. There was a range of buildings on the south side completing the enclosure of the cloister garth, but nothing now remains except a doorway 5 feet wide, and the foundation of a wall upon which the present boundary-wall is built. The range of buildings on the eastern side of the cloister garth contained the chapter-room and other rooms and passages on the ground-floor,

with the monks' dormitories over. The masonry of the walls of this portion of the building appears to be a portion of the original work, but some of the cut stonework of the doors is of later origin. Two doorways, one entering the hotel grounds and one adjoining it, are of modern construction.

The cloister arcading was continued around the four sides of the cloister garth, and had disappeared. The original work in it appears to be about fifteenth century. There is only a small portion of it now standing. It was re-erected from the fragments found on the site. The arcade originally was carried around the north, east and west sides, as may be seen by the position of the corbels in these walls; it was also, no doubt, carried along the south side, as indications of the foundation-walls have been recently discovered where marked by dotted lines on the ground plan.

The apartments on the ground floors of the two ranges of buildings east and west of cloisters are vaulted over. The eastern range comprised sacristy, chapter-room, passage from cloisters to the grounds surrounding the abbot's residence; also a small room, 18 feet 6 inches by 10 feet, and a large room, 33 feet by 15 feet 6 inches, which was probably a day-room or parlour. The monks' dormitory was on the next floor. The ground floor of the range on the west side of the cloisters contained three large rooms, which were probably stores and cellars, buttery, &c., and the storey over would be the usual place for the lay brothers' dormitory. There are fireplaces in one of these apartments, which, with the garde-robes, are clearly insertions of a latter date. The refectory was probably at the southern side of cloisters where shown on the plan.

HOLYCROSS ABBEY, Co. TIPPERARY.



The abbot's residence and guest-house south-east of the cloisters contained kitchen, hall, stairs and cellars on the ground floor, and sleeping-rooms and library on the upper floor. The buildings between the abbot's residence and the river on the ground floor comprised vaulted stores, kitchen, dayroom or parlour, with long passage between these rooms and the stores. Most of these buildings were three storeys high. As there were a great number of pilgrims and visitors to the abbey, this building was probably occupied as the guest house. The nave walls are of a rather inferior class of rubble masonry, with pointed arches formed with rough voussoirs. They spring from plain piers without any cap or moulding. There are modern semicircular arches under the old pointed arches in the south nave wall of the same class of work as the arches

across the aisles, and probably built at the same time to strengthen the wall. The arch between the nave and choir is of a similar class of work to that in the old pointed arches in nave walls. The present choir, chancel, transepts and chapel appear to be the work of about the fourteenth or fifteenth century.

The cloister garth and the conventual buildings east and west of it are in the occupation of Mr. Wall, of Holy-cross House. The abbot's house and other residential buildings also belong to Mr. Wall, and were until recently in the occupation of the tenant of the small hotel adjoining. Local tradition has it that the burial ground was at the western side of the abbey. It is also said that the mill was at Bakestown, but it is more likely that the mill was on the site—adjacent to the present mill—where there is an ancient weir. It is to be regretted that the interior of the church is still used as a graveyard, not controlled by any authority. The Board have no power to interfere with the right of burial claimed by large numbers of persons not now resident in the locality and by strangers. This gives the interior a neglected appearance. The conventual buildings are not vested, and are still in the hands of Mr. Wall.

YORK MINSTER.

THE Dean of York has issued a statement respecting the cathedral, in which he says:—

There is no doubt that the disintegration of the surface of the building, and hence the serious and dangerous condition of many of its details, has been due, I will not say entirely, but in a very great measure, to the volumes of sulphurated smoke poured out upon the magnesian limestone of which the Minster is built. The west front was practically refaced at the beginning of the last century, so that this is the work of the past hundred years. Unless the evil is mitigated the costly restoration, which is almost completed, will perish even more rapidly in consequence of the increased and increasing number of chimneys.

No doubt cocoa and sweetmeats, and beer and glass may be essential to human existence, and the railway works to the comfort and convenience of life, but it is a question worth serious consideration whether all these things cannot be equally enjoyed, and the irreparable beauty of Mediæval art and science maintained. "Smoke," we are curtly told, "means business and employment." I think that far more correctly it implies waste, waste of fuel through carelessness, ignorance and false and mean economy. No doubt whatever, the smoke of York might be materially, if not entirely, reduced, to the increased cleanliness and comfort of our homes, as well as to the integrity of the Minster.

Perhaps at no very distant time machinery will be worked by electricity, and our rooms warmed by the same means. The dynamo will take the place of the boiler and the furnace, and motive-power will be generated at some central station outside the city. But until that happy time comes, must we continue to be choked and sullied and blemished with smoke? Is there not an Act of Parliament which, if put in force, would give immediate relief if not absolute cure for all this? It may involve a little extra outlay and consequent expense in factories, but due attention to this is the best practical evidence of good citizenship and good Christianity, and, meanwhile, I would appeal to those who have been the most serious offenders to send substantial contributions to the restoration of the injuries to the Minster which they have caused, even though they themselves may be unable to appreciate the grace and beauty of ecclesiastical architecture.

A Meeting of the Edinburgh municipal art school committee was held on the 27th ult. at which the committee had before them a representation from Mr. Dick Peddie, the architect appointed by the committee to carry out the building of the school, to the effect that, in his opinion, it would not be possible to carry out the plans of Mr. Macgillivray for the sum of 40,000^l, the sum set down as the cost of the buildings, and asking the instructions of the committee as to a modification of the plans to bring the building within the sum set apart. Some discussion took place on the plans, it being pleaded on the one hand that more money could be raised so that the original plans might be carried out, and on the other that the original estimate of the number of students they were likely to have was excessive, and that therefore the scheme could stand modification. It was subsequently agreed that the architect should amend his plans in order to come within the 40,000^l.

ENGLAND IN AMERICA.

THE United States has not as yet acquired a style of architecture which can be claimed as national. The all office blocks differ in treatment. In that way there is a resemblance to most modern nations. The forms which pleased people in a more or less distant age have not lost their attraction, and many of them serve as well in American cities as in the places where they originated.

It is satisfactory to find that American architects and their clients consider that buildings of an English type are appropriate for several purposes. Many mansions are to be seen in districts outside the great cities which recall England. Colleges and schools also bear resemblance to English buildings. It may be said that both England and America were alike indebted to foreigners for the true originals, but America has somehow preferred to retain English adaptations. We publish a few examples taken from recent numbers of the *American Architect*, which will suggest the tendency to take models from among our buildings.

The Fairhaven High School is one of several buildings with which Mr. H. H. Rogers has endowed his native town. Mr. Charles Brigham, the architect, has treated the period of English Renaissance which he adopted as well as could be done in an English office. His windows, it is true, have fewer divisions than are seen in the old residential halls, but the interest of the students had to be considered.

The two doorways of the University of Pennsylvania are of later types, when our carvers had forgotten Gothic traditions and were allowed more liberty. The two works designed by Messrs. Cope & Stewardson suggest the advantage of adopting doorways as memorials. In that way more richness of treatment is likely to be attained than would be attempted in the original plans where economy is generally paramount.

Streets in Boston have their rise and decline like those in various parts of London. Acorn Street, which once was supposed to be "genteel," to employ a word which was obnoxious to Ruskin, fell into so low a state, it resembled, we are told, a London mews. But a reaction followed, and now we learn that Acorn Street, one of the shortest and narrowest streets in the city, has been retentanted by



COXE DOORWAY, NEW DORMITORY, UNIVERSITY OF PENNSYLVANIA.

(Messrs. Cope & Stewardson, Architects.)



HIGH SCHOOL, FAIRHAVEN. (Charles Brigham, Architect.)



SMITH DOORWAY, NEW DORMITORY, UNIVERSITY OF PENNSYLVANIA.

(Messrs. Cope & Stewardson, Architects.)

lawyers, architects, artists and others who appreciate quiet respectability more than the garishness of "all modern improvements." If we may judge from Mr.

Bourne's restoration it must resemble some of the quiet streets in provincial towns in England, where repose appears to prevail undisturbed from year to year.



ALTERATIONS ON ACORN STREET, BOSTON, MASS.

WHISTLER AS A PORTRAIT-PAINTER.

THE full-length portrait of Miss Florence Leyland (measuring 74½ by 35 inches), by the late J. McNeill Whistler, has been purchased by the Trustees of the Brooklyn Institute of Arts and Science. In an official description of the painting, Mr. W. H. Goodyear, the curator, says:—

To understand this picture it must first be seen, and it cannot be seen unless it is in focus. With an opera-glass we remain in one position and change the focus of the lens. With this particular, stationary picture the focussing must be done by experimental change of distance. An over-close approach will throw the picture, especially the face, out of focus.

Otherwise let it be remembered that art is technically only to be admired for its results and not for its process (aside from the attitude of professional painters). We are all good judges of youth, of innocence, of sweetness of nature, of an unaffected pose, of refinement and of good breeding. If we look for these things in the Leyland portrait, without bothering about "art," we shall surely find them, and in so looking we shall look for all that Whistler wished to show, and we shall consequently discover his art. If Miss Leyland's dress is a neutral gray, relieved with a little black, it is evident that the artist did not wish to interest us in the clothes of the young lady, and why should we refuse to take this hint as to her more spiritual perfections? If the figure emerges from a dark background, without any sort of accessory furniture, it is evident that the artist wished to interest us in Miss Leyland alone, and not in his undoubted ability to paint furniture. Why, then, should we not concede the reasonableness of this mood? As to character, tastes differ. Some may prefer the "Lady in Gray" of the Metropolitan Museum, a water-colour only 10 inches high, of brilliant colour in spite of the title, and a masterpiece in spite of its size. There the attitude is bold, here it is modest. There is nothing retiring, to say the least, about the "Lady in Gray." Having once convinced ourselves by knowledge of this little water-colour or by memory of the "Princesse du Pays de la Porcelaine" as seen at the Chicago exhibition (originally the central feature of the "peacock-room") that Whistler delighted in strong colours as well as in sober ones, we shall return to the portrait of Miss Florence Leyland with sincere approbation of this modest dress, for her, in a picture. For let it be remembered that Miss Leyland was a young lady, and that Whistler's pictures

were generally shown at public exhibitions. Why, then, should the lady not be as reserved in demeanour and as quiet in her dress as she would have certainly been when she herself appeared in public?

Mr. Whistler's own views of the methods followed in his portraits, as stated below, are quoted from his "Gentle Art of Making Enemies":—

"The notion that I paint flesh lower in tone than it is in nature is entirely based upon the popular superstition as to what flesh really is, when seen on canvas, for the people never look at nature with any sense of its pictorial appearance, for the reason, by the way, they also never look at a picture with any sense of nature, but unconsciously, from habit, with reference to what they have seen in other pictures. Now in the usual 'pictures of the year' there is but one flesh that shall do service under all circumstances, whether the person painted be in the soft light of the room or out in the glare of the open. The one aim of the unsuspecting painter is to make his man 'stand out' from the frame, never doubting that, on the contrary, he should really, and in truth absolutely does, stand within the frame, and at a depth behind it equal to the distance at which the painter sees his model. The frame is, indeed, the window through which the painter looks at his model, and nothing could be more offensively inartistic than this brutal attempt to thrust the model on the hitherside of the window. Yet this is the false condition of things to which all have become accustomed, and in the stupendous effort to bring it about exaggeration has been exhausted and the traditional means of the incompetent can no further go. Lights have been heightened until the white of the tube only remains shadows have been deepened until black alone is left. Scarcely a feature stays in its place, so fierce is its intention of firmly coming forth; and in the midst of this unseemly struggle for prominence the gentle truth has but a sorry chance, falling flat and flavourless and without force."

It was a phase of the principles and practice above described that Whistler invariably designed his own frames and did this with the greatest care. Thus even this detail of his art has great importance and should not be overlooked in the present instance. The canvas is also in perfect condition.

The best things (aside from Whistler's own remarks) have still to be said, or to be left unsaid, about this picture. The greatest modern artists have all aimed at a certain mystery and reticence of effect. That all parts of a picture should be equally clear, and that all should be

exactly defined and literally detailed, is equally contrary to the laws of vision and (in modern art) to the suggestions of good taste. The quiet repose in colour of Whistler's portraits in black and gray is a marvellous means to the suggestion of that spiritual repose which is the first condition of spiritual aristocracy, as it is also the invariable trait of social aristocracy. To this repose is added a subtlety of treatment which approaches and reaches the effect of optical mystery. This mystery lies in the gradations of neutral tone by which the figure melts into the background and coalesces with the surrounding atmosphere, without the definition of separated and separating lines and surfaces (which are never seen in nature, though they generally are seen in pictures). So, too, that effect of distance behind the frame, which Whistler announces quite logically as necessarily equal to the distance at which the artist sees his model, is obtained by an absence of linear sharpness in the details of the face and figure. Thus, it may be presumed, is to be explained that marvellous calculation of effects which positively forces the observer to remain at a certain distance from the canvas, for the face falls out of focus as soon as we approach it closely. Thus Whistler has deliberately forced his attentive and careful spectator into the proper position for observation. It may easily be that the habit, so common to the public, of studying pictures at close range, has impeded the comprehension of Whistler, for not all eyes are trained to seek for the point of view which the artist wished them to take. Nor is the taste for optical mystery, either in painting or in nature, as widespread as the comprehension of Whistler's point of view would make desirable. His interest in "Nocturnes," that is, in night effects, is, of course, notorious, and in this search for the effects of visual mystery lies, beyond doubt, the greatness of his daylight pictures, however difficult of apprehension some of his "Nocturnes" themselves may be, when considered as subjects within the desirable range of the painter's art.

In face of the complaints formerly made that Whistler's portraits were unfinished it is easy enough, when standing before the Leyland portrait, to understand such complaints and easy enough to realise, what all critics now know, that his pictures are in reality marvellously finished. That some of his pictures, notably the Florence Leyland portrait, almost suggest a disembodied spirit, an "astral form," or in plain words a ghost, is their greatest charm. Many of George Fuller's pictures have a similar effect, although the pictures themselves are of such different character. Fuller's figures often appear as though they were seen through a gauze veil. Albert Ryder obtains his mystery by the low tone. In Monticelli's revels of colour still other devices obtain a similar optical mystery. Monet and the true impressionists all have the same aim of visual mystery. These comparisons are sufficient to show that in the scope and methods of his art Whistler is one of many moderns, although at times, perhaps, the greatest, as certainly he was among the first.

It is fairly well known that Whistler was not over patient with the critics whose vision was not as well trained as his own. That magnificent repose which inspires his portraits is not especially apparent in the "Gentle Art of Making Enemies," and the world would be the loser had it been otherwise. That Whistler was a kindly and genial soul with those who did not tread on his toes or knock the chip off his shoulder is clear enough. Doubtless he would have been more than tolerant with the public which thinks it sees and does not, if his critics had not sinned in the same way. That these critics were laid low in the dust by this free-lance of the brush and palette will long delight those other adepts in the gentle art of making enemies who have not written such good books in reply, and who have occasionally been pierced, possibly at more vulnerable points, by the shafts of criticism. Thus we will let Whistler speak for himself, in his own fashion, on the great and true doctrine that the bulk of men do not know what they see, and that they only know what they think they see, and that it is the business of the artist to help them and to teach them the theory and practice of vision. This was Whistler's idea of the "whole duty of man" as a painter. Doubtless there are many other duties, but this was his duty as he understood it, and this much may be conceded safely, that, as far as vision is concerned, Whistler was master of the theory of his subject, and that, as far as the practice of this theory is concerned, he has had no superior in modern art. The passage already quoted thus continues:—

"Could the people be induced to turn their eyes but for

a moment, with the fresh power of comparison, upon their fellow creatures as they pass in the gallery, they might be made dimly to perceive (though I doubt it, so blind is their belief in the bad) how little they resemble the impudent images on the walls, how quiet in colour they are—how 'gray,' how 'low' in tone. And then it might be explained to their rivetted intelligence how they had mistaken mere-triciousness for mastery, and by what mean methods the imposture had been practised upon them."

Doubtless the "Gentle Art of Making Enemies" has been well named, but let the world take heed to it that it does not mistake its best friends—the men who tell the truth.

THE AMERICAN CONVENTION.

THE Convention of the American Institute of Architects, at which Sir Aston Webb, R.A., will receive the first Institute medal, will be held in Washington on Monday, Tuesday and Wednesday of next week. On Wednesday there will be a reception at the Octagon House and the unveiling of a bronze tablet in honour of the founders of the Institute. On the same evening a formal banquet will be given, to which will be invited distinguished representatives of the Government, the Fine Arts, Literature and Education. Each member of the Institute is entitled to attend upon payment of 15 dollars per cover, and may suggest to the dinner committee the name of one guest, for whom the member will pay an equal amount.

The *American Architect* has the following comment on the charges:—

We are asked to "comment indulgently" on the price that will have to be paid by those members of the American Institute of Architects who attend the banquet at the coming semi-centennial celebration in Washington, which is to be made memorable by the bestowal of a gold medal on Sir Aston Webb. Without debating the question whether a man who spends 15 dols. on a meal is indulging or over-indulging, we will point out that if "banquets" are to be the rule the Institute will soon cease to be a democratic body, simply because it has become an oligarchical one, for only those who can afford to waste money needlessly will find themselves attracted to these occasions, and money is not always the equivalent of worth. Members who, because they are not elected delegates, have to pay their own expenses are already feeling themselves alienated and discriminated against, and it seems unwise to foster this feeling. Moreover, it is questionable how far the exchequers of the several chapters may be drawn on at the whim of the Institute's chance committees who are charged with preparing and carrying out the programme of "entertainment." For example, the Boston Society of Architects finds it a rather heavy draft to meet the expenses of the score of men it sends to the conventions as delegates, and those of its members who have to stay at home will hardly relish the withdrawing from the treasury of 300 dols. more for a single meal, when there are so many other more desirable uses that could be made of the money. On the whole there seems to be a certain likeness between the proposed banquet and a certain notorious insurance dinner given to a French ambassador and "charged to advertising."

The Government of the United Provinces of India have sanctioned an estimate amounting to Rs. 39,954 for restoring the inner Delhi Gate in the Fort at Agra. The work is, however, not likely to be taken in hand for some time yet, as funds are not available at present.

The Dean of Canterbury has received a letter from an old scholar of the King's School, Canterbury—a school in its origin coeval with the cathedral—in which the writer says:—"I note that about 4,000*l.* is required to defray the cost of the works at present in hand and is urgently needed. I shall be very pleased to find 500*l.* of this if seven others will find an equal amount."

Mr. Thomas Graham, an honorary member of the Royal Scottish Academy since 1883, and who has long been resident in London, died last week in his sixty-sixth year. He was a native of Orkney, and received his art education in Edinburgh. His first picture at the Royal Academy was in 1863. Since that time he was a regular exhibitor in London, Edinburgh and elsewhere. He painted *genre* and portraiture.



COMMERCIAL AMERICA—SPOILS OF THE PRAIRIES.

THE PERIGUEUX DISTRICT.

THE city of Périgueux, writes a correspondent in the *Irish Times*, is well worth a visit. There are in reality two towns. The older and more picturesque, with its narrow streets and still narrower lanes, lined with fourteenth and fifteenth century houses, clusters round the cathedral of St. Front, and forms a square whose entrance side lies on the banks of the Isle; whilst the new town, built upon what was the Vesuna of the Romans, is distinguished by its broader alleys and more modern houses. The cathedral is not only the finest Byzantine church in France, but one of the most magnificent in Western Europe, modelled, as the church has largely been, on the same lines as St. Mark's in Venice.

Many stories have been told of its origin, which some writers have assigned to the fourth century, a date anterior to the construction of Santa Sophia in Constantinople. Count de Montalembert, in his "Catholicism and Vandalism in Art," argues that the principal portions of the church, with the exception of the tower, must have been built before the tenth century, whilst on the other hand M. de Vernheil contends that the cathedral dates from some time between 1010 and 1047, and bases his opinion on the date of the construction of the basilica of St. Mark as well as on those contemporary records which speak of the visit of the then Bishop of Périgueux to the Holy Land. The problem is rendered all the more difficult by the presence of the Pointed arch, which has never been seen in this form in any church anterior to the eleventh century. The question is still unsettled. Most authorities are, however, now agreed in regarding the church consecrated in 1047 as having been mostly destroyed by the fire which wrought such havoc in 1120. In this case the actual cathedral must have been built between 1125 and 1150 on what was then left of its predecessor.

The church of St. Front assumes the form of a Greek cross, whilst the roof is vaulted with five large arched cupolas resting on massive square pillars, which are in their turn supported by the walls of the church, to which they are joined by massive stonework pierced with apertures also cut in the form of Greek crosses. The belfry, which rises to a height of 210 feet, is composed of two massive towers, the one rising from above the other, the upper one being supported by a circular row of columns with an oblong dome at the summit. The apse, which is Romanesque, is quite modern. Massiveness is the most prominent feature of the building, and enables it to dominate effectually the whole town. The interior is just as foreign to the south-west of France as the outside, and must strike the antiquarian as equally out of character with western architecture whether he considers the Oriental cupolas, the heavy pillars, the massive arches or the dim religious light which the windows cast upon the whole fabric. Then again, though St. Mark's was evidently the original model, St. Front can boast of several characteristics peculiarly its own, such as the crypts, which do not exist in Venice, and whose presence is favoured here by the peculiar conformation of the soil, and the lighting of the dome, which has four large windows instead of those numerous lights so often found in purely Byzantine churches. Then the tower, which is quite distinct from any other of its kind, was evidently constructed by the architect from his own special design, and, if of the same date as the church, presupposes an inventive genius wholly in advance of the age in which he lived.

So much for the cathedral of St. Front itself, which, however, was originally the abbey church, and only attained its present dignity when the church of St. Etienne had been partially destroyed by the Huguenots. This building, which dates from the eleventh century, has only been partially restored. Of the three cupolas which at one time surmounted the nave and choir, only two now exist in their entirety. One of these was reconstructed in the

seventeenth century. A fine baptistery in the florid Roman style and three altarpieces in carved oak, dating also from the seventeenth century, are its most prominent features. The tower of Vesuna, which once formed part of the temple dedicated to the titular goddess of the town, is a relic of the period of the Roman occupation. Nothing now remains but the brickwork, as the last portions of the original red and green marble outer lining have now been transported to the museum. There are many other relics of the Roman and Mediæval ages, such as the amphitheatre, the "Tour Mataguère," the churches of St. Martin, St. George and St. Ursula, and finally the Château Barrière, originally part of a Roman house, but remodelled in the tenth, the twelfth and the sixteenth centuries.

Brantôme is reached by a tramway, and lies some twenty miles to the north of Périgueux. It is built on an island formed by the two arms of the Dronne, and is celebrated for its abbey as well as for the exquisite beauty of its situation. Thus the belfry, which is quite separated from the monastery, and dates from the eleventh century, rests on a foundation of natural pillars, part of the original rock, as well as on marble columns. The Romanesque church has been restored by Abadie, and consists of a fine nave, formerly surmounted by two cupolas. The other monastic buildings were turned into the Town Hall schools in the eighteenth century. The tramway runs from Brantôme to Saint Pardoux-la Rivière, and gives the tourist an ample opportunity of gauging all the beauties of the Valley of the Dronne.

Bergerac, on the other hand, which lies to the south of Périgueux, is prettily situated on the banks of the Dordogne. It is not, as has frequently been done, to be confused with the home of the illustrious Cyrano, who lived much nearer Paris. It now carries on a thriving business with Bordeaux, but the old town still preserves many relics of its past, such as the "Château of Henri IV.," which dates from the sixteenth century. A little further east, Sarlat is, after Périgueux, the town which has preserved most of its old characteristics, with its small lanes running into narrow streets lined by houses that have altered but little since the Middle Ages. The old cathedral, built in the eleventh, was restored in the fifteenth century, and has a fine belfry in the form of a campanile. The nave is supported by large round pillars, whilst the wood-carving, especially that of the choir stalls, is extremely fine. The valley of the Vézère is also most picturesque.

Terrasson rises in a series of terraces above the river, which is at its best between this and Montignac, a primitive village which the railway has only thrown open to the tourist within the last few years. It would be easy to dwell at much greater length than I have done on the many other beauties of the Périgord, on the churches of Agénac, Beaumont, Bussières-Badil, Cadouin, Cénac, Cercies, Grand Brassac, Monpazier, Rouffignac, St. Amand de Coly, St. Avit-Sénieur, St. Jean-de-Col, St. Privat, St. Croix and Tayac; on the gates of Domme, on the châteaux of Mareuil-sur-Belle, Hautefort and Michel Montaigne, and on the keep of Vernode, most of which date from the twelfth and thirteenth centuries, and contain features that are rarely found elsewhere. Prehistoric remains lie scattered along what Rudyard Kipling calls "the banks of the lost Dordogne," and elsewhere throughout Périgord, which is far richer in this respect than many other much more frequented parts of France. When, in addition to these many attractions, we remember that Périgord is the home of the truffle, and exports those celebrated "pâtés" made of truffles and partridges, and that these are served at luncheon and at dinner in almost every wayside inn, we hardly understand how one of the most interesting countries in France is so little visited by the tourist and the lover of the picturesque. This very fact must enhance its attractiveness to those who are always seeking fresh scenes off the beaten track,

especially when we remember that Périgord is near Courtras, on the main line from Paris to Bordeaux, to Pau and Biarritz. It can also be reached direct from Paris by Limoges. The tourist then leaves Victoria at 9.5 in the evening, and arrives at the Gare du Nord at 5.50 the next morning. He must then travel by the 10.17 train from the Gare d'Orsay, which reaches Périgueux at 6.51 in the evening. The day service from London is much quicker, as it lands the passenger at Périgueux at 3.27 in the morning, eighteen hours from Charing Cross.

TESSERÆ.

The Earliest of English Architectural Treatises.

"THE First and Chief Grovndes of Architectvre vſed in all the auncient and famous monymentes: with a farther and more ample diſcourſe vpon the ſame, than hitherto hath been ſet out by any other. Publiſhed by Ihon Shute, Paynter and Archytecte. Imprinted at London in Fletſtrete nere to Sainct Dunſtans church by Thomas Marſhe, 1563." Such is the title of the earlieſt English treatiſe on architecture that is known to have been publiſhed. The title-page has a border of cupids and arabesques, bearing the mark of the deſigner or engraver, and alſo of the bookseller (?) for whom it was originally executed. The author, John Shute, was a limner or miniature painter in the ſervice of the Duke of Northumberland, who in 1550 ſent him to Italy to ſtudy architecture, and on his return he ſhowed the drawings he had made during his travels to Edward VI. The volume, a ſmall folio, contains only 42 pages of text—title, dedication and preface included—and five full-page engravings repreſenting the Five Orders, with human figures to illuſtrate their ſuppoſed origin, theſe laſt drawn in a better ſtyle than uſual in English books of that period. It is dedicated to Queen Elizabeth. In his preface "unto the loving and freindly Readers" he exalts the ſtudy of *Architectura*, which he thinks not "altogether unfite nor unaptlie by me termed in Engliſhe, the arte and trade to rayſe up and make excellent edifices and buildinges. . . . without a meane acquaintance or underſtanding in which neyther paynters, maſſons, goldſmythes, enbroderers, carvers, joynars, glaſſyers, gravers in all maner of metalles and divers others moe can obtayne anye worthy p'aiſe at all." He goes on to ſay that he had diligently read all the Latin, Italian, French and Dutch writers on the ſubject, and had alſo viſited and examined the moſt excellent buildings in Rome, and the other moſt notable places of Italy. In the firſt chapter of his work the author tells how the ſcience of architecture increaſed, excuſing himſelf for beginning his hiſtory only after the Deluge by premising that "of all ſuche order and forme of buyldinges as were before Noes fludde, it ſhall not nede to make rehersall." In the ſecond chapter Shute lays down "what the office and duetie is of him that wyl be a perfecte architecte or mayſter of buyldings." Firſt, he "ought to be a very good grammarian, then to have experte knowladg in drawing and protracting the thinge which he had conceived;" thirdly, he muſt have "a good ſight in geometrie, conſequently in opticke and in ſuche lyke ſciences; likewise in arithmeticke he muſt be very parfaiect, and in hiſtories ſingularly wel ſeene; he muſt alſo have a good ſighte in muſycke and ſome knowlaige in phyſicke, not altogether ignorant in aſtronomie; he muſt alſo beſides all theſe ben philoſophie very experte." The neceſſity of which knowledge he ſets out at length, ſo much ſo that in his treatiſe on the "five antique pillers or columnes" he has taken for his principal guide Vitruvius, ſupplementing his dicta with remarks taken from the works of Sebastian Serlius, of Bologna, and the annotations of Philander. Eight ſmall cuts in the text illuſtrate the Attic pillar and the "chaunge of the five pillers orderly to be uſed eche of them in his kynde."

Athens and Rome.

It is fortunate for us that we have more remains of the two cities where architecture was carried to the greateſt perfection than of any other. The immenſity of Rome and the vaſt multitude of public buildings which adorned it might lead one to expect that we ſhould meet there with more remains than elſewhere, but Athens never was a very large city, nor do the public buildings in it appear to have been conſtructed on a larger ſcale than in many others. In each of theſe cities we probably ſee the remains of ſome of the fineſt examples. Judging from the fragments found

at Rome, we may pronounce that there were many other buildings of great beauty, but none which we could wiſh to exchange for the temple of Mars Ultor, of Jupiter Stator, of Jupiter Tonans, of Antonius and Fauſtina, or for the portico of the Pantheon. The temple of Jupiter Capitolinus was indeed larger than any of theſe, but we may doubt if its architecture were better, or even ſo good. In Athens there are fewer objects to diſtract the attention, and we may be aſſured that the Parthenon, the Erechtheum, the Propylæa and the temple of Theſeus were the principal objects of beauty in the time of Athenian ſplendour, and if there were others which rivalled, there were none which pretended to ſurpaſs them. That we have remains of the beſt edifices of Hadrian and Herodes Atticus is not quite ſo certain, but we know from ſeveral examples that architecture had fallen at that period from the dignity and purity which it poſſeſſed in the time of Pericles. Roman buildings occupied in many inſtances points of land advancing into the general line of the valley of the Tiber. The ſpectator was in the centre, the objects were round him. In Athens it was exactly the reverse; the objects were grouped together on a hill in the centre, which diſplayed its magnificence on every ſide. At Rome the beholder was dazzled by the multiplicity of objects. At Athens he was impreſſed by their ſimplicity and unity, for, from every point of view, the public edifices which crowded the ſummit and were diſpoſed on the ſlopes of the Acropolis would combine to form a ſingle whole. In both nature and art ſeemed to have united to produce an harmonious effect, and even in the ſtyle of architecture the richneſs and grandeur of the Roman and the grace and elegance of the Athenian ſeem alike ſuited to the diſpoſition of the buildings and the ſtations they occupied. It is remarkable that both theſe cities ſhould have been ſo admirably placed. Paris hardly offers a ſingle marked ſituation; Naples would have been better had ſome of its principal edifices occupied the Chiatamone; Milan is on a flat; Florence merely in a fine valley. London would be preferable to any of theſe for the diſplay of architecture, but we have taken no advantage of the ſteep bank riſing from the Thames, which, though rather too low, would nevertheless afford admirable ſituations for public buildings. At Rome the buildings are numerous and very much decayed; at Athens they are few, and much more perfect. Indeed, the mere laſe of time ſeems to have had very little effect on thoſe of the latter city. Earthquakes have ſhaken, exploſions have ſhattered, and avarice has deſpoiled them, but a great deal of what remains remains abſolutely perfect, except in the more delicate and expoſed ſculpture, and even of the ſculpture a conſiderable portion is as freſh as if it were only juſt finiſhed.

The Supposed Portrait of Phidias.

A peculiar intereſt attaches to the marble copy of the ſhield of Athena, now in the Britiſh Muſeum, from the fact of its corroborating, with ſlight modifications, the ſtatement of Plutarch that Phidias had introduced among the Greeks fighting with the Amazons on it portraits of himſelf as a bald-headed old man, and of Pericles with his arm ſo raiſed as to conceal part of his face. If there was concealment in one caſe, it may be preſumed that there was the ſame reaſon for concealment in the other, and on this account we may well hesitate to accept the figure on the ſhield as a portrait of Phidias. Beſides, the copyiſt has evidently made the moſt of it, knowing the intereſt which belonged to this figure of the artiſt. The ſtory was that for the crime of introducing theſe portraits on the ſhield, Phidias was thrown into priſon and died there. Yet the obnoxious portraits remained, and to account for this it was further told that they had been ſo fitted into the ſhield as not to be removable without bringing about a collapse of the whole ſtatue. Again, it was neceſſary to explain why Phidias had ever thought of portraits. It was becauſe he was not permitted to inſcribe his name on the ſtatue, as he afterwards did at Olympia. In their ſimplicity the inventors of this tale had not conſidered that in ordinary circumſtances there would have been no queſtion of inſcribing the artiſt's name till after the reliefs on the ſhield had been finiſhed. Pausanias, who deſcribes the ſtatue, not only makes no mention of thoſe portraits, but in another place expreſſly cites a figure by Phidias as being, to his knowledge, the only example of portraiture by him. An inexplicable difficulty therefore ſurrounds the exiſting copy of the ſhield.

The Winter Exhibition of the Royal Academy will be opened on Monday next.



COMMERCIAL ASIA—TEA AND TEXTILES.

Correspondence

The London County Hall.

SIR,—In consulting about the new offices for the London County Council it seems desirable to consider the designs of Inigo Jones for a palace at Whitehall.—Yours truly,

ROBERT GLADSTONE.

Woolton Vale, Liverpool:
December 29, 1906.

Rural Housing.

SIR,—In your article last week on "Housing of the Working Classes" you have, like many other publicists, failed to point out what was the principal obstacle to the erection of a better class of cottages for agricultural labourers. Tradition was in favour of that form of dwelling, and no doubt it had some advantages. But in many districts it would have entailed less expense if half a dozen families would agree to live in one house. That is, however, not the point which I propose to notice. Landed proprietors are not, and I believe never were, more cruel to those in their employment than the manufacturers in towns. But they were and are less free to act according to their desires. A manufacturer, who generally is the architect of his own fortune, can, if he is in the mood, purchase a slum and substitute satisfactory buildings for the hovels. Having gained money, he can spend it wisely or unwisely. A man who has inherited an estate is, on the contrary, hampered in many ways. He merely holds it for the benefit of his heirs. A great many eyes are watching him, although unobtrusively, to see that he does not depart from custom or allow his feelings to get the better of him in raising money to make poor people comfortable. Of late years there is more liberty allowed for benevolence, but it is expected to be exercised without any sensible addition to the burdens on the estate.

Knowing the restraints which are upon him, and from which he cannot escape, it is only natural for a man to appear as rebelling whenever some petty representative of authority or some fireside philanthropist, strong in the exercise of speech, points to his property as if it were the plague spot of the county. No doubt matters are made worse by the opposition, but neither in town nor country are men always guided by pure logic.

I happened, before reading your article, to be looking through Macaulay's speeches in the House of Commons, and in one of them I found a passage which expresses the disturbed mind of many an estate owner when in their tactless manner the sanitary authorities began as if they were despots, and proprietors had no option but to meekly obey them. It was delivered in May 1846, and as it is not inapplicable to-day, it is worth reprinting.—Yours truly,

A LAND AGENT.

(Macaulay on Sanitation.)

I have just read a very interesting report signed by two members of that Government, the Duke of Buccleuch and the noble earl who was lately Chief Commissioner of the Woods and Forests, and who is now Secretary for Ireland (Lord Lincoln); and since that report was laid before the House the noble earl himself has, with the sanction of the Cabinet, brought in a Bill for the protection of the public health. By this Bill it is provided that no man shall be permitted to build a house on his own land in

any great town without giving notice to certain commissioners. No man is to sink a cellar without the consent of these commissioners. The house must not be of less than a prescribed width. No new house must be built without a drain. If an old house has no drain the commissioners may order the owner to make a drain. If he refuses they make a drain for him and send him in the bill. They may order him to whitewash his house. If he refuses they may send people with pails and brushes to whitewash it for him at his charge. Now, suppose that some proprietor of houses at Leeds or Manchester were to expostulate with the Government in the language in which the Government has expostulated with the supporters of the Bill for the regulation of factories. Suppose that he were to say to the noble earl, "Your lordship professes to be a friend to Free Trade. Your lordship's doctrine is that everybody ought to be at liberty to buy cheap and to sell dear. Why, then, may not I run up a house as cheap as I can and let my rooms as dear as I can? Your lordship does not like houses without drains. Do not take one of mine then. You think my bedrooms filthy. Nobody forces you to sleep in them. Use your own liberty; but do not restrain that of your neighbours. I can find many a family willing to pay a shilling a week for leave to live in what you call a hovel. And why am not I to take the shilling which they are willing to give me? And why are not they to have such shelter as, for that shilling, I can afford them? Why did you send a man without my consent to clean my house and then force me to pay for what I never ordered? My tenants thought the house clean enough for them or they would not have been my tenants; and if they and I were satisfied why did you, in direct defiance of all the principles of Free Trade, interfere between us?"

GENERAL.

Mr. Henry Simpson Legg died on December 23 in his seventy-fourth year. He was district surveyor of Mile End Old Town during several years.

Plans have been prepared by Mr. David Barclay, architect, Glasgow, for a school of textile industries which is to cost 10,600*l.*, and is to be erected in Dunfermline at the cost of the Carnegie Trust and the Scotch Education Department.

A Statue of Bernardin de Saint-Pierre is to be placed in the Jardin des Plantes, Paris, a sum of 2,000*l.* having been bequeathed to pay for it. The commission was given to M. Holweck.

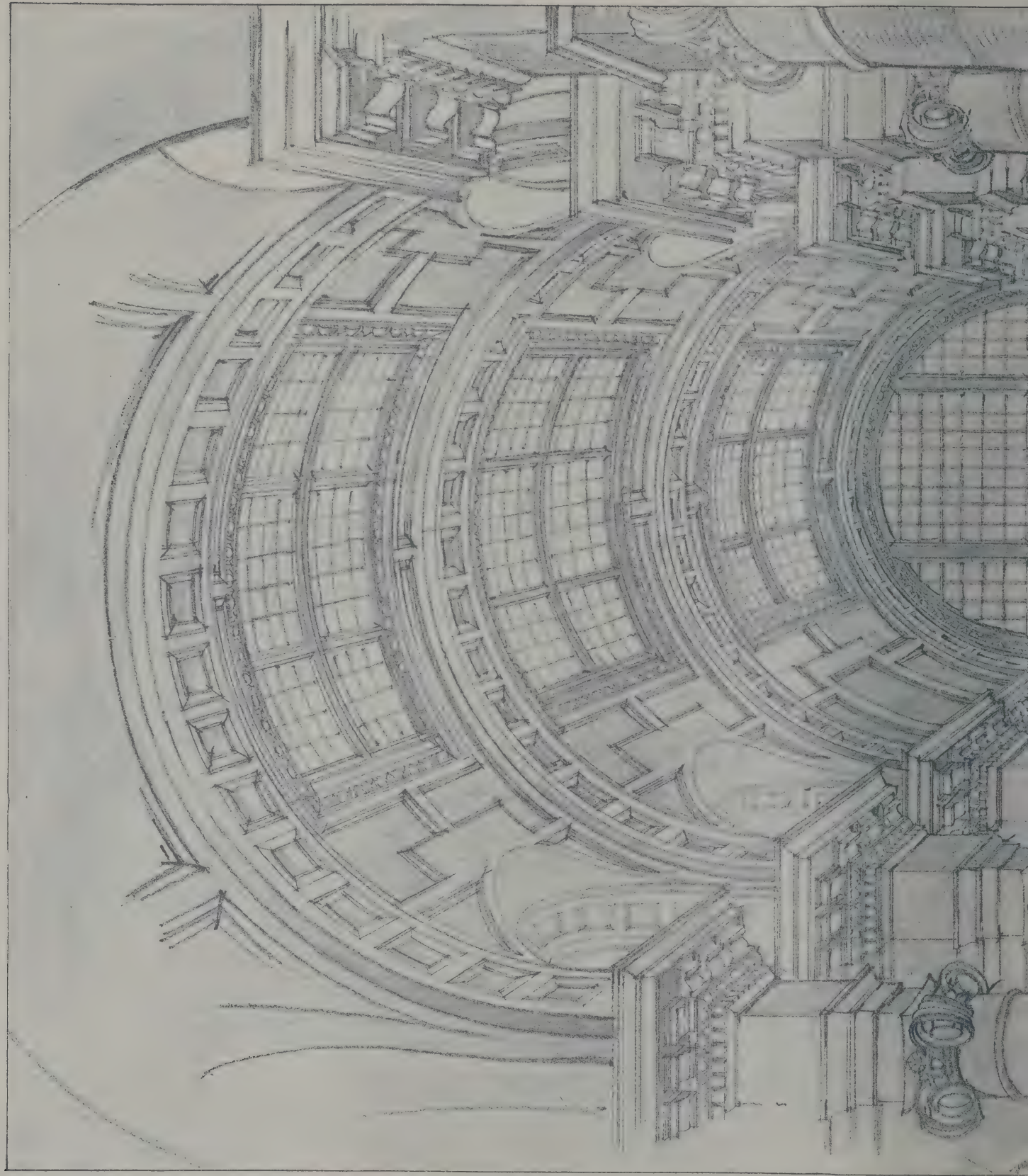
The Frescoes in Manchester town hall are fading under the influence of the local atmosphere, and it is suggested that they should be covered with glass as a protection.

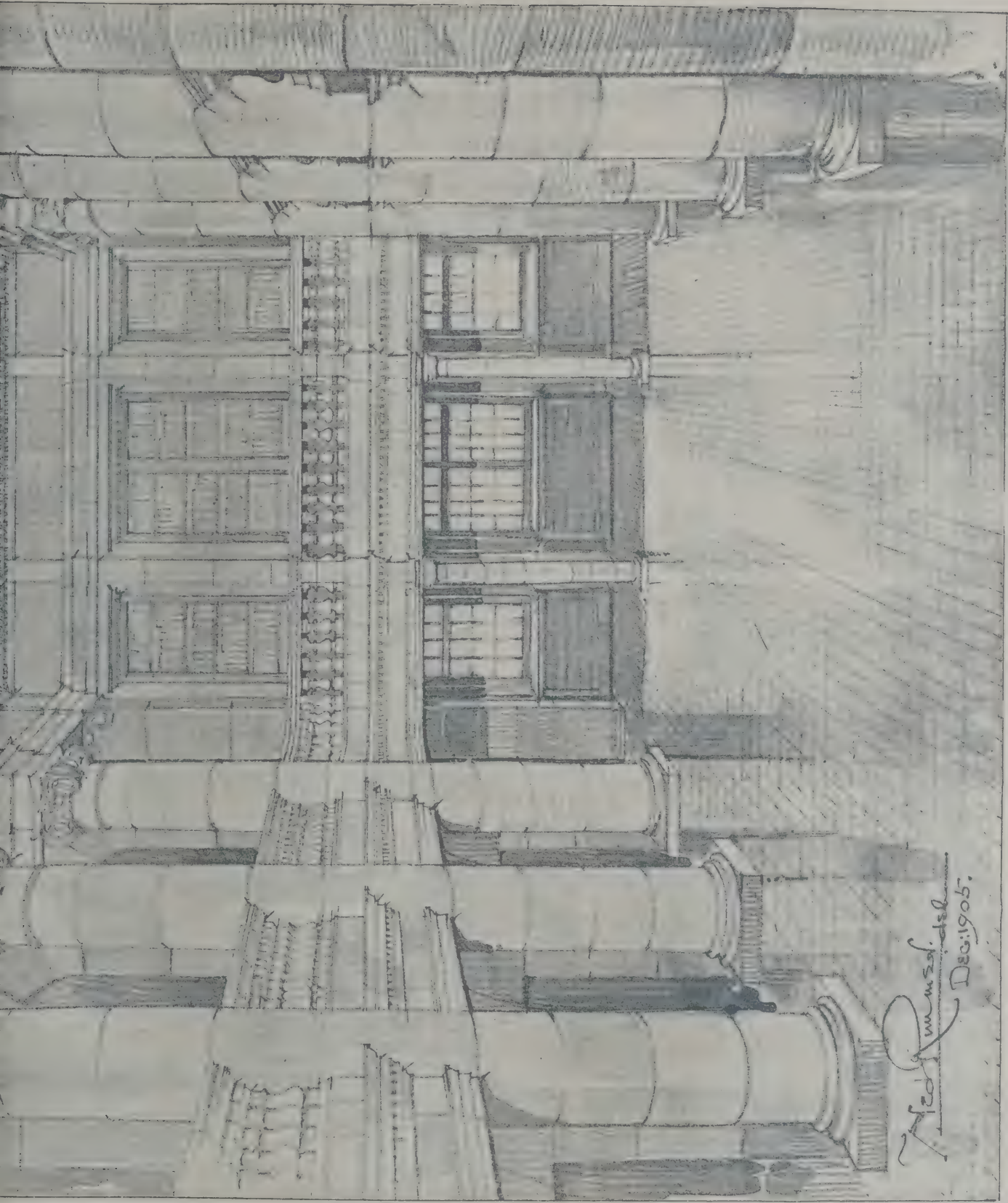
The Municipal Council of Paris propose to demolish during this year 5,263 houses which are supposed to be unfit for habitation.

A Fire occurred on last Saturday in the famous mansion of Jacques Cœur at Bourges, which is used as a palais de justice, but fortunately did not extend beyond the part used as a tribunal de commerce.

The Reports of the winter meetings and summer excursions of the members of the Upper Norwood Athenæum during 1906, which appeared in *The Architect*, have been reprinted in a handy volume. It forms the thirteenth of the series, and is equal in interest to any of its predecessors.

The Fourth Ordinary Meeting of the Liverpool Architectural Society will be held on Monday, the 7th, at 6 P.M., when a paper, entitled "Style in Architectural Draughtsmanship," will be read by Mr. Stanley D. Adshead.



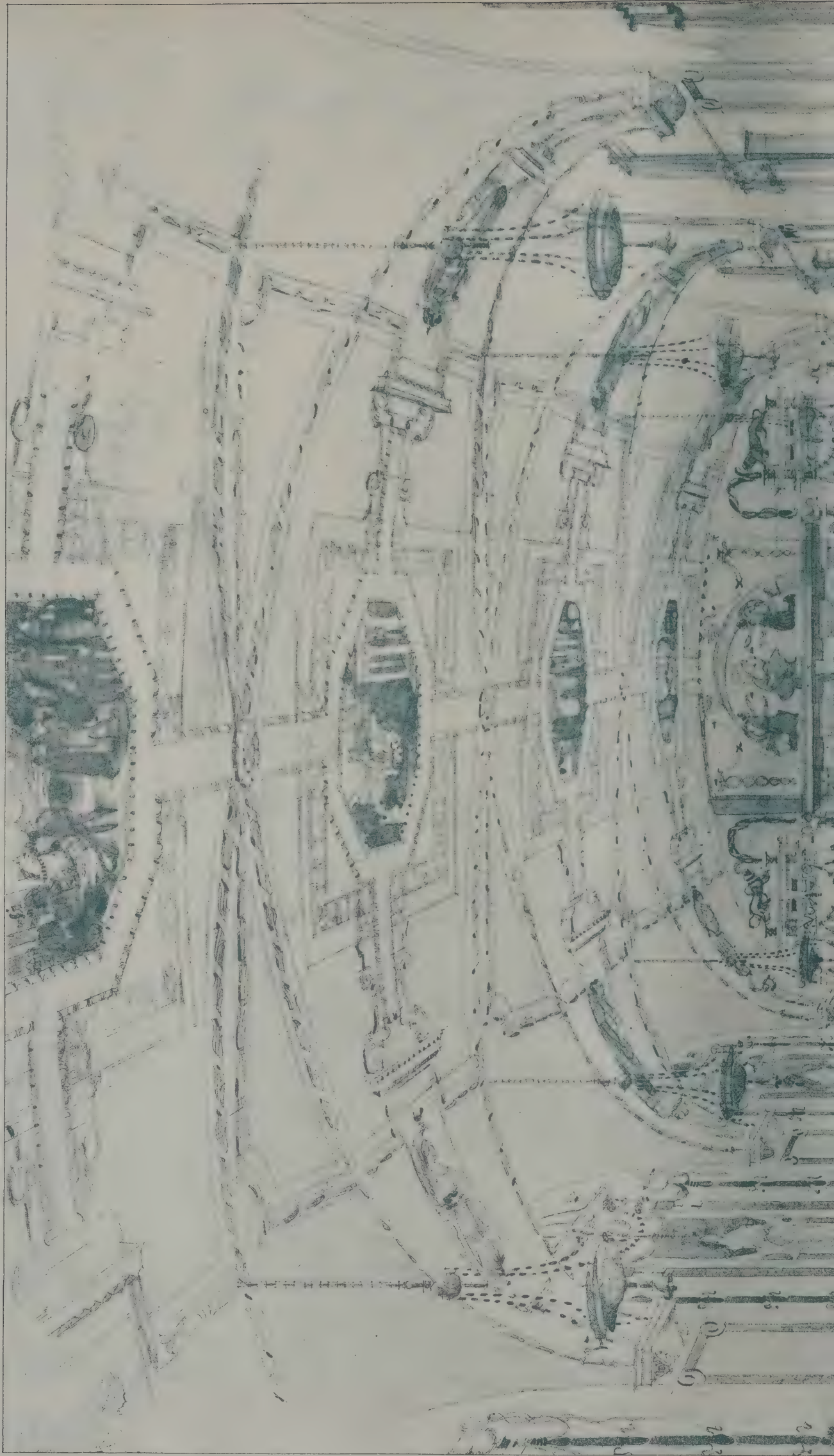


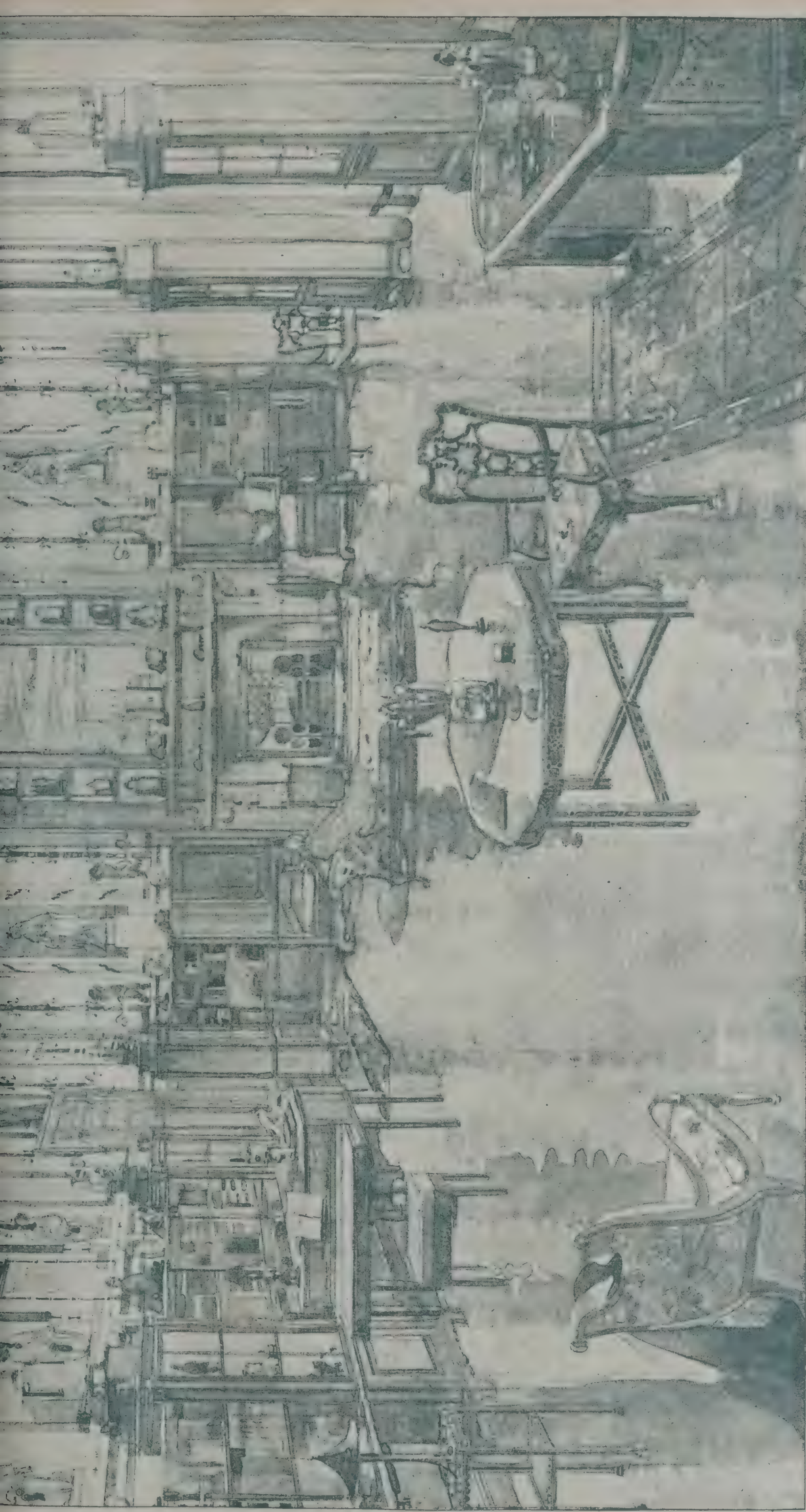
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T. SHELMEKDINE, { Architect and Surveyor.
Corporation of Liverpool.

The Architect, Jan 4th 1907





INT. PHOTO. 1911. 4-5 LAST IMPRINT STREET FLETTER LANE C.C.

A ROOM IN A WEST-END HOUSE.

JOHN BELCHER, A.R.A., Architect.



PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

THE NEW WAR OFFICE

The late WILLIAM

Carried out by CLYDE YOUNG, with the



INK PHOTO SPRACUE & CO. L. 4 & 5 EAST HINDIC STREET FETTER LANE E.C.

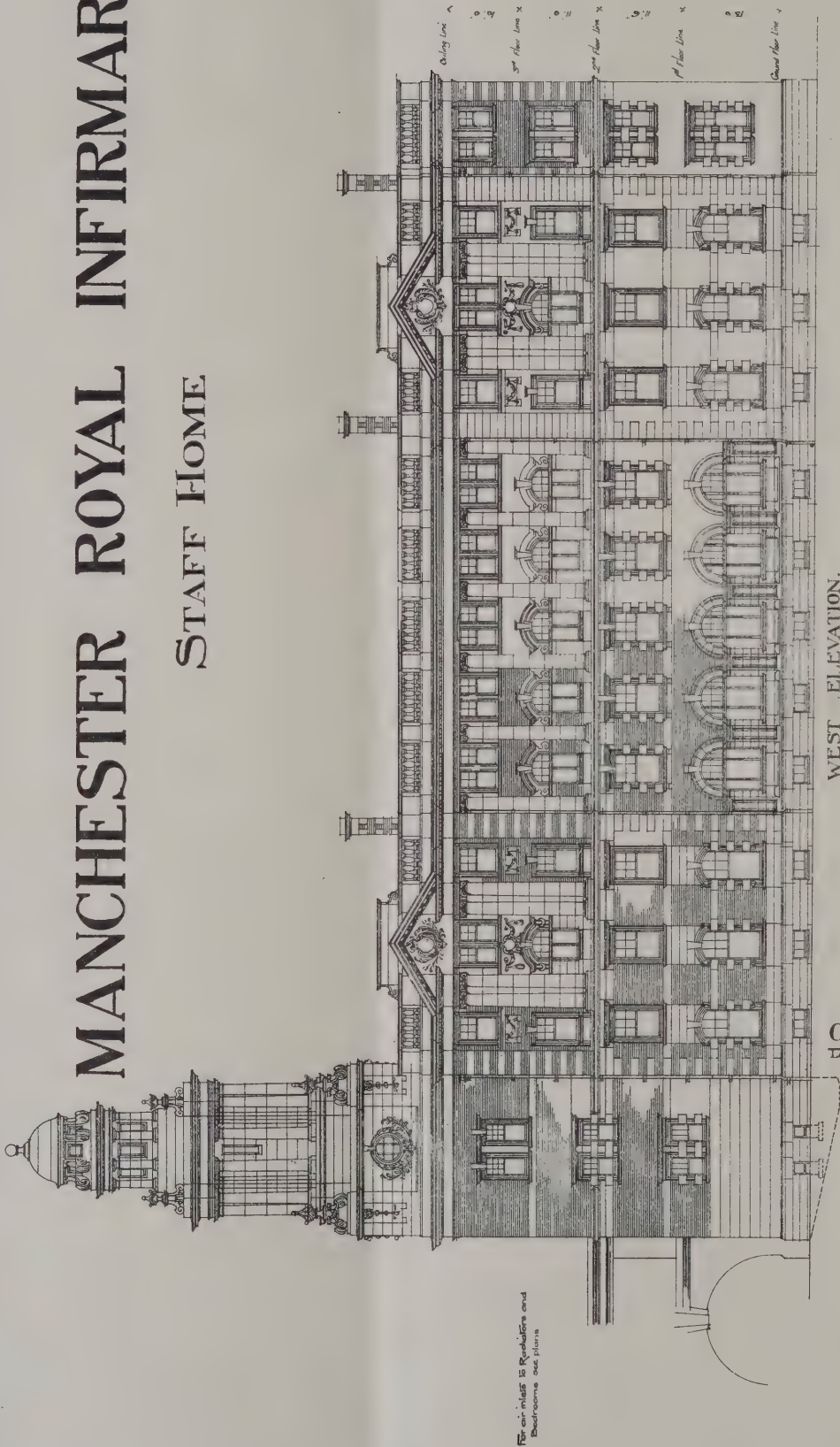
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UNG, Architect.

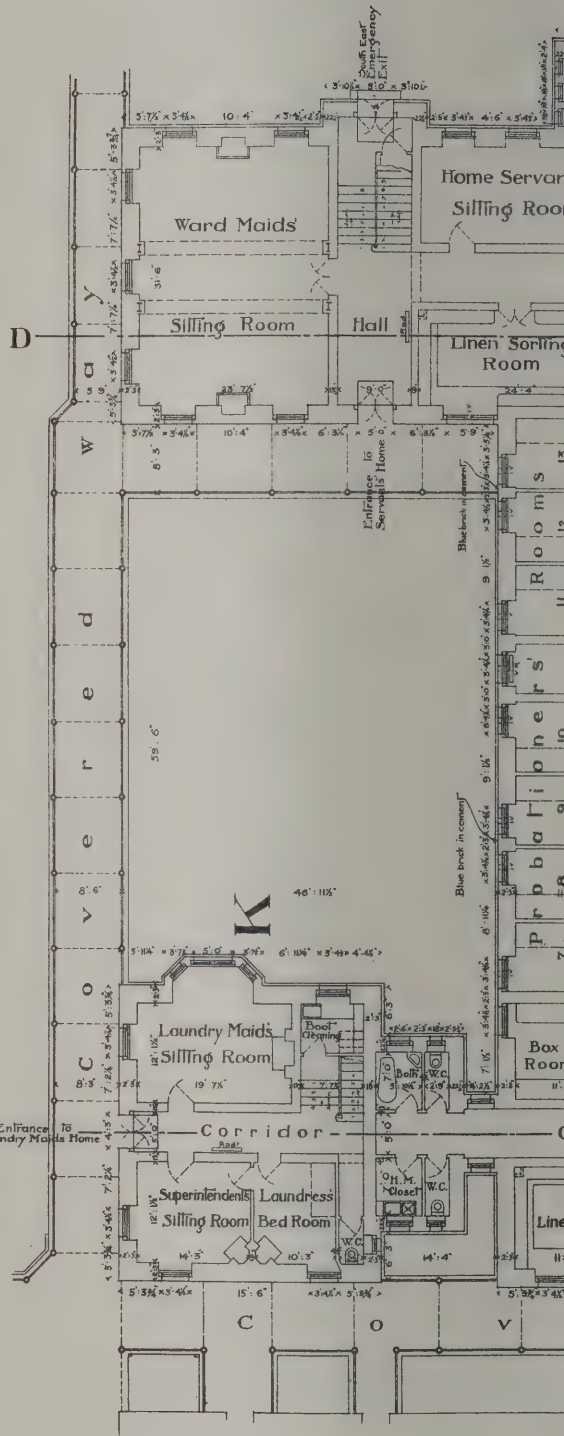
operation of Sir JOHN TAYLOR, K.C.B.

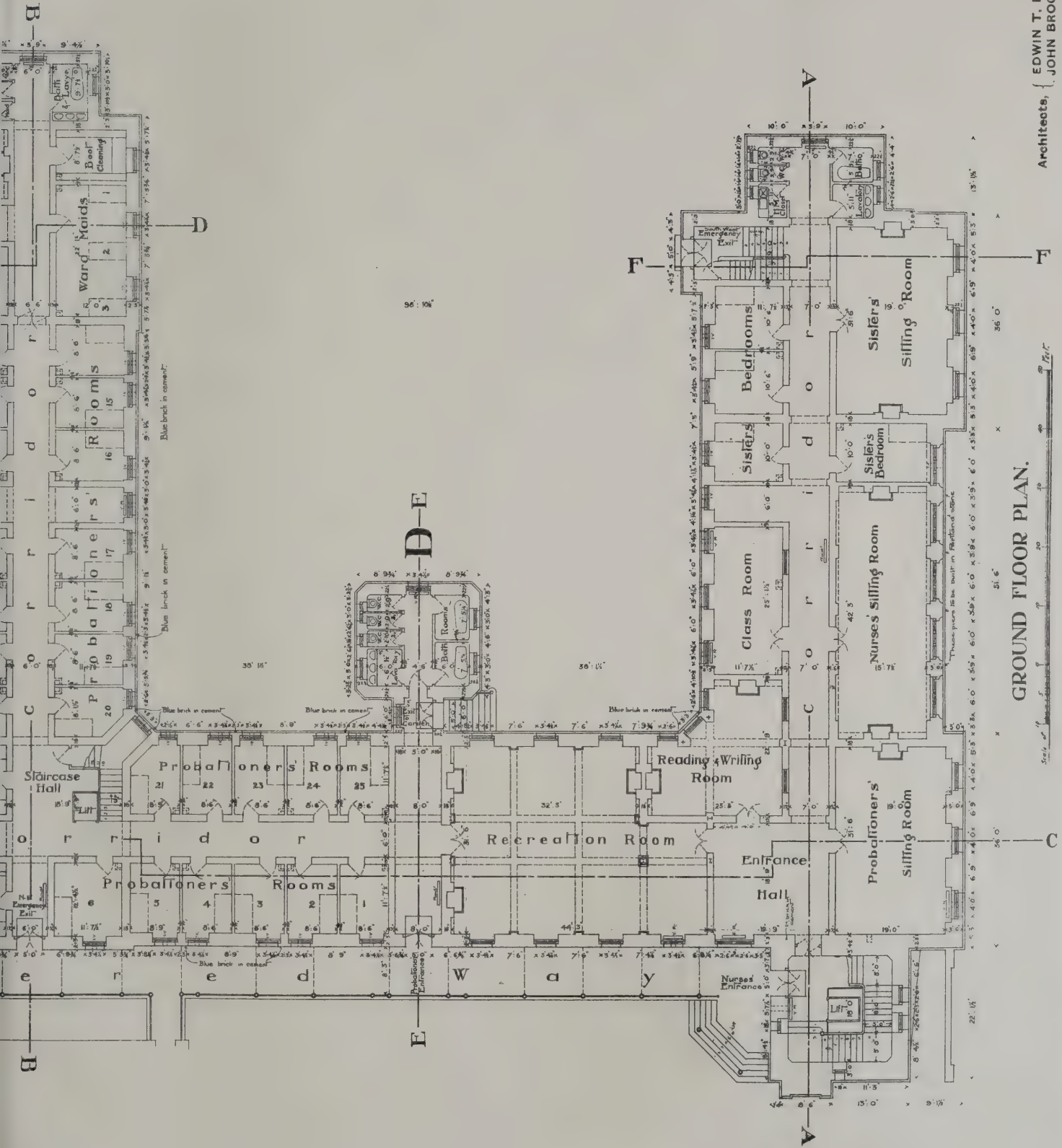
MANCHESTER ROYAL INFIRMARY.

STAFF HOME



WEST ELEVATION.





Architects, { EDWIN T. HALL, V.P.R.I.B.A., London.
JOHN BROOKE, A.R.I.B.A., Manchester.

The Architect.

THE WEEK.

THE six premiated designs for the Palace of Peace at The Hague, with forty other designs chosen by the Society of Architecture of Amsterdam, are about to be published. Messrs. T. C. & E. C. JACK will have charge of the edition for the United Kingdom and the British Colonies. The English architects whose designs will appear are MESSRS. JOHN BELCHER, A.R.A., J. COATES CARTER, J. F. GROLL, H. T. HARE, RUSSELL & COOPER, WILLS ANDERSON and H. W. COTMAN. The work will also be issued in other languages. In addition to the plates, the work will contain (1) A Short History of the Carnegie Foundation; (2) The Letter of Foundation; (3) The Conditions of the Competition; (4) The Report of the International Jury; (5) Short Notes on the Architects and their Work. The committee supervising the issue of the work consists of the following:—J. JURRIAN KOK, director of the Royal Factory of Porcelain and Earthenware, "Rozenburg," at The Hague; J. C. T. LOUIS RIEBER, certificated architect, secretary of the Society for the Advancement of Architecture at Amsterdam; and K. SLUITERMAN, professor at the Technical University of Delft.

THE announcement that the French Government intend to secularise the buildings employed by Roman Catholics for the purposes of religion can cause no surprise. It was anticipated from the beginning of the dispute between the secular and the ecclesiastical authorities. It will in some cases be necessary to effect costly alterations in order to adapt the buildings to their new uses. The immense seminary of Saint-Sulpice in Paris would appear to be suited for a barrack. But it cannot be transformed into a supplementary Luxembourg museum unless a very large sum is expended. It is to be feared that the authorities will be indifferent to degrading the buildings; perhaps that sort of revenge may be sought. English students of painting must be familiar with the exterior of the very large nunnery on the Boulevard de Clichy, at the corner of the Rue de Douai. The Government have not concluded the arrangements for the sale of the property. But meanwhile the chapel has been converted into a theatre for cinematograph exhibitions, and as gaiety is much sought in that part of Paris performances may be expected resembling those in some other establishments in Montmartre. In course of time secularisation may be followed by strange results, but at present these sudden transitions are not creditable to the French authorities.

It is proposed to introduce several important additions in the building by-laws of Manchester. The draft has been submitted to the Council. According to the *Manchester Guardian*, one of them provides for the covering of foundations with good cement concrete at least 6 inches thick and the asphaltting and cementing of the whole ground surfaces within the external walls of domestic buildings, and there are a number of amendments regulating the height, length and construction of walls. The cellars of new dwelling-houses are to be laid with a bed of cement concrete not less than 4 inches thick. The new provisions in regard to open spaces in front of and behind new buildings vary according as the building is in Manchester, Moss Side or Withington. They are followed by a provision with regard to open spaces generally, which provides that every person who shall erect a new dwelling-house shall provide open spaces about it which, including the site and one-half in width of the adjoining streets co-extensive with it, shall be of an aggregate area of not less than 200 superficial square yards. Where, however, the detailed by-laws are more exacting the above provision is not to be read in derogation of them.

Windows in habitable rooms are to be equal to one-tenth of the floor area, and there are provisions regulating the space which windows are to open, and securing that such aperture shall be at such a distance from the ceiling of the room as shall secure proper ventilation according to modern ideas. Staircases in domestic buildings are to have a tread of not less than 9 inches in width, with a rise of not more than 8 inches for each step, and are to be properly ventilated and lighted, and where a principal staircase is to be used by several families in common it is to be adequately ventilated upon every storey. In public buildings public staircases are to be not less than 4 feet in width and to have a suitable handrail on each side. The width of the staircase is to increase with the size of the building, and in the case of larger buildings there are provisions for landings at each flight and prohibition of winder steps. Under the heading of drainage it is provided that drains shall be laid in concrete.

THE Guildhall of Chichester in Priory Park was formerly a chapel of the Grey Friars, and is believed to date from the thirteenth century. Secular use has not been advantageous to the building, but its former appearance is suggested by the window and the portions of the sedilia which have survived. Fortunately for Chichester, Mr. E. S. PRIOR now lives near the city, and he has offered the City Council suggestions relating to the Guildhall as well as other buildings. He recommends structural repair to keep the building together, decorative repair to make it seemly, removal of excrescences within and without, with a few additions which are indispensable. Chichester, although a city, professes to be in a state of poverty, and payment for drainage is supposed to have monopolised all its resources. The finance committee of the City Council consider they have acted courageously in recommending a grant of 500*l.* to pay for the unavoidable reparation. But they have imposed the condition that the cost of the other works be obtained from outside sources which would not entail taxation. In other words, if the old building is to be retained, the county of Sussex will have to subscribe liberally.

It was to be expected that the United States would not long delay in trying the experiment of a Garden City. A company having been formed in New York a competition was announced for single and double houses. In response seventy-two designs were sent in for single houses and twenty-seven for double houses. The judges in their report say:—"Of the plans for the single houses, approximately two-thirds were of the same general type, viz. a central entrance and hall, with the large living-room at one side and the dining-room, kitchen, &c., at the other. In another somewhat numerous class, the long axis of the plan was at right angles to the direction of the street, thus presenting the narrower front toward the street. In view of the wide frontage of the lots, this type of plan is not considered desirable. In many other plans all the rooms were placed in a row fronting the street, and while this type is preferable to that last named, it is open to the objection that the distance between the houses (in block plan) is reduced to a minimum, and that the windows of the kitchen and other service portions face the street." The judges favoured the first-named type. It is stated that for double houses preference was given to plans in which the entrances to the houses were separated by a considerable distance, and in which the porches were not placed side by side; also, as in the case of the single houses, they have considered the question of exposure in relation to the prevailing breezes. In general, the drawings submitted for the double houses, while fewer in number, were more satisfactory in design. The first prize was awarded to Mr. J. LOVELL LITTLE, jun., of Boston; the second prize was obtained by Messrs. W. W. WETTON & G. B. PIKE, of New York. In addition several prizes were given.

THE WINTER EXHIBITION.

THERE are two paintings in the collection at Burlington House which the visitor who is disposed to seriously consider the exhibition would do well to begin with seeing. One is a *Group of Figures with Landscape Background* in the first room. If the purpose of painting is the decoration of walls this picture, which is executed in tempera on canvas, suggests the treatment which is not only the oldest but the most fitting. The quiet colours, the flatness and the broad, masterly handling enable the painting to assert itself amid its more brilliant neighbours. The second painting is in the next room, and is *A Picture Gallery*, by HÄECHT. It is an interior of which modern artists are likely to approve and to wish that most rooms resembled it in the abundance of pictures. It might be easily imagined that the walls were constructed of paintings framed together from floor to ceiling. Some of them can be recognised—especially those by RUBENS—and all are brilliantly coloured, red being dominant. In the foreground we see the INFANTA, who was Regent of the Netherlands when the picture was painted in 1628, her husband, the Archduke, and several artists. But against the background of paintings they appear to be of little account. The painters' work has become supreme, and not only architecture, but even the spectators, are sacrificed to that disregard of measure by which some modern rooms are made to resemble a picture-dealer's warehouse.

There is no question about the variety of this year's exhibition, for the paintings range from one by an unknown artist of the fourteenth century to some by JAMES CHARLES, who died a few months ago. But whether the paintings are by Italians, Flemings, Dutchmen, Spaniards or Englishmen, they were all produced without any thought of the principles of wall-decoration. The visitor, therefore, after passing through the rooms, who considers their decorative value, cannot help concluding that in one important sense they are all alike failures. Placed on easels or other stands the majority of them would no doubt be interesting. But as the artists were indifferent to the manner in which they were to be presented we must assume other standpoints. REYNOLDS, we believe, said that a room hung with pictures was a room hung with thoughts, and for the sake of the thoughts we must accept them as placed on walls, although they may not possess the qualities adapting them to that position.

The first painting in the catalogue is a *Virgin and Child*; it is an example of the Sienese school. The artist has endeavoured to express holiness and gravity on the countenance of the youthful VIRGIN, and on that account the picture compels respect unlike any others of the same class in the room. The delicate treatment of the gilding on the blue robe is by itself sufficient to reveal the painter's feelings. Not even the *Virgin and Child* by SANDRO BOTTICELLI, with its great golden columns and gold embroidery, nor the *Madonna dei Candelabri*, which for the occasion is assumed to be RAPHAEL'S, nor PERINO DEL VAGA'S version, although there is a suggestion of the Raphaellesque in the face, can compare with the simple work of the Sienese artist. If we wish to measure the degradation of Italian art, it is only necessary to compare No. 1 with No. 31. For ANDREA DEL SARTO'S *Holy Family* must have been painted after he had lapsed into dishonesty, for the figures are not only without dignity, but they are absolutely vulgar and ugly. There is a *Salvator Mundi*, ascribed to ALBERT DÜRER, which must have been executed under Italian influence. *The Angel of the Annunciation*, by FILIPPINO LIPPI, has the usual charm of the painter. *The Entombment*, by SEBASTIAN DEL PIOMBO, suggests at least the influence, if not the hand, of MICHEL ANGELO, especially in the muscular CHRIST and the fainting VIRGIN. *The St. Catherine*, by LUINI, recalls DA VINCI, besides having merits of its own. *The Circumcision*, by BARTOLOMEO VENEZIANO, is a vigorous work. The robes are so richly painted it becomes a costume piece, but as all the

figures appear to be familiar with similar operations the ceremony is without religious importance. A portrait of *Mary Queen of Scots* will probably compel people to wonder once more why so plain a woman was so fascinating. SIR ANTONIO MORE'S portrait of himself might have served as a trade specimen, for with his great gold chain, sword, dark dress and haughty expression he could easily be taken for a governor at least. There are several paintings of boys in the exhibition, and they might with advantage have been placed together. The oldest example among them, and in some respects the most curious, is that of the *Dauphin Charles Orlandt*, a small work dated 1494. *A Portrait of a Lady*, by NICHOLAS LUCIDEL, has as much elaborateness in the treatment of the dress and accessories as if it were ascribed to HOLBEIN; it is more characteristic of him than the small portrait of a lady which is supposed to be one of HOLBEIN'S genuine works. There is a mysterious *Lady of the Court of Lodovico il Moro*, by AMBROGIO DE PREDIS, and the portrait of *William Cecil, first Lord Burghley*, suggests the minister who could keep State secrets well, but we cannot imagine that a man with such a crabbed face was fond of joking. *The Toilet of Venus*, by GIOVANNI BELLINI, is a three-quarter nude figure holding a mirror, yet, handsome as is the woman, it is not the goddess of the Greeks or of modern artists. She seems as anxious as if trying the effect of a new hair dye.

The thirty-eight pictures in the second room have been well selected. The portrait of himself by FRANK HALS continues to be as brilliant as ever, and from his florid face it might be assumed that he was about to take a turn in the Haarlem Park after a good dinner. His *Admiral de Ruyter* may not be completely finished throughout, but it recalls the great sailor who took a victory as quietly as an ordinary voyage. There is another vigorous portrait of a Dutch officer by VAN DER HELST. Teachers who arrange material for still-life paintings would do well to study the small picture by HEDA, where goblets, salvers and other appurtenances of dessert have the appearance of having been brought together fortuitously. REMBRANDT'S portrait of his father represents him not as an everyday miller, but as if he were some dignitary wearing a black robe and a gold chain. The old lady who is the subject of No. 56 looks resigned, although time has not dealt lightly with her. *Rembrandt's Cook* shows a coarse-featured girl holding a knife, but the way in which the head is placed, as if she were looking down, is novel for the artist. The portrait of *A Boy* was formerly accepted as WILLIAM OF ORANGE, and suggests that the great artist could, when the occasion offered, appreciate youth as well as old age. In VAN DER HEYDEN'S *View of Amsterdam* the Nieuwekerk is the principal object, and the detail is represented with more than photographic fidelity. *The Breezy Day*, by JAN PORCELLIS, suggests that, however capable he might be to represent a canal, he could not portray sea waves, for those seen are conventional and wooden. Compared with it VAN DE VELDE'S *Calm with Boats*, where the sea is motionless, becomes a masterpiece. Another fine picture of a building is the *Cathedral* by VAN DER VLIET. As usual, the masonry is very white and the visitors wear their hats. But a little variety is introduced, for the sexton stands in an open vault and he is talking with the minister. *Grace before Meat*, by JAN STEEN, is not altogether a pleasing picture, for we see a skull and a motto "Think on Death," and the woman who holds the child must be a sluttish housewife, for the materials for the repast are thrown together without any order. The ham is further evidence, for the painter suggests that it has been hacked rather than carved. It is to be hoped poor STEEN was not suggesting the character of his own home.

The large gallery presents examples of several schools. In one of CANALETTO'S views of Santa Maria della Salute we have larger figures than he usually painted. *General Honywood* is one of the largest por-

traits which has appeared in the same position, for it must occupy about 120 square feet. Considering the difficulties of dealing with so portentous a warrior and his charger, it is creditable to GAINSBOROUGH that he succeeded so well. REYNOLDS's portrait of *James Beattie, D.C.L.*, should be kept in concealment, for it is evidence alike of the vanity of fame and the uselessness of controversy. In 1770 BEATTIE, who, according to Dr. JOHNSON, was a combination of the poet, the philosopher and the good man, published an essay on Truth, which was supposed to have established orthodoxy on a rock where it was to be unshaken for ever. REYNOLDS for once lost his good sense, and having to paint a portrait of the author he turned him into a figure in an allegorical picture, in which BEATTIE stands in his red gown on one side while the Angel of Truth is pushing down VOLTAIRE, and, it is believed, GIBBON and HUME, to perdition. If the painter wished to rival the famous picture which Dr. PRIMROSE commissioned, in which he appeared in a gown and band presenting his book on the Whistonian controversy to his wife posing as VENUS, he could not be more absurd. But we may pardon the freak for the sake of the little boy next the picture, with a firmly-closed mouth, as if he had just resolved not to spend a penny on cakes, and who was destined to become Viscount ALTHORP and Chancellor of the Exchequer. GAINSBOROUGH is again a power in this gallery. There is a half-length portrait of the Hon. Mrs. GRAHAM, who died in her eighteenth year, but which is not quite as fascinating as the full-length portrait of the lady in Edinburgh. That beautiful work is, however, recalled by a portrait of the Hon. ANNE DUNCOMBE, which might serve as a pendant to it. But not even the *Mrs. Graham* surpasses the head of *Miss Linley*, and indeed it is to be doubted whether GAINSBOROUGH ever portrayed a finer portrait. There is a portrait by REYNOLDS of the same lady (*Mrs. Sheridan*) on the opposite wall, which records the effect of domestic trouble. Curiously, both are clad in a white and gold dress. Another masterpiece of GAINSBOROUGH is his *William Pitt*, in which a complex character is expressed with such unusual success as to place GAINSBOROUGH on a level with the Venetian portraitists. One would hope that the portrait of *Mrs. Romney* is genuine, for it could be taken as a peace-offering by her unfaithful husband. There are signs of care, but not sufficient to overcome her beauty. It must be allowed that this year each of the three English portraitists have triumphed over VELASQUEZ. There is only a single work by the Spaniard in the exhibition, a portrait of *Mariana, Second Wife of Philip IV. of Spain*, and who acted for a time as regent of that country. It would be difficult to discover a more disagreeable countenance, and VELASQUEZ could not do justice to it and to his reputation at the same time. There is a portrait of *A Knight of Santiago* by his master, FRANCISCO PACHECO, and if all his works were of equal merit he was well qualified for the office. By TURNER is a fine composition, *Mercury and Herse*, and also his *Burning of the Houses of Parliament, October 16, 1834*, which afforded him ample opportunity for the display of his favourite yellow. The view is taken from the Surrey side, and the piers of the bridge, with the two towers of Westminster Abbey, form substantial contrasts to the flames. Unlike most painters of similar scenes, TURNER was sparing in the use of red.

Portraits prevail in the fourth gallery. There is no better portrait of the Duke of CLARENCE, afterwards WILLIAM IV., than HOPPNER'S. COPLEY'S *Family Group* is an animated scene, for he has realised the absurdity of supposing that four children would pose in quiet attitudes, and therefore he divides them, allowing only two to be at rest. WILKIE'S *Chelsea Pensioners Reading the Waterloo Despatch*, which was painted for the Duke of WELLINGTON, is a collection of portraits of soldiers. The painting is so well-known from the engraving it needs no description; but it is satisfactory to find that after eighty-four years the picture is in

excellent condition, unlike some others of the artist's works. TURNER'S *Devil's Bridge, St. Gothard*, is a stern scene which permitted no exercise of his imagination, and when painted the "Brown Devil" must have had possession of him. MORLAND'S *Postboy's Return* is marked by his usual facility, and although we see we have only an interior of a stable, scope was found for agreeable colouring. "O Scottish chiefs, didn't we weep over you!" exclaimed THACKERAY, and many another schoolboy would have to plead guilty to the tender impeachment. Would they have done so if a reproduction of OPIE'S portrait of JANE PORTER was used as a frontispiece? She seems to be a plain unpretentious little woman, but the so-called brown hat surmounting her head would make JUNO herself ridiculous.

We come nearer our own time in the fifth gallery. JOHN LINNELL was not only the author of *The Barley Field*, a thoroughly Surrey scene, but of the nearest approach to a portrait of TURNER which was allowed to be executed. Lord LEIGHTON'S *Syracusan Bride Leading Wild Animals for Sacrifice to the Temple of Diana*, which was painted in 1866, was no doubt intended to serve instead of a frieze; the figures of the women are statuesque, and the half figures of men seen in the foreground suggest that the procession was along a marble platform. A later work, *Gathering Citrons: A Court in Damascus*, is delightful through the figures and the architecture. *A Chalk Pit, Landscape, The Pond and The Hayfield* are evidence of the skill of the late JAMES CHARLES in landscape, while the old woman contemplating the wedding dress she wore sixty years before proves him to be as a painter of genre equal to any of his contemporaries. *The Harem*, by J. F. LEWIS, is a marvel of detail. *Fairlop Fair*, by C. R. LESLIE, shows a number of single figures scattered round the famous oak tree, but it becomes a curiosity from the indifference to composition. No finer view of Edinburgh can be found than SAM BOUGH'S, which is taken from the canal bank and shows the castle on one side. R. P. BOWINGTON'S *Street Scene in Verona* is a splendid view of one of the narrow streets in the old city, and animation is imparted to it by the two processions passing along.

In the water-colour room will be seen twenty portraits of early members of the Academy by GEORGE DANCE, R.A., the architect of Newgate; they form a most interesting series. Among them are the architects T. SANBY, CHAMBERS and JAMES WYATT. There are also several water-colours, including the designs made by TURNER for CAMPBELL'S poems. Finally, there are several chalk studies by Lord LEIGHTON.

CARLISLE CATHEDRAL.

(See Illustration.)

THE German Chancellor in his last manifesto declared that progress was only to be obtained through blood and tears. If the words were to be taken as expressing the law of the world, the people of Carlisle district should long ago have reached a state of perfection. No part of England could be compared with it as a theatre of war. From its position it was open to attacks from all sides. Caledonian tribes, Danes, Saxons, armies from the south during many centuries appear to have made Carlisle the point of attack. Alternately it was the frontier post of England and of Scotland. In such a district there was a necessity for institutions which would receive men who had no ambition for a militant life. Hence it was, no doubt, that at a very early date the north of England was remarkable for its monastic experiments. Indeed, DAVID I. of Scotland planted the abbeys of Melrose, Kelso, Dryburgh and Jedburgh in a corresponding part of his kingdom. If such establishments were respected by combatants, the arts of peace would have had a chance for growth. The spirit which animated the leaders did not, however, allow of any exceptions. The English monks are known to have appealed to the

Roman legate in the thirteenth century for efforts to be made which would enable them to escape from the compulsion by which they had to fight like ordinary men. Apparently no relief was then found for them; and, indeed, it is difficult to see how in such a debateable land there could be any escape from what would now be called the policy of blood and tears.

The history of the cathedral of Carlisle is in keeping with that of a disturbed country. Originally the northern part of England formed the diocese of Durham. WILLIAM RUFUS gave that great bishopric to his chaplain, RANULF, whose nickname, "The Burning Torch," is enough to suggest that he was not renowned for his modesty or piety. He was disliked by HENRY I., against whom he plotted, and the king took advantage of the bishop's flight to Normandy to conspire with Earl ROBERT to divide his diocese. When HENRY was afflicted by the drowning of his children, ADELULF, who was the prior of an Augustinian house in Carlisle, was able to persuade the king to complete the arrangements and to appoint him the first bishop. By so doing there was a breach of custom, for Augustinian monks were not then selected to fill the episcopal office. The history of the see therefore begins in 1133.

VITET says that the Normans brought ready-made cathedrals to England, just as LENÔTRE transplanted full-grown trees to adorn the swamps of Marly. The meaning of the words is that all the arrangements for building were carried out in France. The late Dr. FREEMAN said it was manifest that what was erected in Carlisle was no more than a moderate-sized Norman church, and, as was customary among the Augustinian canons, the nave was used as the parish church and the chancel was limited in area. It is doubtful whether Carlisle could at first be considered a see in the ordinary sense of the word, for there is no record of an episcopal palace or residence. Norman bishops were generally men who were not out of place in councils of war or on the battlefield, and they seem to have possessed several residences. But in Carlisle the episcopal office was held by the prior of the monastery. A part of the nave and the south transept are supposed to be relics of the early cathedral, and the massive piers which remain suggest that defence as well as stability was in the mind of the designer. The church was hardly commenced when Carlisle was seized by King DAVID I. of Scotland. After holding it for a few years he was defeated, but again he obtained possession of the city. The contest for it continued for nearly a century until 1237, when it was ceded to HENRY III. It is now impossible to say whether the choir was enlarged before or after that event, but a different style to that of the early Normans was in favour. Tradition assigns alterations to Bishop HUGH, who presided over the see from 1218 to 1223, and it is likely that a part at least of the work in the choir was undertaken by him.

There was a fire in 1292, and in consequence it was necessary to rebuild the choir. But it is evident that the undertaking was not completed until the fourteenth century. For the glorious east window with its intricate tracery could not have been carried out at an earlier date. Indeed, part of the stonework of the window remained incomplete for a much longer period. In 1370 Bishop APPLEBY made a great effort to complete the choir, and he succeeded in obtaining money and materials from EDWARD III., the great families of Cumberland and the city of Carlisle. The arms of the benefactors were painted on the ceiling of the chancel, but they have now vanished. As the figure of an Augustinian canon appears in the window, we must suppose that the connection between the cathedral and the priory continued at the end of the fourteenth century. In fact, it lasted until 1541. Prior GONDIBOR is credited with the parts of the cathedral on which his initials appear. Prior HAYTHWAITE had the door on the south side of the choir constructed. The opposite door and the repairs of the tower in 1507 are credited to Prior SENHOUSE.

The choir is unique in England, from having representations of the months as part of the ornamentation of the capitals. They appear in connection with foliage. January shows a figure with three faces, drinking from a cup. February is suggested by a man seated on a low stool before a fire, and who is draining the water from one of his boots. March has a man digging at the foot of a tree. For April we have a man cutting a branch from a tree. May is represented by a woman presenting a bunch of foliage to a man. June is indicated by an equestrian holding a hawk on one hand and a branch of roses in the other. July is symbolised by a man mowing. For August we see a man standing in a field of corn clearing it from thistles. September is denoted by a man in a field of wheat holding a sickle in his left hand. A man with a bunch of grapes in his left hand and a hooked knife in his right stands for October. November appears as a man sowing corn, and December by a man about to kill an ox with an axe. The capitals suggest the importance of agricultural operations in the fourteenth century, and it might be concluded that no other kind of industry then existed. But it is satisfactory to find that peaceful pursuits were in favour, for at an earlier time the sculptors would have endeavoured to glorify warriors. Evidently the days for military bishops had passed away.

There was another fire in 1392, and it became necessary to rebuild the greater part of the north transept. Early in the fifteenth century the height of the tower was increased, but it cannot be said the addition was excessive. It is supposed that a wooden spire was at the same time placed upon it. The beautiful seats in the choir with their elaborate canopies are credited to Bishop STRICKLAND, who ruled from 1400 to 1419.

The priory of Carlisle was among the religious establishments which came to an end under the orders of HENRY VIII. The cathedral in consequence could not fail to suffer, although it was provided with a Dean and Chapter. The financial arrangements were likely to have been in the hands of the Augustinians, and when they were removed it was probable that a defective administration existed for some time. The regular revenue of the see was very limited. Bishop ALDRIDGE contrived to hold his office in that most difficult time, under MARY as well as HENRY. But as a great lover of literature he was more likely to think of books than of his cathedral. We do not learn of any works which were carried out during succeeding years, and it is possible that when DAVID LESLEY destroyed a large part of the cathedral it was not in a condition which compelled reverence. In 1634 it was described as being "like a great wild country church, and as it appeared outwardly so it was inwardly, neither beautified nor adorned one whit." Twelve years afterwards LESLEY and his army were besieging the royalist city.

To them a cathedral was possessed of no special importance. It was a church and no more. In the Ages of Faith ecclesiastical buildings of all kinds had to succumb to the necessities of defence or attack, and LESLEY could find many precedents to justify his action. He had to erect protective works, and in the cathedral he found a quarry of prepared stones. Instead of condemning him he deserves to be praised. He might have destroyed the east end of the building rather than the west, and posterity would have lost the beautiful choir. LESLEY may have thought that the removal of 92 feet of the nave would leave sufficient area for the congregation. He could not have accepted the theory that so large a choir was to be occupied exclusively by a few clergymen. What is remarkable is that since 1645 no effort has been made to restore the nave to its original length.

In 1745 Carlisle repeated its old history in connection with the invasion of CHARLES STUART. The Mayor and Corporation proclaimed him King of England, and in a short time they had to pay dearly for their enthu-

siasm. On that occasion the cathedral does not appear to have suffered at the hands of the Scottish or English troops. A few years afterwards it was recognised that the cathedral was "neither beautified nor adorned," and an attempt was made to enhance its appearance by covering the choir with sham vaulting. Some eighty years afterwards it was removed under the direction of Mr. EWAN CHRISTIAN, and the barrel-roof was revealed. Mr. CHRISTIAN carried out other alterations which have not been approved. Then the work was placed in the stronger hands of Mr. G. E. STREET. But it is needless to say his work has also suffered condemnation from severe critics. Dr. FREEMAN led the way in regretting that so much was done for the sake of uniformity and consistency with an ideal which was more or less imaginary. In spite, however, of all its vicissitudes, in Carlisle Cathedral much has survived which must be delightful to the student of English Gothic art.

ROYAL SCOTTISH ACADEMY.

THE following evidence concerning the origin of the Royal Scottish Academy was given by the president, Sir James Guthrie, before the committee of inquiry into the Royal Hibernian Academy, &c. :—

By the fifteenth article of the Treaty of Union with Scotland, in 1707, a large sum of money was made payable to the Scots. It was about 398,000*l.*, and was to recoup Scotland for the additional liabilities it incurred owing to the Union, mainly in the way of taxation. It came under the English excise duties and the English taxation, and a sum was provided to recoup it for that extra expenditure, which sum was afterwards to be met out of the revenue of the Scottish contribution to the taxation. The same article provided that 2,000*l.* a year of that sum should be made available for the encouragement of manufactures and fisheries in Scotland, and in 1727 a body was appointed of twenty-one commissioners, called the Trustees for the Improvement of Fisheries and Manufactures in Scotland. That was, of course, an important State body. It had under its charge the manufactures of Scotland, which were at that time expected to increase, and which did increase owing to the provisions of the Union. The functions of that body began to take care of themselves. Manufactures progressed, fisheries developed, and so on. There was no particular change made in the body itself, but as time went on, it more and more assumed the character of a State body which had almost no functions to perform. In 1828, about a century after it was founded, it was empowered to spend this money on whatever it thought advantageous for Scotland and the United Kingdom, and in 1847 its money was made available for art purposes. In fact, there was almost a direction given that it should be used for art purposes, for instruction in the fine arts, in arts as applied to manufactures in the first instance, and so on. That was the position of the 2,000*l.* a year, which came from what is called the Scottish Equivalent Money, and I should like you to note very carefully that this 2,000*l.* a year was national money, that it was money for which a consideration was given at the time of the Union, that it was absolutely the property of Scotland, and that the payment of it every year was simply the carrying out of a financial obligation incurred in the Treaty of Union.

In London there had been a body called the British Institution, and in the early part of the nineteenth century a number of gentlemen interested in art thought it would be a good thing to have a similar body in Scotland. Accordingly, in 1819, a body called the Royal Institution was founded in Edinburgh. It had a large membership and the Council was mostly composed of members of the Board of Manufactures. I ought, perhaps, to say here that the roll of the Board of Manufactures in Scotland contains the names of many distinguished Scotsmen, in every way representative of the country. So, whatever there is to complain of—and there is a good deal to complain of—in the administration of the Board of Manufactures, nothing can be said against the personnel of the members. This institution for the promotion of the fine arts was fathered by the Board of Manufactures. It was arranged that a building should be put up, for the cost of which the Board of Manufactures would supply the funds, and the Royal

Institution was to pay a rent for the occupation of that building. This arrangement was carried out. It was originally the Scottish Institution for the Encouragement of the Fine Arts. Between the years 1821 and 1826 the building was erected. It is the building next Princes Street, on the Mound, Edinburgh, and consists of several galleries for the exhibition of works of art on the ground floor, and of upper rooms, which were to be used for the Trustee School—the school that had been carried on by the Board of Manufactures since about 1760. The Royal Institution, like the Board of Manufactures, was composed of noblemen and gentlemen, and they had associated with them what was called the Associated Artists. The two were kept entirely distinct.

These Associated Artists helped the directors of the Institution in providing exhibitions, but they were not admitted to any share in the government of the place. It was, however, arranged that the profits of the exhibitions should go to a fund for the widows and orphans of artists, and that arrangement became a bone of contention afterwards in the carrying out, but it was carried out. The Associated Artists began to smart under what they considered unfair treatment. I do not know the details, and they would not be profitable. But twenty-four artists, including most of them, in the year 1826 agreed to start an institution of their own, to be called the Scottish Academy. At the last moment, in view of the great influences arrayed against them, nine of the twenty-four lost heart and retired. That left fifteen men, without money or social influence, and these men founded the Scottish Academy.

They began by having an exhibition in Waterloo Place, Edinburgh, which was a rival to the one carried on by the Royal Institution. Those of their colleagues who did not join them continued to support the Royal Institution. The first year the Academy's exhibition was by no means as good as the exhibition of the Institution; the second year it was as good, and the third year it was much better. To make a long story short, it drove the Institution exhibition out of the field in the course of a few years. Thereafter, the Institution agreed that the Academy exhibition should take the place of its own in the Institution galleries, and the Academy continued to hold its exhibitions there for a long time. Meanwhile the members of the Academy, having made a little money by their exhibitions, with remarkable public spirit spent the money on the purchase of works of art, and their collection grew. The Royal Institution also acquired a collection, partly by bequest and partly by purchase. These had to be housed. They were housed in the galleries of the Institution. These galleries were limited, and friction began between the exhibition of modern pictures every year and the housing of the other pictures in the galleries. There was a great deal of unpleasant bickering between the Institution people and the Academy representatives on this question, and the position finally became intolerable—so intolerable that Government was approached directly, and sent down Mr. Shaw Lefevre in 1847 to inquire into this whole question—the question of the housing of the old pictures in Edinburgh, the question of the administration by the Board of Manufactures and Royal Institution, and the question of the development of the Royal Scottish Academy. Mr. Shaw Lefevre made a report, in which he said provision ought to be made for the Scottish Academy, and a building should be erected for the purpose of an annual exhibition of the works of living artists.

The question was taken up by the Government, and a Bill was promoted to provide a building which should house the Royal Scottish Academy and the valuable collection of pictures belonging to the Royal Scottish Academy and the Royal Institution, and on loan to the Royal Institution, as the nucleus of the National Gallery. The Bill went up to the House of Commons, and at its first stage was lost. There was agitation in Edinburgh over this, mainly because the Town Council of Edinburgh had played a very generous part in the matter. The Town Council of Edinburgh, interested in the works of the living artists and in the annual exhibition of pictures, had agreed to give a site worth 40,000*l.* for the nominal sum of 1,000*l.*, out of consideration, in the first place, for the Royal Scottish Academy. That was the reason that actuated the Town Council in making this proposal, which was accepted; and the throwing out of the Bill was therefore felt by the Town Council to be an unfortunate miscarriage that would injuriously affect the public interest in Edinburgh. The Lord Provost of the time went up to London and told influential members of the House what the result of the throwing out of the Bill would

be. Two members had been chiefly instrumental in securing that result—Mr. Bright and Mr. Hume. Mr. Hume, on being told the real position of affairs, asked, "Why was I not told this before? I shall now support the Bill." Mr. Bright took a similar view, and the Bill subsequently passed. That Bill was the instrument under which the whole of the present state of affairs came into existence.

But it was found that, for some reason or another, the name of the Royal Scottish Academy was not mentioned in the Bill. In spite of all that I have told you, in spite of the fact that, but for the Scottish Academy, there could have been no Scottish National Gallery (since one-third of the pictures, and the most valuable portion of them, belonged to the Academy); in spite of the fact that, but for the Academy, there would have been no joint building (as the Town Council would not have granted the site had the Academy been excluded), the name of the Academy was not mentioned in the Bill. They asked why this was so, showing signs of opposition, and were told by their friends in London that the Royal Academy of London was not at that time in good odour, and that the Bill would have a better chance of going through if the name of the Scottish Academy was not mentioned. They accepted this explanation on the understanding that an appropriation of the building was to be made, and that in it the Academy would be fairly treated. The building was proceeded with. It took the form of a twin building, exactly like the opposite pages of an open book, with galleries here and there. The eastern half is occupied for four months of the year by the Royal Scottish Academy, and the western half is in the occupation of the National Gallery of Scotland. That building was erected, but when the appropriation was made out the same feature was observed—the Academy was not properly recognised. Its name was mentioned, certainly, but its tenure did not commend itself to the members. The Town Council was again approached in the matter, and the Lord Provost wrote a very strong letter on the subject, showing the whole grounds that had influenced the Town Council, showing why they had given this site, and complaining not only that he had been misled, but that he would be made the means of misleading others, if this matter was not put right.

The result of all that was that Mr. Wilson, who occupied some position in the Treasury—I think that of Secretary—was sent down to Edinburgh to go over the whole ground again and make another and final appropriation of the buildings. The Treasury minute he wrote was adopted in 1858. It is a statement of the conditions under which we live to-day. It took the place of the Minute of 1855, which was most unfair to the Academy. According to this final Minute the eastern part of the building was to be called the Royal Scottish Academy. The Royal Scottish Academy was to have during four months of the year the right of occupation of this set of galleries. It was also to have a small council-room and a library at the end of the building in perpetuity. The other half was to be called, and was to be, the National Gallery for Scotland, and was to house the national collection. The whole building was to be absolutely under the control of the Board of Manufactures, and the Scottish Academy therefore had no say. They had no voice in any arrangements that might be made with regard to the disposal of the premises, other than was implied in the right to have the gallery for four months every year for the purposes of the exhibition, and the occupation of the council-room and the library, in perpetuity. That is the position to-day. The whole of the building has been under the custody of the Board of Manufactures since it was erected fifty years ago, and the Scottish Academy has consequently had to apply for every trifle that is required. Theoretically, if we want to drive a nail into a wall we have to ask permission from the Board of Manufactures. As a matter of fact, if we want to decorate a room, we have to ask permission of the Board of Manufactures. The whole position is an unfortunate one, involving immense sacrifices of time and labour, and giving rise to undesirable differences of opinion, which have been of the greatest prejudice to art all along. In my view, the brigading of a body such as the Royal Academy with a body such as the Board of Manufactures was an initial mistake. It is bad administration. The Board of Manufactures was an authoritative State body. The members of it were men accustomed to authority. They were patrons. The artists were men smarting under a sense of injustice, who, after a long struggle, had succeeded in freeing themselves from what they considered an intolerable control. Those two bodies were not likely to agree when one was

housed by the other. I do not say that all the fault was on one side. I think it likely that the artists may have been too ready to scent injustice and oppression. But there is no doubt that the others were arbitrary, and the result was unfortunate. That is the state of affairs which we are trying to do away with now.

TESSERÆ.

Early Churches.

EARLY Christian architecture, as might be expected, bore the evidences of its obligation to Pagan models, and neither the form nor the architecture of the first churches was the invention of the Christians. It was thought sufficient that the church did not imitate the heathen temple, and the conversion of a court of law into a place of worship was not calculated to shock religious prejudices. In this respect the Italian Christians were more scrupulous than those of Egypt and some other countries, who allowed a Pagan temple to be converted at once into a church; the saints succeeding, on the stucco newly spread over the walls, to the gods in the ancient sculptures concealed beneath it. The Gothic architects improved on the basilica. Our large cruciform churches as buildings are beautiful, but it may be questioned whether their plan is as well suited for the object for which they are intended as some others that might be adopted, and the form of a cross is certainly one of the worst for accommodating a large concourse of people, for enabling them to hear the voice of the preacher, or for permitting a large congregation to join in the services of the Church. The debasement of architecture was gradual, and was only the natural consequence of what had already commenced under the Roman empire, the various styles which grew out of it being merely changes in the earlier ones in different provinces of the Roman empire. They were all modifications of the late Roman, one varying it in this, another in that part, according to the taste and saints in each country, and the architecture in Rome itself underwent less alteration than in many of the provinces. For it is an error to suppose that the influx of northern invaders introduced the changes in the Roman architecture; they only borrowed and modified what they took, but did not originate any of their own. They brought with them no architecture, and the grandest palace of Attila was of wooden planks and beams. But without the necessity of this proof that the alteration in the style was of native growth, it is sufficient to examine the changes that took place in Roman buildings of various ages, even before the time of Diocletian and Constantine. The vertical line, which dates as early as the first century A.D., was really Roman, and the long and short work of our Saxon churches was the common style of building in villages of North Africa during (and probably long before) the reigns of Justin II. and Justinian. The invasions of the Roman empire hastened, but they were not the origin, of the decline of art.

Archæological Studies.

If we could look into the future the past would probably lose much of its importance in our eyes, and our curiosity would be much more strongly excited to ascertain the state of the world a thousand years hence than its state a thousand years ago. But this power is denied us; and to form an estimate of the character and capabilities of mankind more comprehensive than the experience of a single generation can afford we must apply to the retrospect of the past. Not that this curiosity influences none but those who might wish or be expected to draw profit from its gratification; on the contrary, it seems a temper natural in greater or less degree to all alike, reflecting or unreflecting. It is that which causes us to look with pleasure on an antiquated town, to grope among ruins, even where there is evidently nothing to repay us for the dirt and trouble of the search, and generally to invest everything entirely out of date with a value which its original possessors would be much puzzled to understand. But time works constantly as well as slowly, and therefore however antiquated the appearance, and however old-fashioned and changeless the habits of any place or people may seem to be, they are sure to present a very imperfect type of what they were even a single century ago. Who has not wished in various parts of England that we could recall for a moment the ancient aspect of the country; reclothe the downs of Wiltshire with their native sward, and see them studded with tumuli and Druid temples, free and boundless as they extended a thousand

years ago before the devastations of the plough and Inclosure Acts ; recall the leafy honours of Nottinghamshire and Yorkshire, and repeople the neighbourhood of Sheffield and the Don with oaks instead of steam-engine and manufactory chimneys ; or renew the decayed splendour of those monasteries whose ruins still strike the beholder with admiration ? If the romantic fictions of the Middle Ages could be realised, which tell of mirrors framed with magic art to represent what had formerly passed or was passing in distant parts of the earth, the happy discoverer might soon make his fortune in this age of exhibitions. What exhibition could be found more interesting than a camera-obscura which should reflect

past incidents of historical or private interest, and recall with the vividness and minuteness of life at least the external characteristics of long past ages ? Such fancies are but idle speculations. The past can only be recalled by the imagination working upon such details as the pen or the pencil of contemporaries may have preserved. Deserted places are usually too much dilapidated to convey more than a very imperfect idea of the minutiae of their arrangement or of the manners of their former occupiers ; places which have been preserved by being inhabited are of necessity changed more or less to suit the changing manners of those who tenant them.



HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD.—DOORWAY.

NOTES AND COMMENTS.

THE death is announced of Professor OTTO BERENDORF, who was the leading archæologist of Austria; he was director of the Archæological Institute at Vienna and professor of archæology at the University. He held the latter office for thirty years. Previously he filled a similar position in Zürich and Prague. His principal work relates to the excavations in Samothrace, which were carried out at the expense of the Austrian Government. He also entered into the discussion relating to the Nikè, by PÆONIOS, which is in the Louvre, and which at first suggests a figure intended for the bow of a man-of-war. It is suggestive of movement, and is supposed to be a copy of the figures for the Acroteria of the Temple of Zeus at Olympia.

THE subject given this year by the Royal Sanitary Institute for the essay in competition for the Henry Saxon Snell prize was "Suggestions for Improvements in Sanitary Appliances for Use in Workmen's Dwellings and Labourers' Cottages, under the varying conditions of Water Supply and Drainage usually obtaining in Towns and Villages." Nine essays were sent in and have been brought under the consideration of the Council. Acting upon the advice of the adjudicators appointed by them the Council have decided to divide the prize between two essayists, whose essays are about equal in merit, and they have awarded to Mr. JOHN R. PRESTON, M.R.San.L., Lancaster, writing under the motto of "John of Gaunt," and to Mr. E. H. PARKINSON, architect and surveyor, Bradford, writing under the motto of "Spero Meliora," each the sum of 25*l.* and a bronze medal of the Institute.

ALL SAINTS CHURCH, Maidstone, is a remarkable example of a parish church converted into a collegiate church and again into a parish church. The stalls are evidence of the first change, which dates from the end of the fourteenth century. The building was lately examined by Mr. FRANK PEARSON, and his report should at once be acted on. According to Mr. PEARSON, there is a general decay going on over the surface of the Kentish rag stone, and there are signs that the disintegration is taking place more rapidly now than formerly. The projecting features and those most exposed to the weather, such as label mouldings, strings, copings, buttresses and weatherings, have suffered most. The clerestories of the nave and chancel, which were restored some twenty years ago, are in good condition, but the aisle parapets, especially on the south side, show considerable signs of decay. This is true also of the buttress tops. The label and arch mouldings of the west door are in a bad state, and in places the strings and base mouldings round the building have almost entirely disappeared. Several of the jambs of the windows, which are in Bath stone, have also suffered. Some stones at the bases of the east and west angle buttresses on the north side are coming away from the body of the work, and should be replaced. It is in the tower perhaps that the decay both of the dressed stone and ashlar is most extensive. On the west side it is difficult to find a stone that has not perished in a greater or a less degree. The belfry windows in particular are in a serious state, what is left of some of the stones being only retained in place by the bar at the springing. The parapets, especially that of staircase turret, require attention and some stones renewed. The strings and base mouldings here are in quite as bad a condition as those in the rest of the church, and the mouldings of the label and outer order of the arch into tower are almost obliterated. Mr. PEARSON suggests that the surface of the decayed stone should be treated with one of the preservative solutions.

THE Pavillon de Flore in Paris, which was designed by DU CERCEAU, has much architectural interest as a relic of the Tuileries. For several years it has been

used by the French Minister of the Colonies. The building is connected with the Louvre, and it has been recognised how certain was the danger of a fire in offices containing numberless documents, and the irreparable loss which would arise if the fire extended to the adjoining galleries of the Louvre. Various suggestions have been offered about offices for the Minister. It is now stated that M. REDON, the architect having charge of the Louvre, has been ordered by the Government to adapt a house in the Rue Oudinot, lately occupied by a community of monks and their patients, for public offices for the Colonial Minister. The authorities of the Louvre are anxious for the removal, not only for the safety of the collections, but also in order to obtain the space required for the exhibition of works of art which are now kept in seclusion.

ENGLISH contractors who may be desirous to extend their business will be wise if they hesitate before taking any steps to tender for works in connection with the Dublin Corporation. We lately published reports which manifested the peculiar system of preparing plans and specifications by which contractors possessing the wide experience of Messrs. PEARSON were led astray and were involved in costly lawsuits. On Monday last there was another instance. The acceptance was moved of the tender of a Dublin firm amounting to 47,593*l.* 15*s.* 11*d.* for the construction of sewers and other works in connection with the main drainage of Clontarf, one of the suburbs. A London firm, however, had offered to do the work for 1,251*l.* 8*s.* 2*d.* less, and moreover were willing to employ only Irish labour. Honesty, fair play and regard for the interests of the ratepayers dictated that the work should be given to the London firm. But for some unexplained reason the majority of the Corporation were in favour of paying the larger amount. No doubt the members understand the wishes of the constituency in preventing economy, but we humbly suggest that whenever they solicit tenders in England they should announce the impossibility of accepting any of them, although based on minimum prices for labour and materials.

THERE was a time when Parisians would have suffered much inconvenience before they would have allowed any obstacle to be created which would diminish the interest of the Invalides for a month. But we are afraid that one effect of the *entente cordiale*, about which we hear so much, is that Frenchmen now take a British view of everything connected with aesthetics. Paris, like London, is to have its underground railway, part of which is in operation. Another section is about to be commenced, and the contractor has found no difficulty in obtaining authority for using the esplanade in front of MANSARD's beautiful building as a site for his stores and workshops. We know by experience in England the kind of structures which are run up by railway contractors, and we can therefore easily imagine the startling contrast about to be seen. It will also be inevitable that the Invalides will be invisible from several points of view for at least three years.

ILLUSTRATIONS.

CATHEDRAL SERIES.—CARLISLE: EXTERIOR, FROM SOUTH-WEST, SHOWING THE MUTILATED NAVE.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—PART OF GREAT HALL.

THE NEW WAR OFFICE, WHITEHALL.—PRINCIPAL STAIRCASE, TOP FLOOR.

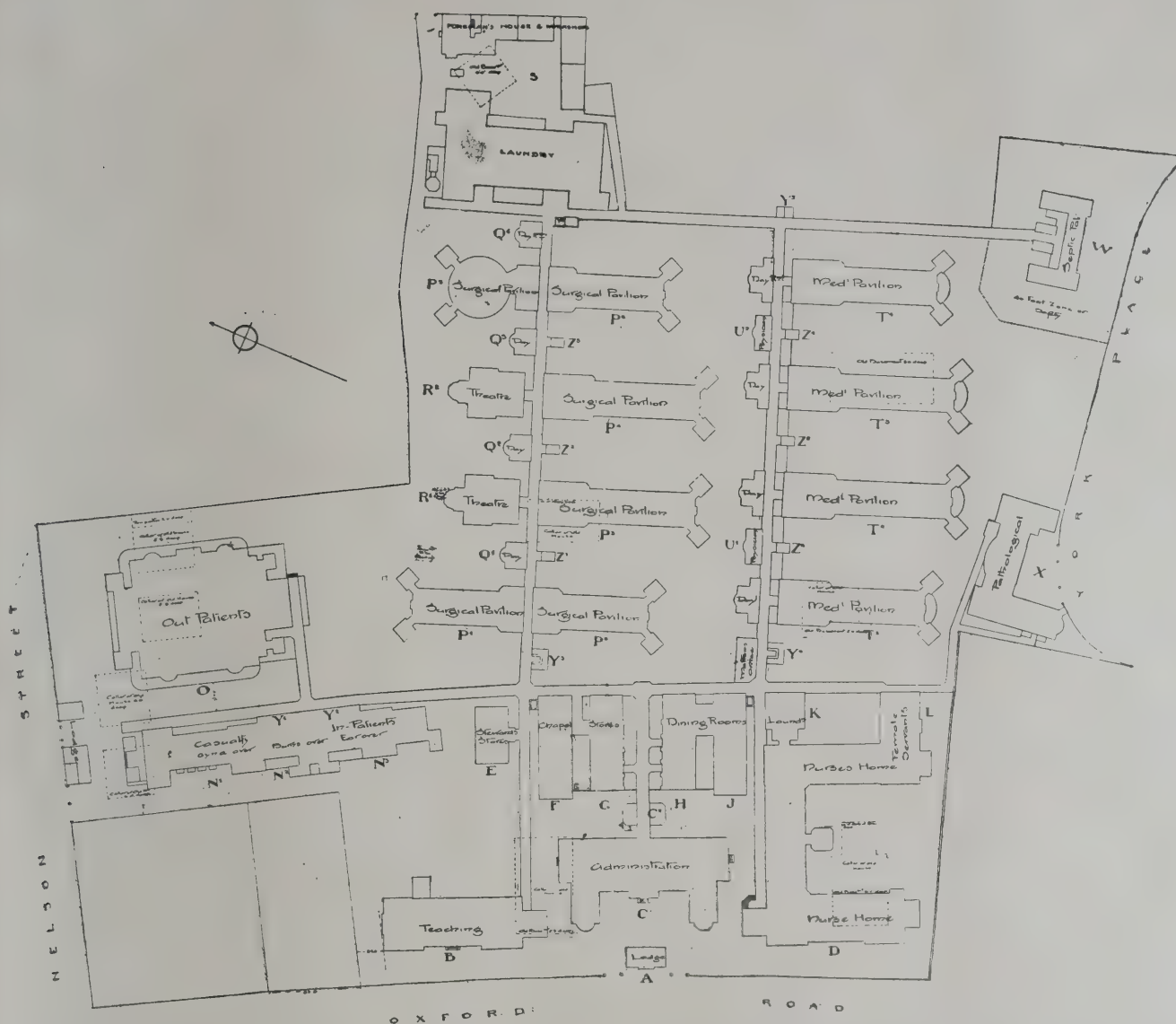
A FULL description of these buildings appeared in our issue of last week. We omitted to mention that Messrs. JOSEPH BROOKE & SONS were entrusted with the order for their "Silex" stone for the construction of staircases; and no less than 30 tons of "Duresco" was supplied by Messrs. J. B. ORR & Co., LTD., of Charlton, and used throughout the building.

MANCHESTER ROYAL INFIRMARY.*

* For description, see *Architect*, January '4.

MANCHESTER ROYAL INFIRMARY.

BLOCK PLAN



THE LIVERPOOL CELEBRATION.

ON August 28, 1207, King John granted letters patent by which Liverpool was constituted a free borough. It is proposed to celebrate the anniversary this year, and the town clerk has prepared the following report on the subject:—

The town clerk begs to report that on August 10 last he mentioned to the committee a conversation which he had had with Professor Ramsay Muir with regard to the proposed celebration of the 700th anniversary of the foundation of Liverpool.

Liverpool was founded by King John, who, on August 28, 1207, made Liverpool a free borough by granting to the burgage tenants in Liverpool liberties and free customs.

If it is decided that the granting of this charter or letters patent should be celebrated, the manner in which it should be carried out will, of course, have to be carefully considered, but it has been proposed that there should be an exhibition for two or three months in the summer, and some special festivities on or about the actual date.

Two kinds of celebration are suggested:—(1) Exhibitions running throughout the summer. (2) Festivities on the actual date selected to celebrate the foundation of the old borough.

1. Three or four exhibitions of distinct types and of reasonable dimensions are suggested. It is a matter for consideration whether these should be gathered together in the same place or distributed in different parts of the city. There is much to be said for either course, but in either

case the exhibitions suggested below would serve a double purpose. They would stimulate civic pride and patriotism, and, especially in the young, encourage the growth of a higher citizenship, and they would bring Liverpool more prominently to the notice of other countries, and be the means of inducing visitors to the British Isles to spend some time in the city. The exhibitions suggested are:—

(a) An Exhibition of Ancient Liverpool. This should take the form of a reconstruction of the ancient castle (in lath and plaster, but on full scale), with its four towers, its chapels, its hall, its moat, &c. Though demolished in 1720, the castle is capable of reconstruction; the school of local history and the school of architecture at the University could supply detailed plans, partly conjectural, of course, but near enough for the purpose. To the castle might be added the tower, which stood at the bottom of Water Street till the nineteenth century, Liverpool having been almost unique in the possession of two Medieval fortresses within a stone's throw of one another. Perhaps one or two specimens of ancient domestic architecture (taken from Herdman's drawings) might also be added. The building or buildings might be erected in one of the public parks, or at Calderstones, or the Bowring estate, or on the Edge Lane Hall estate, or at some other convenient place. They should be used for the display of a collection of drawings, old maps and relics of all kinds, including some of the charters from the municipal archives. They should remain open throughout the summer.

(b) An Exhibition of Modern Liverpool, containing (1)

some representation of the activities of the various departments of municipal government, and (2) some illustration of the trade and industries of Liverpool, *e.g.* a series of models showing the various types of vessels which have crossed the Atlantic. This show should remain open throughout the summer, and in connection with it the great shipping lines and the big industries might be persuaded to give special facilities for visits to their vessels or their works.

(c) An Exhibition of the Liverpool School of Painters is already being arranged for. It should not be difficult to make this synchronise with the rest, and it would form an additional attraction.

(d) An educational exhibition would be of great value to teachers, and would form an additional inducement to the holding in Liverpool of a series of educational conferences already proposed for the summer of 1907. Such an exhibition should cost little. The buildings of the University might be utilised for the purpose.

All the exhibitions would help one another.

2. Under the head of special festivities or celebrations the following suggestions are made:—

(a) A pageant, or pageants, like that of Warwick, illustrating episodes in the history of Liverpool. For this the proposed models of the castle and tower would form the appropriate background. This might be given once or twice during the summer, the main performance being on the actual day of celebration.

(b) A great public service of thanksgiving for 700 years of prosperity, to which all public functionaries should go (in official costume wherever possible) in procession through the streets, which should be lined with the local volunteers.

(c) A review of merchant shipping in the river, with perhaps a visit of the Channel Fleet.

(d) Games, &c., in the parks for the children of the schools.

(e) An illumination on the river at night, ships lighted up.

(f) A medal might be struck in celebration of the occasion.

With regard to the cost of such an exhibition and pageant, the town clerk, after making some inquiries, thinks that a sum of at least 2,000*l.* would be required to enable a sufficient guarantee fund to be formed before any expense is entered into.

Charges, of course, would be made for admission to the exhibitions and for viewing the pageant, and it is hoped that ultimately there would be a balance in hand.

The scheme can be initiated in one of two ways, either by the Council itself forming a committee to carry it out or by the Lord Mayor calling a town's meeting, at which a general committee could be appointed for the purpose of organising and carrying out the exhibitions and raising the necessary funds.

As the matter, however, is principally one affecting the municipality, the town clerk is himself personally of opinion that, if the scheme is at all desirable, it should be initiated and carried out by the Council, and any committee appointed by the Council for those purposes might be authorised to co-opt other persons who would be willing to advise and assist the committee. If this course is adopted the funds required for the celebration could be obtained by an addition to the Lord Mayor's allowance.

There is also one other question which ought to be considered, namely, that of obtaining the services of some person who has been accustomed to organise exhibitions and pageants of this kind. Similar celebrations have already been held in Ripon, Sherborne, Warwick and Shrewsbury, and others are contemplated, and the town clerk understands that special masters of the ceremonies were appointed to arrange and conduct the proceedings. This is a matter which might be left to the committee having charge of the arrangements.

The report of the town clerk and the recommendations of the finance committee will, of course, be submitted to the next meeting of the City Council.

A Committee of the Dudley Town Council have issued a report dealing with the new free library scheme. They recommend that Mr. Nicol, architect, Birmingham, be engaged to prepare the conditions of the competition for the plans and designs for the library on the site already selected, that the competition be limited to architects practising within fifty miles of Dudley, that an assessor be nominated by the committee, and no prizes be offered.

"THE HOUR."

THE opening lecture of Professor Herkomer's course was delivered at the Royal Academy on Monday. By "The Hour" he meant the present time, and it was of the decadence of the art of the time that he spoke. There was, he said, a taint of decadence in the art of all ages. This age was no worse than the others, but we unfortunately were indifferent to its presence, owing to the complicated conditions of modern life and its mad rush, with no standing still and no time to look back. It was an age of "scorching," and his first message to the students was to warn them against "scorching" in art and to urge them to fight against the tendency. Before touching on the decadence of illustration, taken from its altar to provide amusement for the modern public, he wished to speak of the decadence of another kind, exemplified by a circle of French artists whose pictures were going the rounds of the principal German cities, where, unfortunately, they had aroused the curiosity of the continental public. Pointing to some pictures on the walls covered up with paper, the Professor said that these works, which they should see presently, were by artists who called themselves impressionists, whereas they should be called imperfectionists or idiotists. True impressionism was at the bottom of all our art. Turner and Holman Hunt, to quote two men of widely different view, both painted their impressions. The lecturer read some of the claims and views of the French impressionist artists from the preface to their catalogue, and said that the crowning joke was that they pretended to hang on to the old masters' traditions. He had always thought that these impressionists claimed to have discovered a new secret of seeing and that they alone were right. Professor Herkomer then removed the paper from the four covered works and showed huge black-and-white drawings, carefully enlarged from illustrations in the impressionist catalogue, of two figure subjects, a landscape and a seascape. "It would be difficult to do anything so bad, wouldn't it?" said the Professor. "Yet they still want the beastly colour." It must be, he thought, a mad freak or an effort to see how far the public could be fooled. Decadence was not necessarily a concomitant part of innovation. The pre-Raphaelite innovations came as a godsend to English art. The critics of the time, severe as they were on the "Carpenter's Shop" and other pictures of the same school, always allowed that the pre-Raphaelites possessed imitative skill, but this was the quality that the impressionistic paintings lacked beyond all others. "It's the badness of the work that knocks one over," remarked Professor Herkomer before he proceeded to describe one of the masterpieces of the school shown him by a disciple in Berlin. He asked the disciple if he thought the picture was a good composition? No; that was not its aim. Did he think it well drawn? That, again, was not its aim. Nor was colour, and of its real aim the lecturer was still ignorant. An alarming change was creeping over the art of illustration. The facility of the black-and-white artist of to-day was surprising, and although in Professor Herkomer's youth there were always a few men of outstanding excellence the present average of skill was far higher. Talking to one of these clever black-and-white men the other day he commented on this, and the black-and-white man said, "Yes, but your period of illustration led to the highest art—ours leads us nowhere." Partly the lecturer put down the decadence of illustration—despite its modern cleverness—to the decay of wood-engraving, an art that represented the combined efforts of the draughtsman and the translator. In his day he and his friends used to treasure prints from the woodcuts after Millais, Walker and others, but reproductions were not treasured now, he said, because they were from process blocks. The Professor claimed that finer results were got by wood-engraving than by process work, and that even in the reproduction of line drawings by photography the line was poor and scratchy compared with the full-blooded line of the woodcut. He showed the audience an enlargement of a woodcut by Bewick, and claimed that it lived, whereas if it had been a wash drawing reproduced by process it would be dead. Other examples shown included enlarged specimens of work by Menzel and Mr. Timothy Cole, and a wood-engraving after a picture by Sir Lawrence Alma-Tadema. He spoke of the excellent work done by the *Graphic* under the direction of the late Mr. W. L. Thomas. When he visited America in the eighties beautiful wood-engraving was being done in such magazines as *Harper's* and *Scribner's*, and when going through their printing

works he asked whether their engravers had been trained in Europe. He was told that they had not, and the examples they had followed were hanging up in the office. They were wood-engravings from the *Graphic*. Of course the process block was quicker and cheaper—800 per cent. cheaper—than wood-engraving, which was slow and dear. He condemned the snapshot photograph which the public liked, because it thought it must be true, and denied its truth. Compare the snapshot, he said, with the Parliamentary sketches of Ralph Cleaver, clever creations, the result of the brainwork of an artist who saw things through his refined temperament. But there were other reasons besides process for the passing of the wood-engraving. The first blow to it was given before the advent of process and given by Ruskin in one of his Oxford lectures. He did not wish to attack Ruskin—a great and good man—and regretted that a recent report in a newspaper had given that impression. But he was a misleading guide when he spoke against the art of the woodcut. In conclusion Professor Herkomer held out hopes for a revival of the art. "But," he said, "there is no time to be lost. The master engravers are growing old, and there are no new ones forthcoming."

HOLYROOD ABBEY CHURCH.

IN a letter to the *Scotsman*, Mr. John Watson, architect, writes:—Many architects have devoted a considerable amount of time to the study of the structural organisation of the Chapel Royal at Holyrood, and, as one of these, I venture to express my views upon the condition of the existing remains, with special reference to the report by Professor Lethaby, lately published in your columns. To me his contentions are not convincing.

The Chapel Royal, as now known, is merely the nave of the church of the once important and wealthy abbey founded by David I. The erection of this part was commenced about the end of the twelfth century, and was completed about sixty years afterwards. The plan shows that from the beginning the nave proper, as well as the aisles, was intended to be groin vaulted, and during the whole course of its erection no departure was made from the general dispositions. Two hundred years later massive buttresses, with flying arches spanning both aisles (some of which exist entire on the cloister side), were erected to strengthen the clerestory walls and to resist the vaulting thrusts which the earlier builders believed they had sufficiently counteracted by the thickness of the piers. During the sixteenth and seventeenth centuries it received various attentions, some of violence and spoliation by English invaders, and others of reparation, principally by Charles I. In the eighteenth century it fell into a period of continuous neglect—a neglect which vividly reflects the general indifference of the times regarding such structures—which finally brought about its doom. I am strongly of opinion that but for this the nave of Holyrood might have been standing till this day in all its beauty.

All its intermediate history bears more or less on the present condition of the structure, and it is necessary to understand it to appreciate the practicability of a successful restoration. Professor Lethaby says:—"The parts now remaining are but a small portion of the complete nave." This is minimising the extent of the remains. Anyone may see what exists to-day. What has disappeared is the main northern arcade with pillars (of these two fragments remain, giving clear evidence to their similarity to those on the south side), the triforia and clerestory, also the clerestory of the south arcade. The main vaulting and vaulting of the north aisle; the wall head parapets with their supporting cornices and corbels, the external flying buttresses, the upper portion of the western gable and the terminations of the circular staircases adjoining; also the roofs which covered in the whole structure.

Professor Lethaby reports rather discursively, but his chief points can be reduced to three heads, viz.:—

1. That the stonework is decayed and unsound.
2. That the walls are seriously off the vertical.
3. The problem of making anew lost parts.

1. As regards the decay of the stonework, Professor Lethaby says:—"The walls and arches which remain are much decayed by the weather and disintegrated by the action of smoke deposits . . . and the surface is everywhere attacked and blackened." This description is indiscriminate, and to condemn the whole is too summary. The Professor, however, assures us it is the surface only which is decayed and blackened. In my opinion these thick

walls and arches are perfectly sound otherwise. Professor Lethaby remarks that "the pillars of the south arcade have been very largely patched with cement, across which joints have been neatly struck," and concludes that they "consequently seem to be in a far better state than they are in fact." This is making the very worst of these pillars. I inspected them most carefully last week, and noted that they are built of an exceptionally good quality of stone. The cement was applied to make good the forms of the columns, &c., where the sharp surfaces had been broken by accidental violence, and one has only to examine the fragmentary pillars on the north side to understand how strongly they were bonded and built.

The Professor's conclusion should have been reversed. I am of opinion that these pillars are sound and strong. There are no indications of crushing or fracture, the joints are sharp and good, clearly showing that they bore the crushing weight which they were meant to sustain and have sustained for nearly 600 years. I see no reason to assume that they would not bear the weight of a restored clerestory and vault, or even a greater weight. Professor Lethaby also states:—"The triforium stage is in still worse a condition. . . . The last three bays to the east are formless in respect to mouldings and details." This is an overstatement of the case. They are doubtless much weather-worn, but certainly not formless, and their mouldings are distinct with the exception of some of the outer capitals. Mention is made of the sooty condition of several of the decorative features, but these points are quite irrelevant to the stability of the structure.

2. That the walls are seriously off the vertical. "Seriously" can only apply to the south wall of the nave containing the triforium. We are told on the best authority that it leans inward 14 inches. The reason is obvious to anyone viewing the wall from the cloister side. The simple way to correct this is to reinstate the main vault and the flying buttresses over each aisle roof. I may point out that the inward lean of this wall is an important factor in favour of restoration.

That the north aisle wall leans outwards 4 inches is of little consequence; it has been so for over 450 years, and it can never move again so long as the buttresses stand. The leaning of the west wall ($4\frac{1}{2}$ inches) has been counteracted by reducing its thickness at the top and loading it on the inner side (this wall is about 10 feet thick as high as the intake).

(3) The problem of making anew lost parts. Professor Lethaby states the form of the clerestory is unknown. He evidently made a very hurried study of the Chapel Royal or he could not have made that statement. The main vaulting has undoubtedly been sexpartite in form. The bonded springers of the vaulting arches exist. These give the start of the rib curves and the detail of each rib. The height of the crown of the vault is marked exactly on the east wall, and the height of the clerestory is defined by the wall ribs. There are vestiges of the north wall of the nave still adhering to the east and west walls, which clearly show that the north and south walls were counterparts of one another. On the north and south sides of the east and west walls the clerestory passage is distinctly visible with capital, shaft and base to the interior. The number, position and detail of the clerestory windows and openings are also known, and can be seen by any who care to take the trouble of verifying their existence. With these evidences I venture to say that the form of the clerestory cannot be said to be unknown.

Professor Lethaby also says that the form of the west gable is unknown. The west gable in its latest form at present exists to a height of about 60 feet above the door step. The east wall, which was altered into a gable, is standing, showing on it the pitch of the nave roof, therefore the west gable must have corresponded closely in height to that of the former. This being so the form cannot be said to be unknown. Moreover, there is an old measured drawing published which gives an interesting elevation of this unknown gable.

Professor Lethaby repeats that the new work would be largely copied and conjectured. I am of opinion that there is absolute authority in the existing work for nearly every detail required in the new work, which is, indeed, but a small portion of a completed nave. The Professor mentions a number of details of less importance, and asks what is to be done as regards broken string-courses, bases, &c.; also the late and debased work at the west end, regarding the date of which he has been misinformed. The date is given 1633 on the tablet, containing a very touching inscription,

above the west doorway. He points out that the floor level was lower than at present (the original floor level is distinctly marked at the crossing). No doubt the burials at a comparatively late date account for the fact of the present level being higher. But what have such trivial details to do with the general scheme of restoration or the stability of the existing building? The days of eclectic restoration are past, and there is no architect living so regardless of his own reputation as to think of touching or removing any of the work that exists. Is not the very essence of restoration to preserve and not to destroy?

BIRMINGHAM ARCHITECTURAL ASSOCIATION

AT a meeting of the Birmingham Architectural Association on the 4th inst., Mr. Arthur Dixon spoke on "Architectural Education," and suggested that the professional education which was now open in Birmingham to architectural students was incomplete on two sides, the practical and the scientific. Having reviewed the classes now open to architectural students in Birmingham, Mr. Dixon entered into a short digression upon the qualities which constituted a good building. Convenience in planning, solidity, combined with a due limitation of the quantity of materials to be used, presented problems with a view to which the present system of education afforded a not altogether inadequate preparation, though in these days, when materials such as steel and reinforced concrete were becoming of such great importance, the training which had been hitherto reserved for engineers became more and more necessary to the architect. If, however, the attainment of the utilitarian qualities of a good building demanded a more scientific training on the part of the architect, the case became even stronger when they thought of those qualities which had a more spiritual character. He used "spiritual" partly because he wished to avoid that much vulgarised and misused word "artistic." The word had to cover what was the greatest quality of all—he meant expression. There was a kind of expression which no building, however humble and however utilitarian, ought to lack—the expression of its own essential character and the expression which came from an exact and delicate adaptation of the means to the end in view. It was, he believed, this quality of expression which more than any other led the way to the interest and beauty and dignity of a building. One of the most delightful things in the world was a Mediæval fortress. He could find no better illustration of delicate adjustment of material to its purpose than the vaulted choirs of the great thirteenth-century churches, such as Westminster, Amiens, and most of all, Beauvais. The mastery over materials which was certainly attained by the Mediæval builders was no doubt gained on the job and in the workshop, without much, if any, help from university schools or books; but the materials which he had to study were comparatively few, and so were the purposes for which they were used, while the methods of their use might be said to have been included within the limits of a single living tradition with which it was quite possible to become thoroughly acquainted in the course of a few years of actual apprenticeship and practice. It was certain that could not be done now—other means must be found, and one of them was that architectural students should receive part of the training now given to engineers. They wanted a co-ordinated scheme for architectural students which would make it easy for them to get all the training they really ought to have; and one very great advantage which would follow upon this being done in connection with the University would be found in the splendid apparatus which was being provided there for testing materials of all kinds, whether in respect of tension, compression or transverse strains.

Some buildings looked as if the materials of which they were composed had been thrown together, others as if the materials had been bullied and kicked into their respective places; but the building which they loved to look at again and again was that whose materials looked as if they had been led together by a friendly hand, which had taken the trouble to study their characters, to find out what work each could do best and would do most happily, and had also taken thought to put each beam and each stone in that position in which it could perform its almost eternal function in self-respecting and happy tranquillity. They must learn to play with their stones and beams like friends, rather than order them about like a squad of

stokers. If it were possible to provide classes for students in which they would become familiar by actual practice with the work of the carpenter and mason, and perhaps the bricklayer and plumber, it would be of very great advantage. It would seem that on the practical side at least there was in Birmingham already in embryo and on paper the elements of what they wanted. An architect ought to have actual practical familiarity with a good many points, such as the various methods of finishing masonry, methods of bedding, bonding and pointing, &c. It was only by such practical familiarity with materials and their treatment that they might hope to avoid what had been for some long time the Scylla and Charybdis of their profession—the Scylla of the pedantic copying of ancient form, and the Charybdis of the fanciful and effeminate vagaries of the new art, which had sprung up to no small extent in brains unsanctified by wholesome contact with the stocks and stones of mother earth. The essential point was the co-ordination and direction of architectural studies, and he supposed the ideal solution would be a chair of architecture at the University. Liverpool had its chair of architecture, and they might have theirs in time. In the meantime, it would be of great use if they could have a committee to consider the whole question.

REBUILDING SAN FRANCISCO.

IN the course of the last letter written by the late Sir John Leng, LL.D., from Delmonite, California, and despatched thence on November 14, 1906, as printed in the *Dundee Advertiser*, he asked:—Did the infernal powers of destruction ever shake to pieces a vast city in so few seconds, and then fiendishly gloat over their work in such a widespread, fierce and consuming conflagration as raged over San Francisco from April 18 to 22 last? Were ever so many huge buildings so quickly reduced to skeletons, their bones alone remaining nude and gaunt to indicate former crowded hives of commerce and industry? Were ever so many human beings so suddenly made houseless and homeless, and compelled to live under the sky as their roof, and to maintain their existence by daily toeing the bread line, sick and poor, native and foreigner alike, to receive sufficient food to keep away the pangs of hunger?

Approaching San Francisco six months after the earthquake and fire, we heard alarming accounts of the dangers to life and limb from still falling buildings, from streets covered with iron beams and unremoved debris, and from Thugs and villains of all kinds ready to hold you up with their revolvers while they robbed you in broad daylight of all you possessed. Placing ourselves in charge of two experienced friends, long familiar with the place in all circumstances and conditions, we soon found how much exaggeration there had been, and on the whole we were astonished how much had been accomplished in removing the debris, clearing the roads and streets and expediting the work of reconstruction. The illustrated papers have given accurate photographs of the lofty buildings whose frames stood firmly after the earthquake, while most of the filling-in was shaken out, in some instances with very grotesque effects, the domes and upper portions of lofty towers appearing intact, while little but the iron framework of the lower sections remained.

In confirmation of the parable respecting those who build on rock and those on sand, there are three remarkable illustrations. The United States Government buildings—the Mint, the Post Office and the Custom House—were scarcely injured. These were all founded on concrete—artificial rock. As a rule buildings built on "the hard" natural ground stood comparatively well. It was on the swampy, loose, made-up ground that the greatest havoc occurred, and showy, lofty structures utterly collapsed, or remained as monuments of work more pretentious than substantial. There are still high walls far off the perpendicular, some of which are being assisted to their fall, while passers-by are warned not to approached too near.

Everywhere are the signs and sounds of extraordinary activity in clearing away obstructions, raising girders and building materials. The place is all alive with the activity of energetic workmen, working eighteen hours a day. Bricklayers, we were told, were earning 30s a day, and yet they are very scarce. All kinds of tradesmen were in great demand, but the supply was short. San Francisco is rising rapidly from its ashes. The United States flag floats everywhere in the breeze as if to announce to the world, "We are not downhearted." Every month will show more and more of the upbuilding process. Already many of the old

cleared streets are crowded with pedestrians, carriages, motors, waggons and buggies. The great fire, which extended over five miles, and the heat of which was more than seven times hotter than is wont at ordinary fires, fortunately did not cross a broad avenue on the western side. This is now the most crowded business street for shopkeeping classes. There has been a tremendous boom in property and rents in this region. A writer in the excellent local magazine "Sunset" says:—

"Van Ness Avenue, the widest residence street, Fillmore and Devisadero Streets, yet further west, at once became centres of trade industry. Houses that would not rent for 50 dols. a month before the fire brought 500 dols. readily. Then developed the leasing and sub-leasing industry. One modest druggist, whose profits from pills and potions had never exceeded 100 dols. a month, sublet his 75-dol. store for 600 dols. a month for three years, sold out his household goods, packed his family trunks, and sped away to live in Europe in affluence on the money that will reach him monthly without his working for it. The overland railways were soon congested with freight ordered by merchants to renew their stocks. Lumber camps all the way up the coast, far into British Columbia, felt the surging wave of industry. Every ship and barge that would float was put into service to carry cargoes of things needful for the city's upraising. The shout of architects and contractors was for concrete construction, and every cement factory in California was soon working double shifts to fill the demand. Cablegrams to Liverpool, Bremen and Melbourne soon started the loading of deep-water ships with cement and iron and brick, and thus the ill wind of the stricken city blew good to the far corners of the world."

Thousands of ground-floor stores ran up in all directions. Large private houses were rented for business purposes at from 300 to 600 dols. monthly, and converted into restaurants or dry goods stores. After a few weeks from the disaster the gaiety of San Francisco people led to the cafés and theatres being crowded night after night by merry-making throngs.

The appearance of the still-standing lofty buildings is often fantastic and grotesque. In some respects the impression is melancholy, but there is not that aspect of desolation one would at first expect. The sounds of mechanical activity all indicate a speedy resurrection from the ruin that remains. Then in the newly-erected streets of stores, banks and offices everything is on the whirr and the whiz, while in the older residential quarters, now converted into business streets, the movement and the rush are quite equal to the busiest parts of Chicago or New York. No one knows what may occur after San Francisco is built up again, but the rebuilders are going to work to replace the San Francisco of 1906 by a better-planned, grander and more imposing city of the future. The British insurance companies have provided the owners of property with ample funds. Whether those companies will renew their risks and obligations remains to be seen. It redounds to their credit that there has not been a single default on their part, while the demands upon them have been such as would have seriously shaken weaker concerns. A number of German insurance companies have not stood the test so well, being unable to meet their obligations, which will tell seriously upon their future business.

BELFAST CITY HALL.

A MEETING of the Council of the county borough of Belfast was held on the 2nd inst., when, says the *Belfast News Letter*, the minutes of the improvement committee dealt with the City Hall accounts, and stated that the attention of the architect having been called to the unsatisfactory acoustic properties of the Council chamber, he expressed the opinion that if the windows and galleries were draped and a change made in the heating and ventilating system a great improvement would be effected. It was resolved that this suggestion be acted upon.

Councillor Macartney, in moving the adoption of the minutes, said the city accountant had prepared a statement of the City Hall accounts, which showed the committee were authorised by the Council to expend 297,508*l.* out of the loan of 300,000*l.* The final accounts showed an expenditure of 288,865*l.*, or a saving of 8,643*l.* All the sub-contracts and furnishing contracts were settled and paid for, and represented an expenditure of 89,000*l.*; so there was only one serious matter arising out of the City Hall, and that was Messrs. Martin's account, which the committee said was 149,000*l.* and the contractors said was 215,000*l.*, the difference being due to the fact that the committee's price was based on

the contract schedule, and Messrs. Martin's on what they said the work cost them, plus 5 per cent. for establishment charges and 10 per cent. profit. Negotiations were at present taking place between the architect and Messrs. Martin regarding their account, and before any final settlement was arrived at the matter would be placed before the Corporation. The following is the

Approximate General Summary.

Site	£30,000	0	0	
Preliminary expenses	3,615	0	0	
				£33,615 0 0
Building contract (Martin's)	£149,000	0	0	
Building sub-contracts	77,000	0	0	
Furnishing contracts	12,000	0	0	
				238,000 0 0
Architect	£7,500	0	0	
Architect (furniture)	500	0	0	
Surveyor	5,200	0	0	
Clerk of works and miscellaneous	4,000	0	0	
				17,250 0 0
				£288,865 0 0
Margin				11,135 0 0
Amount of loans	£300,000	0	0	

Continuing, Councillor Macartney asked that the question of the accounts should not be gone into on that occasion, because they would be no nearer a final settlement if any discussion took place.

Councillor Shaw, in seconding, agreed that the accounts should not be discussed at present, as negotiations were going on, and he hoped they would end satisfactorily and in a friendly settlement rather than trouble. So far as the building was concerned, everyone felt that the contractors had given them a good job.

Councillor Henry said that was, he thought, the proper time to refer to the acoustic properties—or rather the lack of them—of the Council chamber. The matter had been brought up from time to time, and the Lord Mayor had suggested that he (the speaker) should confer with the architect at the meeting of the committee in order that some plan might be arranged. The architect had accordingly suggested that the windows should be draped and the galleries also hung with drapery in a temporary way in order to see what effect this would have. The architect also said that one could never be sure how the acoustic properties of a room would work out. He expected that the chamber would be perfect in this respect, but it was not; whereas an apartment which he designed at Woolwich, over which was a large dome, and which he thought would be an acoustic failure, had turned out a success. He (Councillor Henry) would remind Councillor Macartney that he had promised to have the drapery put up. At the committee meeting one or two members expressed the opinion that the seats should be rearranged in horseshoe form. The architect said the room was not designed to have the seats placed in this manner, and if they departed from the present arrangement the whole contour and success of the chamber would be irretrievably spoiled.

Alderman Lawther said he differed from Councillor Henry in regard to the acoustics of the chamber. These were entirely the result of the architect's plan. He for one objected to the way the seats had been located. When on the Continent he saw large halls in Brussels and elsewhere much the same size as that one, and the seats were in circular formation. He objected to their dealing with the chamber on the patchwork principle, as had been the case with that building. If they had followed out the original design of the architect they would have had many things that would have been a disgrace to Belfast. Now, as a result of the improvement committee's experience, they had a fine building. If they looked around that room they would see the cock-loft or the "crow's-nest" for the people, and now they wanted to go on spending money on drapery. The public audience should face the Council and have the "crow's-nest" done away with. He objected most strongly to any further patching and to any expenditure on drapery.

The Lord Mayor: That would not be patching.

Alderman Dr. King Kerr said it would be a mistake to put drapery in the Council chamber, as it would be out of keeping with the character of the room. It must be evident to those present that the acoustic properties had improved very much, and they ought to continue as they were doing a little longer without incurring further expense.

The Lord Mayor said the committee would bring in a report before going to any expense.

ARCHITECTURAL DRAWING.

A PAPER was read on Monday before the members of the Liverpool Architectural Society by Mr. Stanley D. Adshead, of London, on "Style in Architectural Draughtsmanship."

After a reference to the great originators of style, Mr. Adshead reviewed the various styles in use, and advocated the use of the French or academic style as the explicit style of draughtsmanship, taught to the exclusion of all others up to forty years ago, and asserted that only by the adoption of which could a really national style be founded and developed. The representation of really good architecture could only be done justice to in this style because the characteristic attribute of good architecture was refined detail. It was contended that for ordinary competition purposes this style demanded too great an expense of energy and time, but it was impossible to make explicit drawings hurriedly and well in any style. The prevalence of thick line drawing was, however, due to stress of competition, and it suggested that the architect was not confident of his own ability to make a display of grace and refinement or had not confidence in the assessor, so that he tried to captivate the latter by a display of brute force. He hoped assessors did not give their awards on a mere display of good black work. The prevalent thick line was responsible for the poverty of detail which appeared in the modern municipal and the Carnegie library as compared with the interior of the Banqueting Hall in Whitehall, and he ascribed this degeneracy to our coarse manner of drawing.

A discussion followed the reading of the paper.

BOND BETWEEN CONCRETE AND STEEL.

A CONSIDERABLE number of valuable tests of the bond between concrete and steel were recently made at the University of Illinois. They were made with plain round bars, cold rolled shafting, mild steel and tool steel embedded in concrete of different proportions. The experimental work was done by Mr. Todd Kirk, and a description of it, with a summary of the data, was recently prepared by Professor A. N. Talbot. The conclusions he draws from the experiments are the following:—

Little difference is found in the bond resistance per square inch of surface of bar in contact with the concrete, whether the bar is embedded 6 or 12 inches. Evidently a length may be found beyond which the stretch of the steel would cause uneven distribution of the bond stress along the length of the bar and cause failure to begin at the point of the greatest stress in the steel, and thus give results not representative of the real bond resistance. This limitation applies to lengths for use in experimental tests of bond. In simple beams the bond stresses are applied along the length of the bar, and stretch and bond exist together.

The richer mixture of concrete gives somewhat higher bond resistance than the leaner, the values for the 1:2:4 concrete averaging, say, 10 to 15 per cent. higher than the 1:3:5½ concrete. For plain round mild steel rods the average for the bond resistance ranges from 350 to 450 lbs. per square inch of contact surface.

Flat bars gave much lower resistance than round iron bars. Only three tests were made with flat bars, and these may not be representative. It may be noted that the results with flat bars are much lower than tests made elsewhere. It should also be noted that for a bond stress of 125 lbs. per square inch the tensile stress developed in the bar was only 9,000 lbs. per square inch.

The value of bond resistance will depend upon the smoothness of the surface of the bar, the uniformity of its diameter and section, the adhesive strength of the concrete and the shrinkage grip developed in setting. The effect of smoothness of surface and uniformity of diameter and section is seen in tests made with cold rolled shafting and tool steel. The average bond developed with cold rolled shafting and tool steel was 147 lbs. per square inch of contact surface, as compared with about 400 lbs. for ordinary plain, round, mild steel rods. It should be stated that not only was there a very noticeable difference in the smoothness and finish of the surface of the rods, but the section of the cold rolled shafting and tool steel was very uniform, the diameter not varying more than 0.0001 or 0.0002-inch at ¼-inch intervals throughout the length, while mild steel rods will vary as much as 0.0015 inch. It is to be expected that the smoothness and uniformity of section of drawn steel wire will operate to give low values of bond resistance, though,

of course, as the section of the wire is small compared with the circumference, the bond stresses developed when wire is used are relatively small. Attention is called to the fact that in the reinforced concrete beams tested at the University the bond stresses developed in beams failing by tension of the steel, diagonal tension of the concrete or other similar methods amounted to from 73 to 193 lbs. per square inch. Even at the breaking load, then, the bond stress developed in the mild steel rods was far below the bond resistance found in these tests.

COSTLINESS OF THE PENNSYLVANIA CAPITOL.

THE Attorney-General for Pennsylvania having demanded from the architect of the new State Capitol an explanation of his method of inviting bids, the following reply of the architect, Mr. Huston, is reprinted in the *American Architect*:—

In answer to your letter relative to the special furniture and fittings for the new Capitol building, I beg leave to reply as follows:—

The specifications were prepared in the usual manner in my office—that is, a description of the kind and quality of the articles required—and these specifications were prepared by me.

The knowledge I had relative to this subject was obtained during over twenty years in the practice of my profession.

Regarding my knowledge of the "per pound" and "per foot" rule, I would state that this principle of unit prices which you refer to was used by me in the specifications of the Capitol building, of which you have a copy, and which on page 18 read as follows:—"Each bidder must state the unit prices called for on the blank form of proposal; and said prices will be used as a basis in the valuation of changes that may be required in the work and as further stated hereinbefore." The form of proposal, upon which estimates were given by contractors for the construction of the Capitol building, contained the items upon which unit prices were required.

I enclose herewith a copy of this form of proposal for your information, which you will note contains sixteen items, upon each of which an estimate is required, either by foot, yard, perch, thousand, or by the pound. I may also state that the above-referred-to clauses in the specifications and the forms or proposal are similar to those used by architects employed by the United States Government, other commonwealths and city governments, and in good private practice. This being my first public work of this character, when I saw the system had already been adopted in the schedules of the State for years past, containing items calling for articles by the foot and by the pound, it was evident to me that it should be continued and used to cover the equipment of the new Capitol building.

This method is generally used by the trades in making up prices for bids, and is the common practice all over England.

I know in the practice of the arts in all lines the "per foot" rule is applied for the determining of costs and in the giving of bids by the above rule for wainscoting, bookcases, wardrobes, mantels, overmantels, cabinets, &c., and in the schedule of 1904 the items for specially designed furniture for the new Capitol building were framed to extend this principle to tables, chairs, desks and other articles of furniture.

I also know all metals are bought by the weight.

Upon investigation and research for lighting fixtures of good quality and methods for buying same, I found that one of the finest examples for this quality of work and the method of having it performed so as to bring about the best ultimate result was placed in the residence of Mr. William H. Vanderbilt, in New York, where all special lighting fixtures were paid for by the pound in preference to by the piece, and that a more satisfactory and artistic result was obtained by this method.

I had in mind a standard of metalwork for this building which was beyond anything yet accomplished in this country. My precedent for the great bronze standards was obtained from the Pantheon at Rome and the altarpieces in St. Mark's in Venice, where I had replicas made for my guidance in obtaining a standard of excellence in this work.

Generally stated, if a bidder desired to bid by the piece instead of by the foot he had the design of each piece and

a specification at hand. He could find the number of feet from the drawings, which were made to scale, and reduce it to the foot rule as requested by the schedule without any difficulty. There are two systems of determining the quantity of materials, weights and measures, and in many cases the one is used to determine the other.

In regard to the conferences with prospective bidders who are seeking business in my office, there are hundreds of them in the course of a year. I do not recall any of the nature you suggest.

I searched many places for precedents in this country and Europe. I visited Albany, Providence, Boston, New York, Washington and many other places, and necessarily had many conversations relative to this work, for I have done nothing but think and talk of this matter for many years. The only conference I recall relative to the preparation of the schedule for the articles required for the equipment of the Capitol building prior to the publication of the schedules was in a meeting of the Board of Commissioners of Public Grounds and Buildings, at which all members were present, as well as yourself. I then went into the subject at length, and the Board adopted the unit-price system and had it incorporated in the schedule.

I gave my professional judgment, and I now think, as I did then, that it is the fairest system for the State on such unusual work.

No bidders made suggestions to me prior to the preparation of the schedule.

John H. Sanderson (the contractor) did not make any suggestions to me prior to the publication of invitations for bids or while schedules were being prepared.

I have no knowledge of the names of the bidders whose bids were opened. I have no record of them on file. Previous to each advertising I had no conferences or conversations with such bidders. Having had no such conversations, I was not affected in my judgment by the same and did not adopt any suggestions by bidders in whole or in part, and did not incorporate any such into the schedules.

I did not suggest the placing of Item 2 in the schedule and do not know what it was intended to cover. I would further state that I did not suggest any of the items from 1 to 20 inclusive in the special schedule.

I was asked by the Board to prepare such items only as would be required for the special furniture and fittings which would come under my supervision.

My answer to your eighth, ninth and tenth questions is the same as above, as they relate to Item 2.

A special design does not necessarily call for the "per foot" rule, neither does it necessarily for the "per piece" rule; the unit-price system having been adopted for the schedule, it was so adopted to this furniture. A special design is made to order after detail drawings, and is not ready-made from stock. For example, in a room the architectural style of which is French the furniture would be designed in the French style; in a Doric room, Doric detail; in a Corinthian room, Corinthian detail; Greek room, Greek detail; English room, English detail; Gothic room, Gothic detail, &c.

This illustrates to you the theory of design which was applied to the Capitol building, the idea being to produce a harmony of design in each room.

The drawings and specifications were on exhibition in this office on the days authorised by the Board from about May 7 to June 7, 1904. I did not keep a list of the various firms estimating on the work. The drawings were examined during office hours, from 9 A.M. to 5 P.M.

No objections are on the file in this office, and no communications of that character were received, and therefore no report made to the Board for the reforming of the schedule.

You will note on page 14 of the Capitol building specifications the following clause relative to verbal inquiries:—

"Neither the commission nor the architect will be responsible in any manner for verbal answers given to inquiries regarding the meaning of drawings and specifications or for any verbal instructions, whether by themselves, their employes or others, in advance of the award of the contract. The bidder will be responsible for any and every error in his proposal."

A similar clause is in all specifications for this work. The reason for such a clause is, an architect must so protect himself and his clients against any such irregularities as your letter suggests.

I have devoted conscientiously five years of my life to this work.

I was called upon by the Commonwealth of Pennsyl-

vania to design a Capitol commensurate with her dignity. My issue was to produce a building which would combine utility, stability and beauty. I gave my best, and all of the artisans and artists employed on the building have given their best, and I repudiate the insinuations that are being made. We have tried to do our duty honestly and well. If I have made any mistakes, they are mistakes of judgment and not of intention, and I stand ready to do all I can to correct them. I based all my judgments upon the highest precedents, and followed the instructions of my clients to the best of my ability.

In regard to extravagance, I say there is no extravagance—there is richness of design. We must advance artistically as well as commercially, and this building is the artistic expression of the culture of this great State, which will tell of us to coming generations.

Art is not a necessity, but architecture is one of the last refining touches which strikes a problem, and it is richer when embellished by the sister arts of sculpture and painting, as this building will be, and I believe thousands upon thousands of the good people of this and other States will enjoy this work for all the coming years, and the total cost of it of one dollar per cubic foot, including all the sculpture, painting, furniture, document filing cases, vaults, lighting-fixtures, art bronze and all expenses, is reasonable and capable of being favourably compared with any other public or private structure of a like monumental character, and since, in the Capitol building time was one of the important features of the contract, so, in my instructions from the Board, all diligence and despatch would be used. The completion of this entire work within the time of forty-six months and occupied by all the departments of the State is unprecedented.

THE SIMPLON TUNNEL.

AT the meeting of the Institution of Civil Engineers on Tuesday, Mr. Francis Fox read a paper on the Simplon Tunnel. The author said that the chief feature of the route followed was the small altitude above sea-level, 2,313 feet. The Arlberg Tunnel had a maximum altitude of 4,299 feet. The Simplon Tunnel was the longest in the world. Instead of one tunnel for a double line of way, it was decided to make two parallel single line of way tunnels 55.8 feet apart connected by oblique cross passages, and experience had fully justified the choice of this method of construction, but for which it was likely indeed that the work would have had to be abandoned. There were many advantages arising from this arrangement, including improved ventilation, reduced pressure on the tunnel lining, increased facilities of transport and drainage during construction, safety in working the traffic and better facilities for maintenance. The complete tunnel measured 16 feet 5 inches in width and 18 feet $\frac{1}{2}$ inch in height above rail level, being lined throughout with masonry. Only one tunnel had been completed to the full section up to the present time, the second gallery being left as a heading, to be completed when the traffic justified the expense. Ventilation during working was effected by means of fans and the whole works were kept remarkably fresh. When hot springs were met with the air was cooled by means of jets of cold-water spray, and though in the St. Gothard Tunnel a temperature of 93 degs. F. proved in many cases insupportable, yet in the Simplon, owing to the excellent ventilation, a temperature of 133 degs. F. was made bearable. There was a distinct relation between the temperature of the tunnel and the height of mountain above it, and he might point out that the Simplon reached the greatest depth below the surface of the earth at present on record. Work was hampered on the Italian side through a subterranean river and hot springs, and it was eleven months after work on the Swiss side had been abandoned that work at the Italian end was completed. The cost of the tunnel was 3,200,000*l.*, which worked out at about 148*l.* per lineal yard, and the period occupied in construction was 6 $\frac{3}{4}$ years.

The Dean of York has written to the Lord Mayor and Corporation of York requesting that steps be taken to prevent any tramway line being laid down near the Minster, either by the Corporation or by a company. The Dean has sent this communication in view of the tramway proposals now before the public, and the Lord Mayor has assured Dr. Purey-Cust that the matter will be put before the Corporation in due course.

GENERAL.

Mr. George Ayscough Wilkinson, of Monkenholt, Hadley Green, Barnet, and 7 Poultry, surveyor, who died on December 4, left a fortune of 40,345*l.* gross and 40,061*l.* net.

A General Assembly of the Royal Scottish Academy was held on the 4th inst., Mr. Hippolyte J. Blanc, deputy-president, presiding. The following associates, recently elected, were presented with their diplomas and relative medals:—Mr. R. M. G. Coventry, painter; Mr. Percy Portsmouth, sculptor; and Mr. James Miller, architect. The general assembly unanimously resolved to place the following artists on the list of honorary members of the Academy:—Sir Thomas Drew, P.R.H.A.; Mr. John F. Sargent, R.A.; and M. Auguste Rodin.

The Stockport Town Council have authorised an application to the Local Government Board for permission to borrow 21,000*l.* for the completion of the town hall. It was stated that the original estimate for the building was 66,000*l.*, but there was such a hurry to get the foundation-stone laid that several items were overlooked. The total cost would be just under 100,000*l.*

A Proposal has been made at York that the old moats should be laid out for recreation purposes, but a committee of the City Corporation which has had the subject under consideration says it cannot recommend that this should be done.

The Bishop of Liverpool is about to open a fund for the collection of 100,000*l.* He states the diocese requires twenty additional churches, at least forty additional parish halls for Sunday schools, and vicarage houses.

The Fate of the Ruins of Glastonbury Abbey remains undecided, and the property is still in the market. A Taunton antiquarian has received a communication from the Office of Works stating that they have no intention of buying the ruins.

The Authorities of Chester Cathedral take precautions against the risk of fire in the building. Some years ago the insurance of the cathedral was substantially increased, and the amount to which the fabric itself is protected is 64,800*l.* In addition there are two separate insurances for 1,600*l.* and 250*l.* The building is furnished with fire-extinguishing appliances.

Lord Aldenham is willing to provide the cost of alterations to the organ at St. Albans Cathedral, which at present occupies a position above the St. Cuthbert's screen, separating the nave from the choir, and seriously impeding the view from west to east. It is his intention, subject to the necessary faculty, to have the organ divided into two parts and inserted in the arches on the north and south above the screen, and at the same time to have it enlarged. Plans for the work have been already prepared by Messrs. Abbott & Smith, of Leeds.

The Autumn Exhibition of Pictures at the City Art Gallery, Manchester, which opened on Tuesday, September 18, was closed on Saturday. The admissions during this period numbered 122,805, a considerable advance on the number recorded at the last exhibition (93,690), after allowing for the difference in the duration of the two exhibitions. The sales at the recent exhibition have numbered only twelve.

In the Cloister of the church of St. Bartholomew the Great, West Smithfield, there has been placed the manuscript of a book written in 1554 by William Peryn, the Dominican prior of St. Bartholomew's during Queen Mary's reign. The manuscript has been presented to the church by a member of the restoration committee.

The Restoration of the west end of Hereford Cathedral, the cost of which is estimated at 14,800*l.*, has been suspended for a year owing to lack of funds. Dean Leigh has now issued an appeal for 3,000*l.* for its completion. Six new subscribers have promised 100*l.* each. The work was begun six years ago, and all that now remains to be erected is the front of the south aisle.

The St. Annes Urban Council decided to apply to the Local Government Board for powers to borrow 3,500*l.* for extending the South Promenade in accordance with the surveyor's scheme. An ornamental lake will run the entire length of the extension, and there will also be a rustic bridge, a fountain and a fish pool. On the sandhills will be placed shelters, arbours and pavilions. A bandstand with seating accommodation for 1,000, amphitheatre style, is also provided for. A feature of the extension will be an ornamental lighthouse rising 50 feet high out of the sandhills, with a look-out on the top.

The Edinburgh Art School Committee have approved of a plan by Mr. Peddie, architect, in which he has rearranged Mr. Pittendrigh Macgillivray's plan so as to bring the cost to about the 40,000*l.* which was the sum agreed to be spent on the building. The committee decided to advise the Lord Provost's committee of the Town Council to approve of the plans, take steps to have the matter gone on with and have estimates prepared.

The Manchester Education Committee propose to purchase the Platt Hall estate, containing 77 acres, to erect a college or colleges, and to use the surplus lands for playing fields.

Messrs. Waterlow, Bros. & Layton, Ltd., have produced their "Architects' Diary," with its complete list of members of societies, building memoranda and other information, the paper as usual being of fine quality.

Mr. Banister Fletcher will lecture at the University of London on Monday upon "The Temples of the Romans."

Messrs. Chatterton & Couch, A.A.R.I.B.A., late of 6 Gordon Place, have removed to 82 Victoria Street, S.W.

The Health Committee of the Sheffield Corporation recommend an expenditure of 43,850*l.* on enlarging all the public baths of the city, and providing sites for new baths for Walkley, Darnall, Brightside and Wincobank.

The County Councils of Anglesey and Carnarvonshire have declined to accept Telford's suspension bridge unless a large sum was granted for the maintenance of the structure.

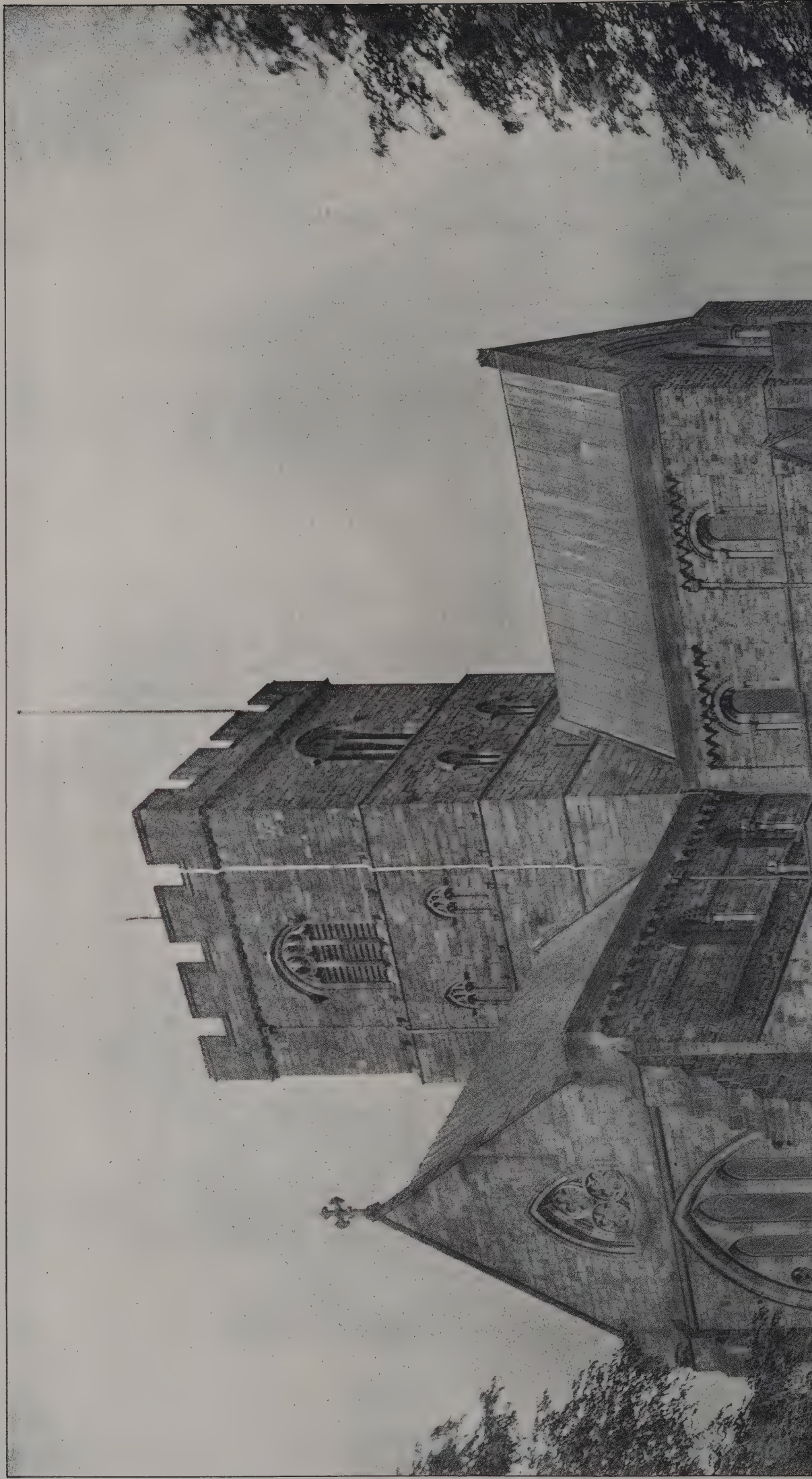
A Design by Mr. L. Fritz Roselieb, of Clapham, has been adopted for the drinking fountain, 21 feet high, surmounted by a figure of St. George, which is to be a memorial of Sir Wilfrid Lawson at Aspatria.

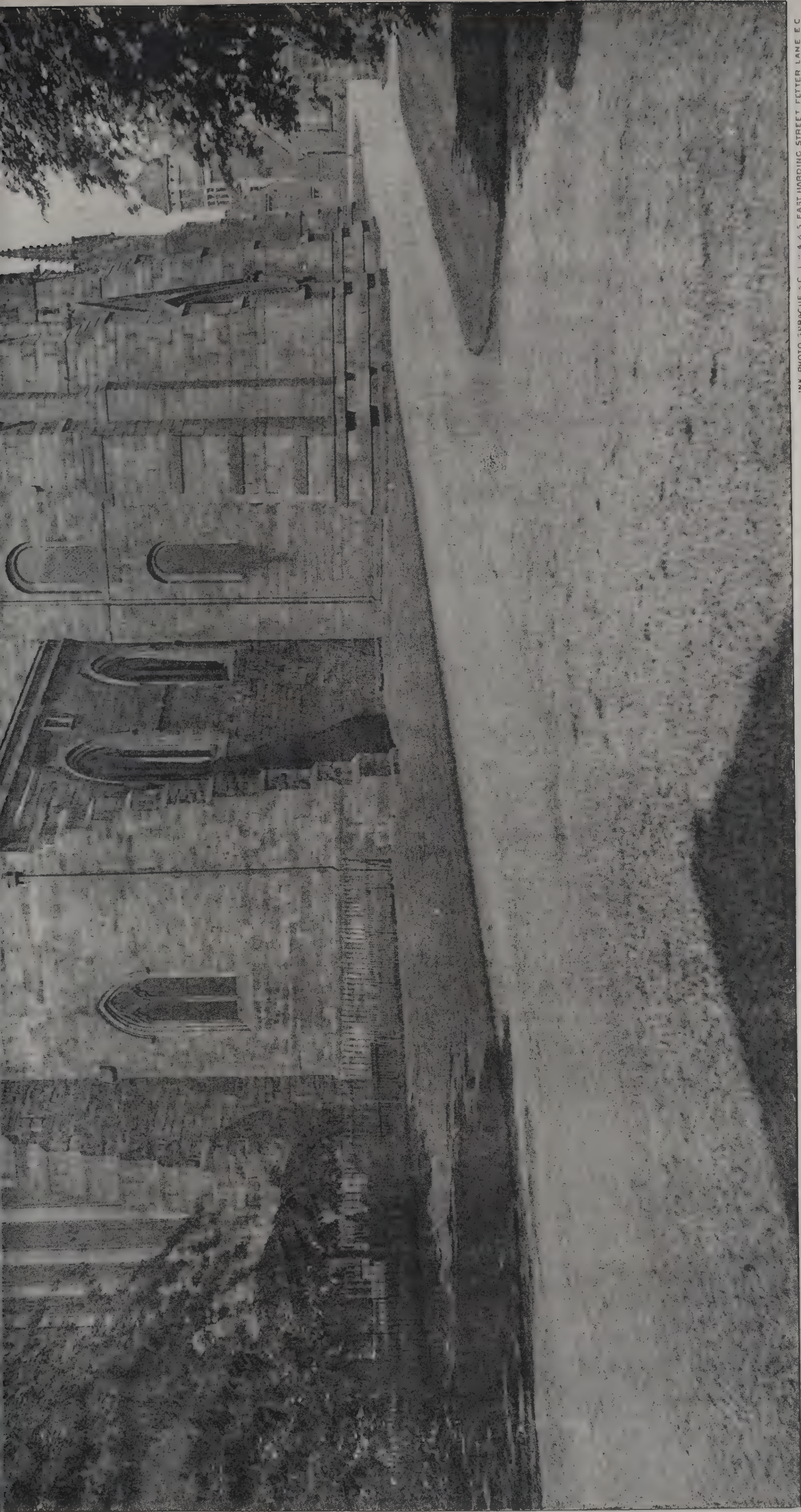
The Manchester Cathedral authorities have removed from the north aisle of the choir the memorial-stone to Sir John Huntington, the first warden (from 1422 to 1458), whose rebus—a huntsman with dogs in chase and a tun—is to be seen on either side of the choir arch.

Mr. Frank H. Mason, the American Consul-General at Paris, in a letter to the Washington Bureau of Manufactures, discusses the underlying reasons why France excels in the production and sale abroad of such a wide range of manufactured goods. He considers the principal one is the national instinct of artistic taste, fostered and developed by education and governmental influence until it has become a national attribute. It is this which enables French ateliers and workshops to turn out the choice products which defy the tariff walls of other nations, and make Paris the Mecca not only of a vast multitude of cultivated amateurs, but of the merchants from foreign countries who deal in the choicest and most valuable forms of merchandise. France is industrially prosperous because she commands the rarest and surest of assets—the æsthetic taste which creates models and standards for other peoples, and the consummate handicraft which multiplies in the product ten, twenty, or a hundred times the value of the material of which it is composed.

The Executive Council in charge of the arrangements for the Scottish National Exhibition that is to be held in Edinburgh next year have agreed to appoint a Scottish architect of standing to act as assessor in the competition for plans, and practically to adopt the regulations as to architectural competitions prepared by the Royal Institute of British Architects. In the instructions given to architects it is pointed out that provision must be made for a conservatory shelter, a concert hall to accommodate 2,500 people, with platform and accommodation for large orchestra and organ, a permanent bandstand and a bridge over the Water of Leith. The architect of the design that is awarded the first prize will be appointed architect of the exhibition, the author of the second prize design will receive 100*l.*, and the author of the third 75*l.* Architects will be advised by the executive to keep in view, in preparing their plans, that the entrances to the grounds are to be:—(1) By the bridge over the Water of Leith, adjacent to the car terminus at Gorgie; and (2) by Balgreen Road, which probably will be the main entrance. It is also suggested that the architects should show a general scheme of laying-out the grounds, garden and river for exhibition purposes, and that in connection with the buildings they should introduce any exhibit, amusement or other attraction which they may consider desirable. It is expected that the work of erecting the exhibition buildings at Saughton will be begun early in the summer.

The Amstert, Jan y 11th 1907.

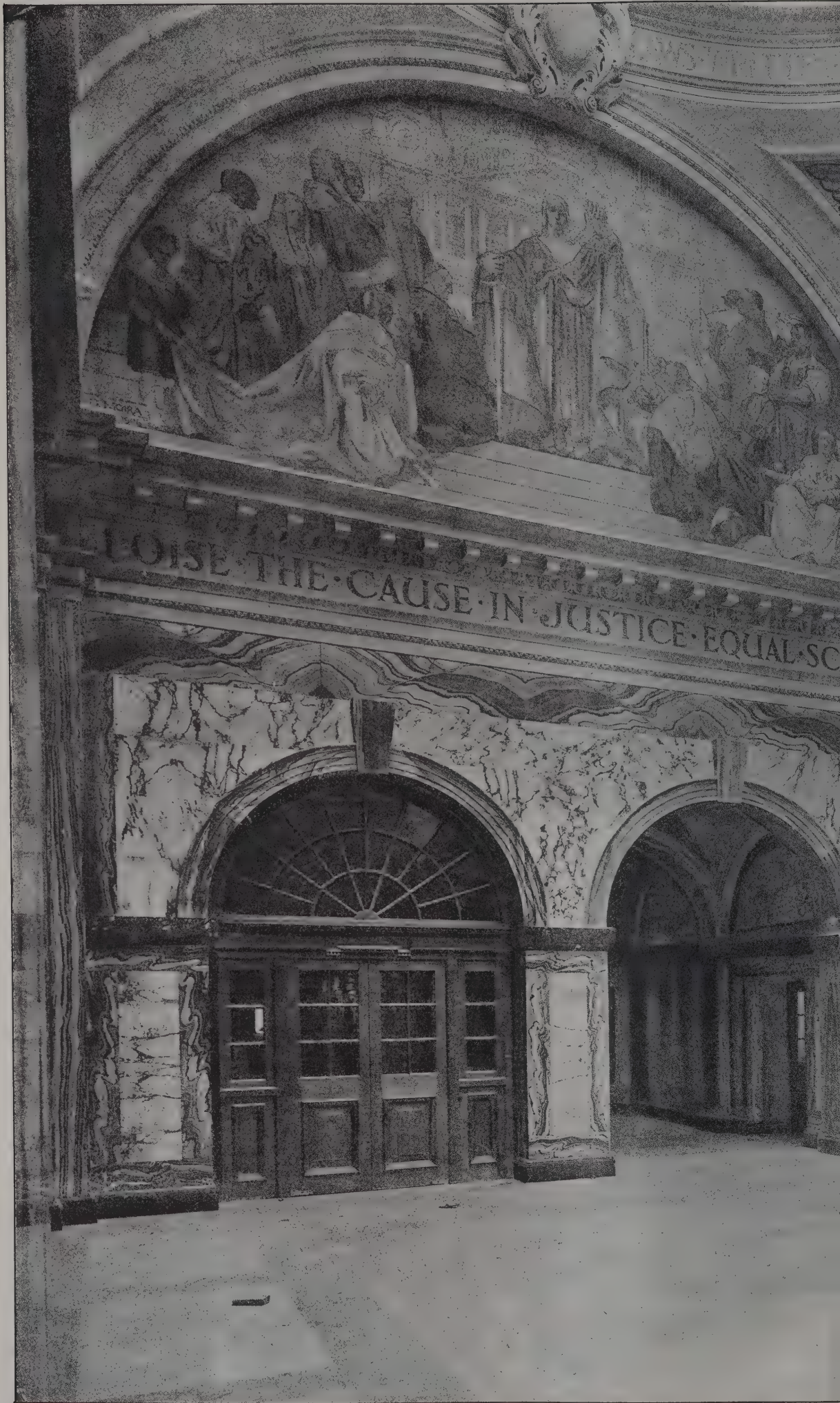




INK PHOTO SHACUE & C. L. 4 & 5 EAST HARDING STREET FETTER LANE E C

CATHEDRAL SERIES, No. 590.—CARLISLE: EXTERIOR, FROM SOUTH-WEST, SHOWING THE MUTILATED NAVE.

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PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

NEW SESSIONS HOUSE, OLD MOUNT

E. W. MOUNT

May 11th 1907.



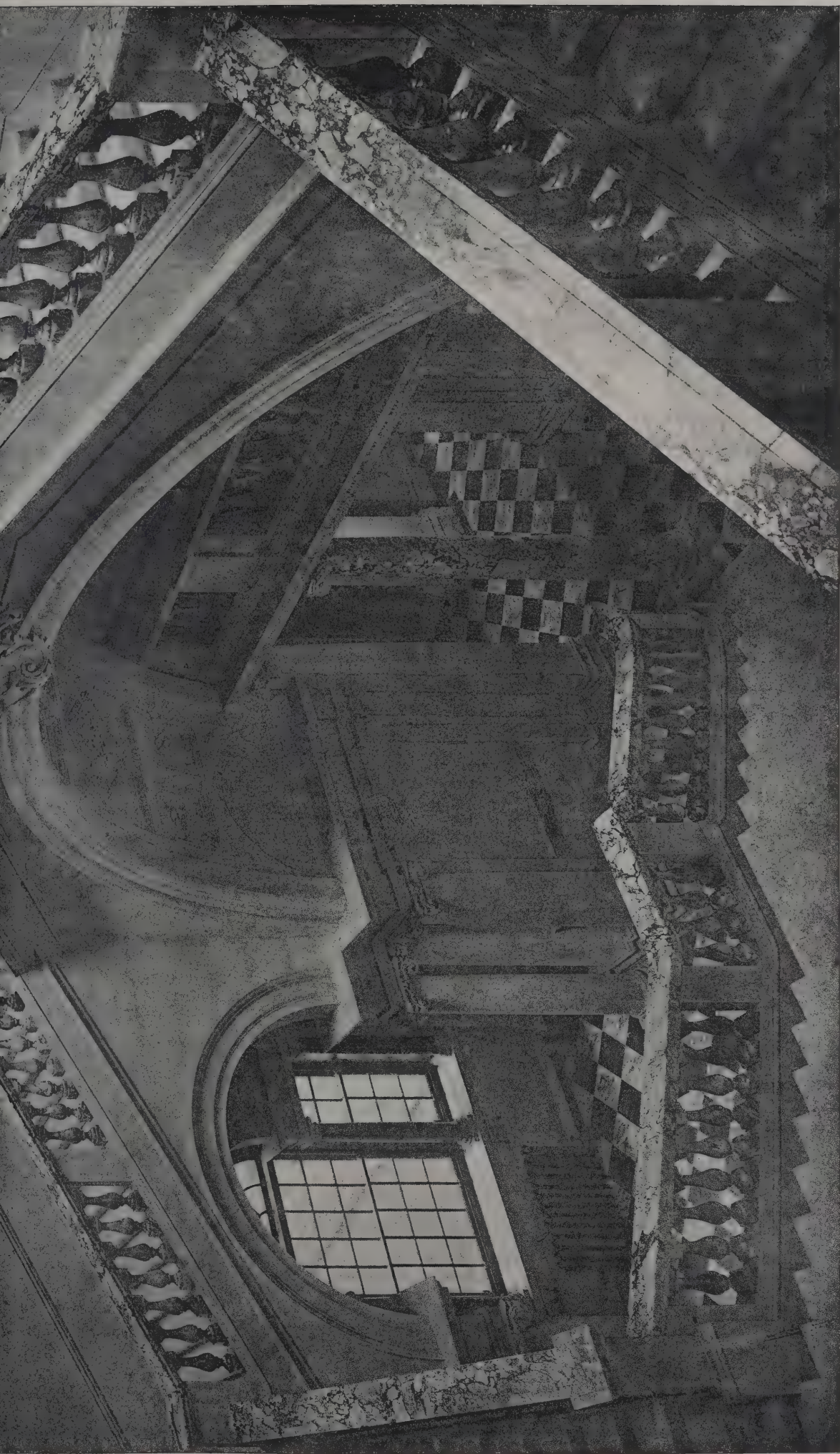
"INK- PHOTO" SPRAGUE & CO. LTD 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

LEY, E.C.: PART OF GREAT HALL.

F.R.I.B.A., Architect.

The Architect, Jan. 9 11th 1907





PHOTOGRAPHED BY S. B. BOLAS & CO. OXFORD STREET, W.

INK PHOTO. STAIRCASE : C. L. 4 & 5 LAST HURDING STREET FELTER LANE, E.C.

THE NEW WAR OFFICE, WHITEHALL: PRINCIPAL STAIRCASE, TOP FLOOR.

The late WILLIAM YOUNG, Architect.

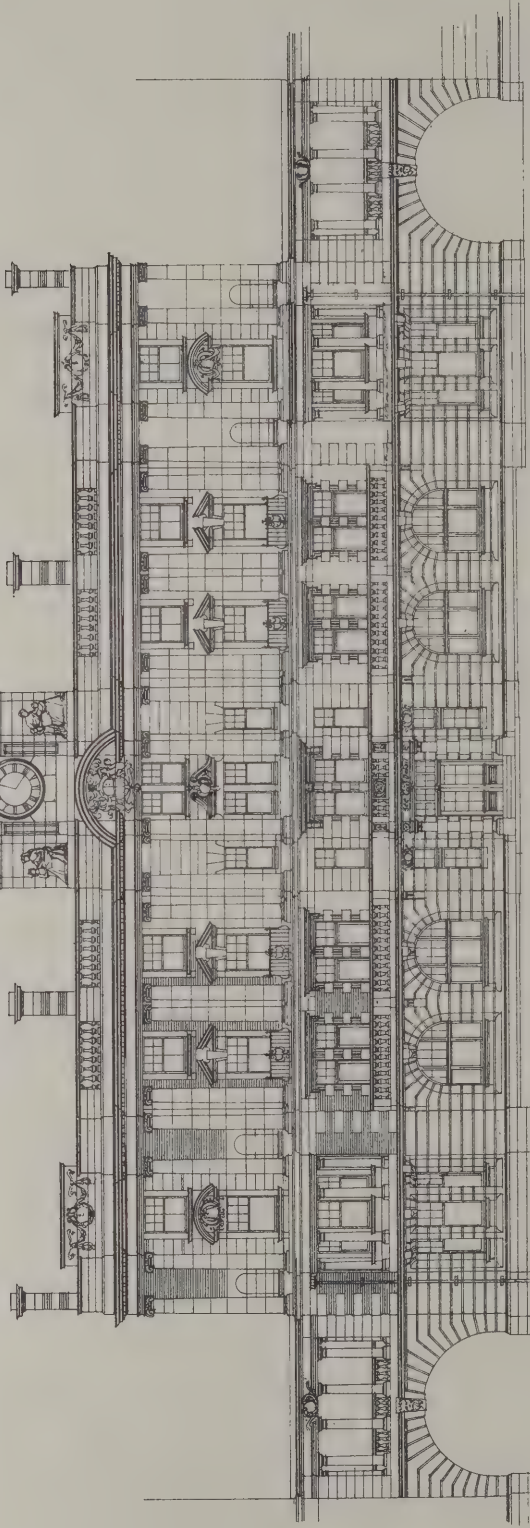
Carried out by CLYDE YOUNG, with the co-operation of SIR JOHN TAYLOR, K.C.B.

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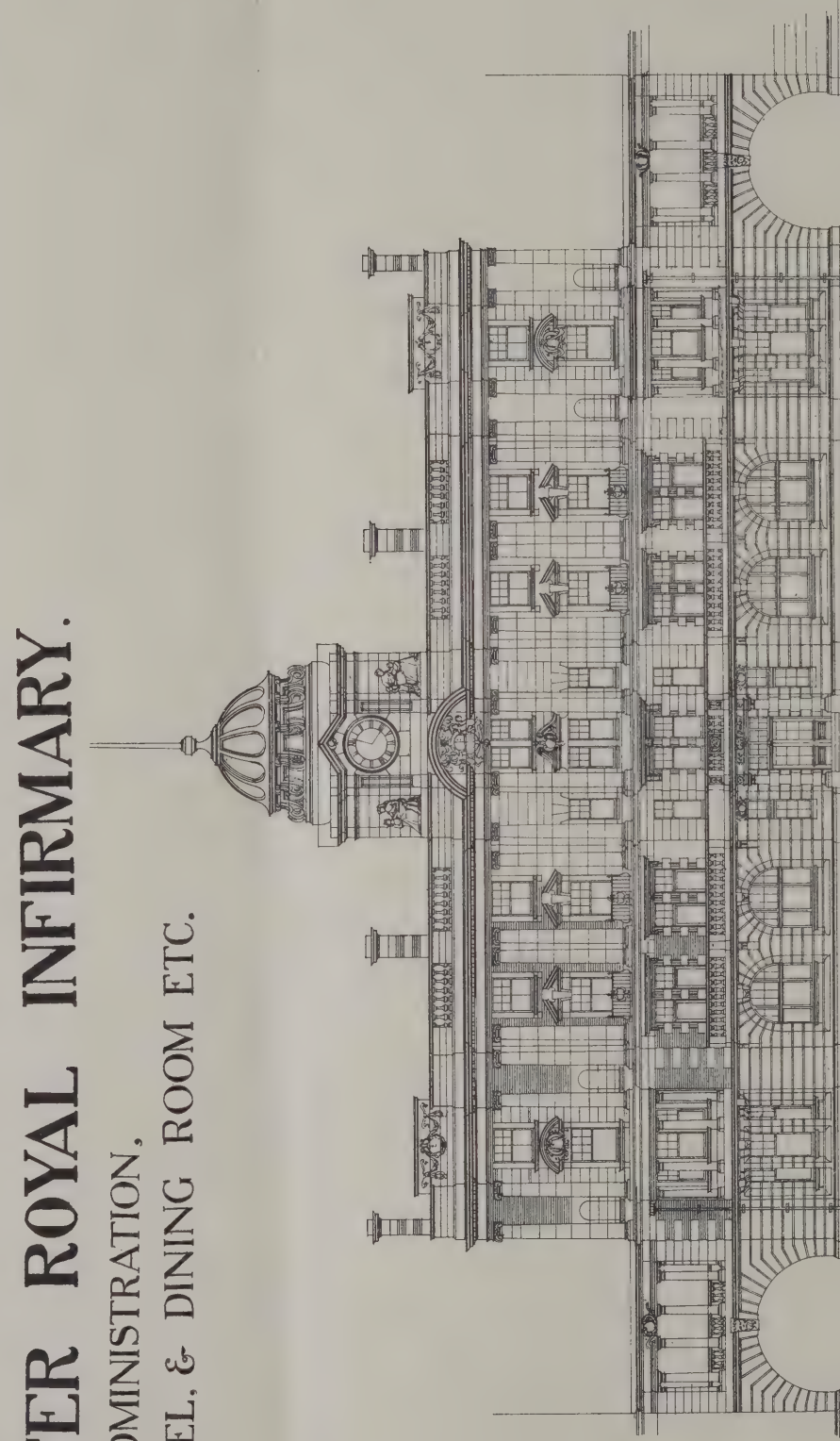
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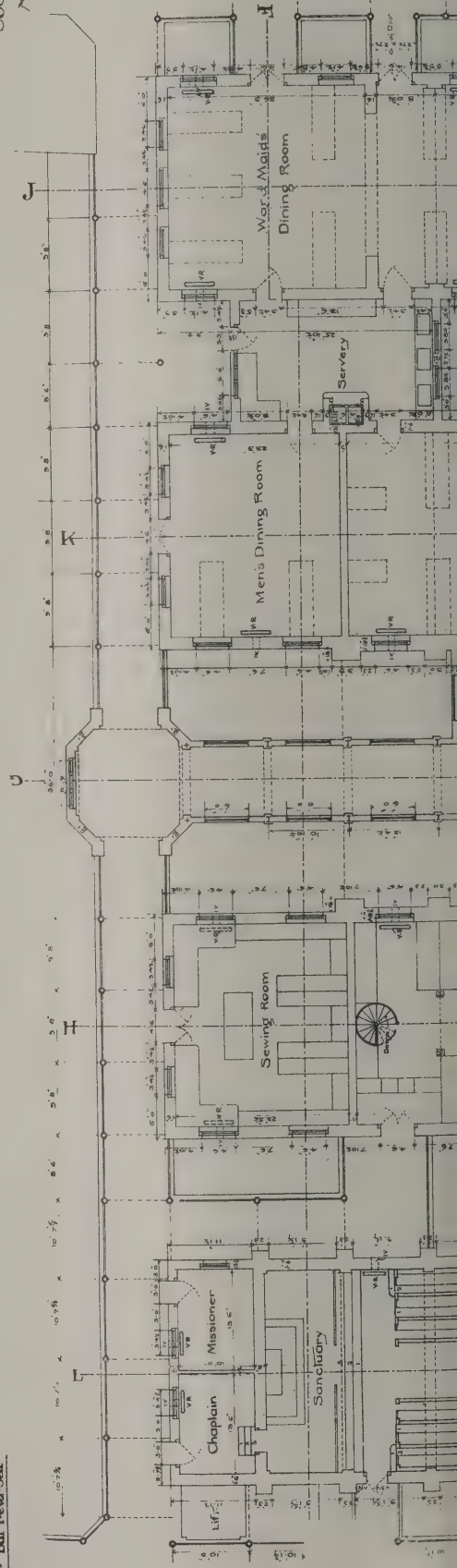


AB: South Wing similar but reversed.



ELEVATION OF

North Side, similar but reversed



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The Architect.

THE WEEK.

THE president of the Royal Hibernian Academy, Sir THOMAS DREW, has informed an interviewer that the Academy, mindful of its trust towards its charter and foundation, and of the position of an academy of arts in other countries, has been prompt, by resolutions already published, to repudiate the "recommendations" of the "majority" report, and would under no circumstances accept at the hands of the Treasury any obligation for paltry repairs of its old buildings in Lower Abbey Street, or its benevolent suggestion of a surrender of its independent charter, such as it is, for some other. If the Academy could become independent of State aid it would be advantageous, for more strenuous efforts might then be made to render exhibitions attractive and to induce the students to make more constant efforts for advancement. That can only be done by self-sacrifice. If Irish pictures were more often seen in the exhibitions of the Royal Academy, and if they had acquired a value in the English market, there can be no doubt that people in Ireland would become more appreciative of their countrymen's talents. We live in an age of tests, and unfortunately Irish artists shirk those which are considered to be decisive. They paint and draw for their easy-going countrymen alone, and people who assume they are possessed of taste are dissatisfied, it may be from applying standards which are not adapted to the circumstances of Ireland.

AMONG the sculptors who may be said to represent the new era in England was Mr. EDWIN ROSCOE MULLINS, who died on the 9th inst., in his fifty-eighth year. He was one of the students who issued from the Lambeth School of Art. Then for a time he studied in the schools of the Royal Academy, and afterwards he worked in Vienna and Munich. He began exhibiting in the Royal Academy in 1873, and between that time and the present there were only three or four years in which he was not represented. His portrait busts were numerous, and included Mr. PRESTWICH, the geologist, Sir ROWLAND HILL, the Rev. J. MARTINEAU, VAL PRINSEP, R.A., Sir EVELYN WOOD and others. He early gained a reputation by his representation of children. His statuettes were so attractive it seems strange that no art dealer was to be found who would endeavour to reproduce them, for it might be supposed they would be as popular in England as similar works are in France and Germany. Although examples could not be shown in the Academy, he rendered good service to architecture by his decorative works. Among the public buildings where his work is to be seen are the town halls of Sheffield, Hackney and Croydon. He believed that the subjects for decoration must vary according to the nature and object of the building itself, and the sculptor should not be bound by any hard and fast rule concerning applicability. Unless he is allowed full freedom it is likely that a lifeless uniformity will be the result. Nor did he consider modern costume was an obstacle to the representation of modern men in public buildings, for he argued that the figures of GOETHE and TURNER on the podium of the Albert Memorial are as interesting as any of their companions who are in fancy dresses. ROSCOE MULLINS appeared destined to execute many public works, but those we have from his hand are sufficient to give future generations some idea of his powers as an artist.

THE question of local *versus* general tendering arose in connection with a new library at Hove. Mr. CARNEGIE offered to give 10,000*l.*, and on the first trial the designs submitted in competition were not considered satisfactory by the assessor. The second attempt was

more successful. The tendering for the building was close, and the lowest, which came from Messrs. MINTER & Co., of Putney, amounted to 9,999*l.*, which certainly was very near to the sum at disposal. The library committee by five votes to two recommended that the tender of Messrs. PARSONS & SONS, a local firm, which amounted to 10,238*l.*, should be accepted. Mr. F. G. MINTER having heard of the proposal wrote to the town clerk expressing his surprise, stating that his firm had gone to the expense of preparing estimates in the belief that the lowest tender would be accepted providing the firm was competent to do the work, and he appealed to the Council for fair treatment. They had, he said, already carried out several Carnegie libraries; his firm would employ the same amount of local labour as any local firm. It must be admitted the choice between the two contractors was difficult, for Messrs. PARSONS were said to be among the largest ratepayers of Hove. A long discussion took place, but eventually fair play prevailed, and the Council decided by twenty-two votes to eleven on the acceptance of the lowest tender. It would take a large space if we endeavoured to explain why it is that local firms so often fail in the contest with those who live at a distance. The struggle for existence in London is so intense that it has an effect upon the productive power of all classes. Work is executed more leisurely in the provinces, and although the difference in any branch of trade may be very slight, yet on the whole it becomes a sensible advantage. In that way, no doubt, the 2½ per cent. difference between the two tenders for the Hove library may be accounted for.

OWING to the resignation of Mr. JOHN HUTCHISON, sculptor, who filled the office for twenty years, Mr. HIPPOLYTE BLANC has been elected treasurer of the Royal Scottish Academy. According to the *Scotsman*, Mr. BLANC, although of French parentage, was born in Edinburgh. He was a pupil of the late DAVID RHIND, architect, and for two years before engaging in the practice of his profession on his own account was chief assistant in the office of H.M. Board of Works. He was elected an Associate in 1892 and Academician in 1896. Mr. BLANC, who is a Fellow of the Royal Institute of British Architects, a F.S.A.Scot. and a J.P., has held many honorary positions. He has been several times elected President of the Edinburgh Architectural Association, he has been vice-president of the Scottish Society of Arts and President of the Edinburgh Photographic Society. Among other public buildings he has designed and erected are the Thomas Coats Memorial Church, Paisley; St. Cuthbert's Church, Edinburgh; the Edinburgh Village Asylum, Bangour; and he was the architect of extensive restorations, including that of the Old Parliament Hall at Edinburgh Castle. He is the author of numerous published articles on architectural and archæological subjects. At the same meeting Mr. W. D. M'KAY, R.S.A., the landscape-painter and author of a book on the Scottish School of Painting, was elected secretary in succession to Mr. GEORGE HAY, R.S.A., who was secretary for a quarter of a century.

THE directors of the Northern Polytechnic Institute, Holloway, have done well to engage Mr. HUGH STANNUS to deliver a course of twenty lectures on "The Evolution of Architecture," from Egyptian beginnings to "The New Style in Britain." The first lecture was delivered on Wednesday, and the last will be given on July 3. The fee for the whole course is only 15*s.* The lectures will be delivered on Wednesday afternoons from four to five, and they will be illustrated by slides, drawings, models, &c. The students of the Holloway Institute as well as others now have an opportunity of obtaining a large amount of valuable information from a competent teacher at a trifling cost, and they should not fail to take advantage of it.

SIXTY YEARS AGO.

THE selection of a period which is separated from our own by sixty years has the sanction of the illustrious WALTER SCOTT. When he started his incomparable series of novels he said the title of the first was selected with grave deliberation. Happily for him "Tis Sixty Years Since" was sufficient to recall a kind of life which was strange to the majority of the readers of "Waverley." But in modern times such a number of years are not marked by events like those which were described by SCOTT. The survivors of men who lived in 1847 are not few, and happily some among them will, we know, read this article. They may be dissatisfied with it, for few writers are competent to restore the past and to give a picture which witnesses can confirm. All we propose to offer are some incidents which occurred.

If compared with the revolutionary year which followed it, A.D. 1847 may appear to be uneventful. But it was not without its importance on the art of England. It was then ROBERT VERNON presented his great collection of the works of British artists to the National Gallery. The extent of it is not to be measured by the number of pictures now to be seen in the rooms assigned to English art. He possessed a great many other paintings. But the authorities preferred to make a selection which, it must be allowed, is extensive, for there are over 150 paintings. It is remarkable that the donor when purchasing chose all the paintings himself, for he could rely on his unaided judgment, and he always preferred to buy his pictures in the studios of the artists rather than have recourse to agents. Prior to 1848 there were donors of pictures in England; but Mr. VERNON was the first whose gifts were on a scale of princely munificence. Since that time the presents of pictures and drawings to public galleries from individuals have often been on a scale which suggests that Mr. VERNON's example will be always effective.

The VERNON collection enabled ordinary English people to study modern works for the first time. Academy exhibitions are like spectacles which pass quickly. The National Gallery in 1847 was mainly representative of Old Masters and of foreigners. It possessed a few portraits by REYNOLDS, landscapes by RICHARD WILSON and GAINSBOROUGH, a classical painting and a Scriptural painting by BENJAMIN WEST, a portrait of JOHN KEMBLE by LAWRENCE, and some examples of DAVID WILKIE. VIARDOT was amazed when he could see no specimens by LANDSEER or other contemporary artists in the Gallery, and water-colour art, which he considered to be especially the national art, was rigorously excluded. Mr. VERNON used occasionally to permit people who applied for permission to see his paintings in his house in Pall Mall; but, by making over the property to the country, he enabled the nation to realise for the first time that modern British artists could produce works possessing an interest which was absent from examples by older and, it may be, greater painters.

The inhabitants of the Metropolis and visitors to London possessed an advantage in being able to see such works as well as the other examples in the National Gallery, while in the provinces pictures were rarely enjoyed. In 1847 the Trustees were subjected to much criticism. They were cramped for space in Trafalgar Square, for the area of the Gallery sixty years ago was much less than it is at present. The consequence was that several paintings which were offered gratuitously had to be rejected. We can now suppose that the Trustees were justified, for they wished to establish a high standard. Sir ROBERT PEEL, however, advised them that they should accept all meritorious works which were offered to them, and if they could not be retained for the National Gallery, they should be sent to towns in the provinces, where they would be useful and serve as first instalments of public collections. Such a suggestion reveals to us the benighted state of

the provinces. No statesman in 1907 would venture to recommend that works of art which were not good enough for London were adapted to please people in country towns. This circumstance by itself suffices to indicate how much progress is attained outside the Metropolis in acquaintance with works of art.

The year might also be considered memorable for another reason, as in 1847 was held what became known as the Westminster Hall Exhibition. The erection of the Houses of Parliament inspired a project for decorating the buildings with frescoes and other paintings in a systematic manner like those in France and Germany. A Commission of Fine Arts was appointed; the two historians MACAULAY and HALLAM were among the members, for historical paintings were to have preference. They resolved that the House of Lords should be first undertaken and that frescoes, stained glass and statues should be prepared for its adornment. The subjects were fixed and the artists appointed for that purpose. But it was also considered desirable that pictures should be placed in other parts of the buildings, and it was therefore proposed that artists should prepare examples of their works which they deemed to be suitable. A large number of paintings were submitted, and they were exhibited in Westminster Hall. With the exception of two members and two Associates the Academicians of the time stood aloof. Three pictures at 500*l.* each, three at 300*l.* each, and three at 200*l.* each were recommended for purchase, but the money paid for them was obtained not from the Treasury, but from the shillings which were given for admission to the exhibition. The Commissioners, having gauged the extent of the talent which could be employed, prepared a vast scheme for the future decoration of the palace at Westminster, but it was not fully realised, and never will be apparently. In spite of the partial failure the project was not without its advantages. It enabled people to perceive that the decoration of a building could serve educational purposes, and it also revealed that many painters who could produce pretty pictures which were made the subjects of engravings were incompetent when they attempted to treat events which were adapted to a public building. Failures have been important factors in the education of Englishmen, and among them we must include the Westminster fiasco.

The discussions which related to the management of schools of design in 1847 would by themselves be sufficient to show that men who assumed to be authorities on education, manufactures and art did not possess the ability necessary to deal with such a problem. Unfortunately it cannot be said that after sixty years of muddle the solution has been arrived at. Investigations were made by committee after committee, teachers were changed, new rules were laid down, amended and superseded, and yet in December the authorities of the school in Somerset House were as doubtful about what had to be done as in the previous January.

The Westminster project made painters acquainted with the principle of competition, but they were sceptical about its value. One curious instance may be mentioned. A couple of speculators offered 1,000*l.* for the best representation of the Baptism of CHRIST in the Jordan. It was expected that a large number of works from the Continent as well as England would be submitted and the materials provided for a profitable exhibition. But on the appointed day it was found there were only eleven paintings. They were deposited in the Chinese Gallery at Knightsbridge. One of the conditions of the competition was that the competing artists should become the assessors and jurors. They were first to select ten of the paintings, then five out of the ten, and eventually one. The first operation was not difficult, for it simply consisted in determining who was to be excluded, and a Mr. AP HUGH became the victim. Then the fun commenced. Each painter naturally gave a vote for himself and added four other names. Some artists, after a few turns, retired in disgust, and

eventually the voting became as erratic as that of suffragettes. Some time later it was declared that the competition ended in favour of Mr. Wood. But whether the speculators were unwise to part with their money under such extraordinary circumstances was never known.

One distinguished competitor of 1847 should not be overlooked. In 1845 the young JOHN EVERETT MILLAIS entered into a contract with an ex-serjeant-at-law to paint small pictures or backgrounds, receiving in return 100*l.* a year. There was a row between the parties. But in 1846 the lawyer paid "Master MILLAIS" 5*l.* for a sketch. In 1847 MILLAIS sent *The Widow's Mite* to the Westminster Hall Exhibition. It measured 10 feet 7 inches by 14 feet 3 inches. He also entered for a prize of 100*l.* offered by the Scottish Art Union for outlines illustrative of events in the life of ROBERT BRUCE. MILLAIS lost the prize by one vote, but he was awarded an extra prize of 60*l.* In the same year he painted *Cymon and Iphigenia*, which might be taken for one of ETTY's works. There was an important architectural competition during the year for the Army and Navy Clubhouse. But after designs were selected the committee, although paying the premiums, refused to adopt any of them. A limited competition of six architects was afterwards arranged, and eventually Mr. S. SMIRKE designed the building in Pall Mall which recalls the library at Venice.

The British Museum in 1847 obtained the fragments from Boudroum which formed part of the Mausoleum. The Knights of Rhodes had used the slabs for repairing the walls of their fortifications. When they were first thrown down on the floor of the room containing the Phigaleian sculpture they were not appreciated, for they were supposed to represent works executed in a period of decadence, and the Greeks and Amazons who were shown fighting were condemned as too theatrical. But later studies have caused them to be valued much higher, and some of the figures are not unworthy of SCOPAS, who was employed with three other artists on the memorial. The arrangement of the Mausoleum has given rise to much speculation, and the remains are constantly sought out by visitors to the Museum.

Last week we printed the evidence of the President of the Royal Scottish Academy. It is confirmed by transactions in 1847. The Royal Institution at an earlier time claimed to be under the direction of men of such rank and station as to prevent the possibility of personal views being attributed to their management, while it was otherwise with the artists. In consequence the artists seceded, and the Royal Scottish Academy was founded in 1826. In 1847 the Academy received notice to quit from the Board of Manufactures and the Royal Institution, and it was declared that the exhibition of that year was to be the last held in the galleries. Afterwards Mr. SHAW LEFEVRE was sent down by the Government, and he recommended that provision ought to be made for the Scottish Academy and a building erected for the annual exhibitions. That was the origin of the twin-building which was divided between the Scottish Academy and the National Gallery, with the unfortunate results which the President lately described.

There are a few artists among us who were labouring in 1847. Mr. GEORGE AITCHISON, R.A., was represented in the Royal Academy by a "Design for a Sepulchre," and among the exhibitors were Mr. W. P. FRITH, Mr. J. C. HOOK and Mr. J. SANT. We hope they may long remain as chroniclers of that time.

The Council of the Royal Manchester Institution have arranged for a series of midday addresses on the pictures in the City Art Gallery. These addresses or descriptive lectures have been undertaken by Mr. J. Ernest Phythian, and are being delivered in the Exhibition Gallery, Mosley Street, by permission of the art gallery committee each Wednesday at 1.20 P.M., and last for half an hour only.

THE BISMARCK MEMORIAL, HAMBURG.

HEINE'S saying about the Germans having the dominion of the air, although it may seem to be contradicted by their success in worldly affairs, helps to explain many of their intellectual and artistic characteristics. By soaring above the earth there is not only a chance of respect for abstract truth, but notions of quantity cease to correspond with those of commonplace mortals. German æsthetics is not always applicable to realisation in sublunary materials or by men and women who insist on rewards in current coin. When attempts are made they generally display a tendency towards the colossal, as if paying tribute to the Infinite. This fact is peculiarly confirmed by the history of German sculpture.

In Mediæval times there was a remarkable correspondence between the architectural details and the carved figures and ornament. The proportions of the churches might not be altogether satisfactory if judged by architectural rules or compared with French or English examples. But in a great many important parts it seemed as if the carvers had got hold of the masons' work. The Flamboyant tracery is often wonderful, but we doubt if it could have originated with an architect. The visitor who stands in admiration before the pulpit in Strasburg Cathedral cannot help being amazed at the delicate details. But at the same time he must approve of the foresight which enclosed it with iron railings in order to prevent the carving from being touched by a finger or by feet ascending the stairs. The Sakramentshäuschen in Nuremberg, the tomb of St. SEBALDUS, and many other examples could be referred to which suggest that the spirit of the early carvers in ivory long prevailed in Germany. In those days, however, a homely mysticism prevailed there and abstractions were not much favoured.

In modern times, beginning with the nineteenth century, when the German spirit received an impetus from the heroic efforts against the Napoleonic armies, the sculpture seemed to become entirely emancipated from all trace of the Gothic spirit. In no art was the peculiarity of GOETHE'S "Faust" so strongly manifested, for as the Mediæval professor in the poem becomes enamoured of HELEN of Troy in her Spartan palace, so the German sculptors boldly sought to rival the Greek masters. The colossal bronze by which SCHWANTHALER represented *Bavaria* might be taken as one proof typical of the new spirit. Sometimes conditions which could not be disobeyed compelled the sculptors to adopt a small scale for their works. It is doubtful whether any one of the memorials of the Emperor WILLIAM and the war with France in 1870 affords as much enjoyment to foreigners as the memorial of FREDERICK THE GREAT in Berlin, with its attendant figures of eminent Prussians, which would now be considered simply as statuettes and not suggestive of the heroic. The space which that work had to occupy in the principal thoroughfare of Berlin was very limited, and RAUCH was obliged to make the best of it. But the sculptors who were commissioned to execute memorials of the latest triumphal war found that if space was not at first available it was provided, and in consequence all the groups of the Emperor and his lieutenants are of exceptional dimensions.

It is unnecessary to say that in the treatment of sculpture serious consideration should be given to the scale of the figures. It is not sufficient to make a perfect model on a small scale and then obtain an enlargement by processes which are more or less of a mechanical sort. Much as we admire German sculpture, we must own that all of the memorial groups we have seen have not impressed us in proportion to their size. A great many of them would undoubtedly appear more creditable to the creators if the scale could be reduced. No doubt works which have to be executed for private patrons must be comparatively small, and practice with them is unfavourable to that condition of mind and hand which can impart largeness of style to masses which must

be of large dimensions. In small works detail is allowable. But one of the conditions of grandeur consists in the omission of parts which under different circumstances are permissible. The works of the Egyptians and those of MICHEL ANGELO may be taken as examples of the operation of this law of sacrifice at very different times.

It is on account of the daring experiment by Herr HUGO LEDERER, the sculptor, and Herr EMIL SCHAUDT, the architect, that we refer to the Bismarck Memorial erected in Hamburg, of which an account has been published by Herr WASMUTH, of Berlin. The Iron Chancellor was not a friend of Great Britain, and we have no desire to glorify him. But art should be respected for art's sake, and there can be no question that the Hamburg Memorial testifies to the inventiveness, courage and scorn of conventionalities of the two artists who were its creators. It is a very big work, but that is not its sole characteristic, for from the foundation to the summit it is characterised by largeness, which is due not only to the design, but to the almost unique character of its construction.

We use the word construction deliberately, although it is not usually employed in describing sculpture. The Bismarck Memorial is simply a composition in granite,



and the figure of the Chancellor has been constructed in the same way as the masonry which supports it. The cloak, the armour, the sword and the eagles which flank the figure were laid in courses corresponding with those in the lower part, which would alone be considered as architectural. The horizontal and vertical lines of the joints are to be traced in both. BISMARCK's head and neck are cut out of one block and the legs and feet from another. But the rest of the figure could be described as construction in masonry. All this may appear strange to those acquainted only with sculpture on a small scale. But one of the ancient Egyptian priests, if he could visit Hamburg, would appreciate the arrangement and approve of it.

The material employed is granite, which is symbolic of the grim statesman, but of a variety which is more applicable to chiselling than any of those quarried in this country. The stone, wherever found, has its limitations in dressing. The Egyptians were aware of

the fact, as well as Herr LEDERER and Herr SCHAUDT. The bold but simple mouldings we see in the architectural part, and the ultra-Doric capitals of the columns, are signs of the right use of the material. But the massive unadorned armour, the heavy mantle which falls almost without a fold, and the broad treatment of the features, are further evidence. No less effective are the two guardian eagles with closed wings, in which not a feather has been indicated. Throughout it may be said there was not a superfluous stroke by the mason's hand.

In modelling BISMARCK the sculptor has avoided the ordinary practice. To represent him in his cabinet, or in the German Parliament, or in the uniform of a soldier who was without a command, would not be much of a feat. Nor would it be novel. But by placing him in a position as if he were to be accepted as the guardian spirit of Germany, the Chancellor was exalted, and the ideas of his admirers, and it may be of future generations, were realised. Although Prussia as a kingdom is not of ancient date, BISMARCK represented the Germanic spirit, and if its legends and stories are evidence, armed and faithful knights were at one time more prized in Germany than in other countries. BISMARCK, therefore, stands quietly leaning on a mighty two-handed sword, looking over the approaches to Hamburg as if he accepted the responsibility of a contest and was prepared to encounter enemies from abroad. The memorial stands on a small hill, and the stern and serious grey figure can for many a year recall the trials and the triumphs of the creator of modern Germany.

It is right to observe that the memorial is not completely finished. For a work which should have a sculptural character it may be considered that the statue is not sufficiently connected with the base, and that it ought to have been either placed nearer or fixed at a greater height. The objection will be removed. On the faces of the eight projecting pedestals single figures in relief and executed in granite will be placed. They represent nude warriors with well-developed muscles, and besides being ornamental they will suggest that BISMARCK's statecraft would have been unavailing if it were not for the strong men who formed the German armies. The spectators will thus learn that if they cannot all be chancellors, at least many of them can help to sustain the Empire in war and peace.

GREEK MYTHS.

OF late years a general agreement has been arrived at among most students of mythology, and this is that all mythological explanations must rest on a sound etymological basis. Comparative philology, after working a complete reform in the grammar and etymology of the classical languages, has supplied this new foundation for the proper study of classical mythology, and no explanation of any myth can henceforth be taken into account which is not based on an accurate analysis of the names of the principal actors. If we read in Greek mythology that Helios was the brother of Eos and Selene, this needs no commentary. Helios means the sun, Eos the dawn, Selene the moon, nor does it require any great stretch of poetical imagination to understand how these three heavenly apparitions came to be called brother and sisters. But if we read that Apollo loved Daphne, that Daphne fled before him and was changed into a laurel tree, we have here a myth before us which yields no sense till we know the original meaning of Apollo and Daphne. Now Apollo was a solar deity, and although comparative philologists have not yet succeeded in finding the true etymology of Apollo, no doubt can exist as to his original character. The name of Daphne, however, could not have been interpreted without the aid of comparative philology, and it is not till we know that Daphne was originally a name of the dawn that we begin to understand the meaning of the myth. It was by taking myths which were still half intelligible, like those of Apollo and Daphne, Selene and Endymion, Eos and Tithonos, that the first advance was made towards a right interpretation of

Greek and Roman legends. If we read that Pan was wooing Pitys, and that Boreas, jealous of Pan, cast Pitys from a rock, and that in her fall she was changed into a pine-tree, we need but walk with our eyes open along the cliffs of Bournemouth in order to see the meaning of that myth. Boreas is the Greek for north wind, Pitys for pine tree. But what is Pan? Clearly another deity representing the wind in its less destructive character. The same Pan

poet tells us that Pan, the wind, played with Syrinx, and that Syrinx was changed into a reed. The name of Pan is connected with the Sanscrit name for wind, namely, "pavana." The root from which it is derived means, in Sanscrit, to purify; and as from the root "dyu," to shine, we have in Greek "Zên," "Zênós," corresponding to a supposed Sanscrit derivative, "dyav-an," the bright god, we have from "pû," to purify, the Greek "Pân," "Pános," the



BISMARCK MEMORIAL, HAMBURG.

is called the lover of the nymph Echo, and of Syrinx. Why Pan, the wind, should be called the lover of Echo, requires no explanation. As to the nymph Syrinx—a name which means in Greek the shepherd's pipe—she is further fabled to have thrown herself into the river Ladon in order to escape from Pan, and to have been changed into a reed. Here mythology has simply inverted history; and while, in an account of the invention of musical instruments, we should probably be told that the wind whistling through the river reeds led to the invention of the shepherd's pipe, the

purifying or sweeping wind, strictly corresponding to a possible Sanscrit form "pav-an." If there was anywhere in Greece a seashore covered with pine forests, like the coast of Dorset, any Greek poet who had ears to hear the sweet and plaintive converse of the wind and the trembling pine trees, and eyes to see the havoc wrought by a fierce north-easter, would tell his children of the wonders of the forest, and of poor Pitys, the pine tree wooed by Pan, the gentle wind, and struck down by jealous Boreas, the north wind.

SELBY ABBEY.

A MEETING of the executive committee of the Selby Abbey Restoration Fund was held on Friday last at Selby, for the purpose of considering the tenders for the roofing and ceiling of the nave, north transept and Latham chapel, and for the outer roofing and oak groining of the choir. The tender of Mr. Ullathorne, of Selby, to carry out the works for 7,041*l.* was unanimously accepted. The meeting resolved that a time limit for the completion of the nave roofing should be arranged between the architect and the contractor so that the work may be pushed on speedily.

The meeting then considered an estimate for the rebuilding of the gable with east and west turrets of the north transept, which is to have a pitched roof in accordance with the original building. The meeting accepted Mr. Ullathorne's tender amounting to 798*l.* 15*s.* 10*d.*

Mr. J. O. Scott brought before the meeting the subject of underpinning the piers on which the abbey tower stood. He pointed out that the foundations had sunk very seriously, this having been going on ever since the abbey was built. It was resolved that the architect should proceed with this work at once.

The chairman of the finance committee reported that the total amount of the restoration fund was 31,810*l.*, of which sum 23,060*l.* was actually in the bank.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fifth general meeting (business) of the session was held on Monday, the 7th inst., Mr. Thomas E. Colcutt, president, in the chair.

The decease was announced of Henry Simpson Legg and Horace T. Bonner. A translation of a letter from M. H.-P. Nénot, president of the Central Society of French Architects, presenting to the Institute, on behalf of his Society, a gold medal in commemoration of the Seventh International Congress of Architects, was read. The thanks of the meeting were accorded the Society by acclamation.

The following candidates for membership were elected by show of hands under by-law 9:—*As Fellows*: Messrs. C. S. Spooner and T. H. Weston. *As Associates*: Messrs. M. J. Dawson and H. G. Leslie, F.S.I.

The following hon. corresponding members were elected *en bloc* by acclamation:—Robert Böker, member of the Imperial Society of Russian Architects (St. Petersburg); Louis Bonnier, president of the Société des Architectes diplômés par le Gouvernement Français, Architecte-en-Chef des Bâtiments Civils et Palais Nationaux; Frank Miles Day, president of the American Institute of Architects, Lecturer on Architecture at Harvard University (Philadelphia, U.S.A.); Jean-Joseph Caluwaers (Brussels); Mariano Eduardo Cannizzaro (Rome); Cass Gilbert, vice-president American Institute of Architects (New York, U.S.A.); Georges Harmand, Avocat à la Cour d'Appel, Paris, member of the Judicial Council of the Société Centrale des Architectes Français (Paris); Hermann Helmer, K.K. Oberbaurath (Vienna); Virgil Nagy, Building Councillor to the Kingdom of Hungary, Professor at the Hungarian Technical University (Budapest); Ludwig Neher (Frankfort-on-Main); George B. Post, Chevalier of the Légion d'Honneur (New York, U.S.A.); Jacques Maurice Poupinel, Architecte diplômé par le Gouvernement Français (Paris); Abraham Salm G.B.zn (Amsterdam); Ventura Terra (Lisbon); Don Fernando Arbós y Tremanti, member of the Spanish Academy of Fine Arts, Inspector-General of Works at the Ministry of Fine Arts, Madrid; Gustaf Wickman (Stockholm).

A motion by Mr. Herbert W. Wills with reference to the employment of public officials for public works of architecture being related to a subject discussed and voted upon by the Institute on December 3 last, it was declared contrary to precedent and out of order to bring what was practically the same question forward again after so brief an interval.

Mr. W. Woodward drew attention to the proposed conditions of competition for the new London county hall, with especial reference to the proposal to invite certain architects to submit designs in the final stage of the competition, and moved the following resolution:—"That this meeting is of opinion that all drawings for the competition for the London county hall, including the designs of the eight selected architects, be sent in on one and the same day. The meeting also decides that a copy of this resolution be forwarded by the secretary of the Institute to each of the architects who are members of the Institute, and that a similar copy be forwarded to the London County Council."

The following amendment was adopted instead:—"That the London County Council be invited to extend the time allotted to the two competitions to nine months, of which six shall be devoted to the first competition."

Mr. K. Gammell proposed the following resolutions:—
1. "That in view of the fact that limited competitions for public buildings erected with public moneys are a great injustice to the young and unknown members of the profession struggling for recognition, and also not in the best interests of the promoters, this Institute declares that such competitions should not be limited, and should take such steps as may be deemed advisable to discourage public bodies from instituting such competitions." 2. "That this Institute exert its influence in obtaining the abolition of the growing custom of penalising non-competing architects by retaining their deposit."

The meeting, on the motion of Mr. Herbert W. Wills, further resolved:—"That the assessor in a competition should refrain from any expression of doubt as to the relative merits of the designs placed in his award, such expression of doubt being calculated to weaken the effect of his award and to lead the promoters to override it, to the great detriment of the object aimed at, viz. the adoption of the best design."

THE LAKE VILLAGE, GLASTONBURY.

A POPULAR lecture was given by Mr. H. St. George Gray in the Taunton Museum on the early British lake village at Glastonbury. The exploration is being systematically extended by Mr. Arthur Bulleid, F.S.A., and Mr. Gray, on behalf of the Glastonbury excavation committee and the British Association. Nine-tenths of the area has now been explored.

Mr. Gray, having remarked that he was sorry to have to inform them on the highest authority, His Majesty's Office of Works, that the Government did not intend to buy Glastonbury Abbey, nor would it be acquired by the nation, at any rate through the instrumentality of the Government, said that in the early days there could have been but a small population in Somerset except on the bare uplands of Exmoor, Quantock and Mendip. For the rest, the centre of Somerset was then but a succession of vast marshy wastes, with the great forest of Selwood thrusting itself in from the eastern border. The story of the arrival of man and of the gradual evolution of culture in his history was, of course, an enormous subject, but they would allow him to point out that their museum contained a very fine provincial collection exemplifying the arts of the inhabitants of Somerset from the earliest times, and the natural history of the same area, while the further they went back into prehistoric times the better, perhaps, their collections were represented. Until recently, he said, the museum, and indeed many others, contained very few remains of the cultured epoch B.C. 250 to A.D. 50, now known as the prehistoric Iron Age or late Celtic period, and that was the age which covered the few centuries in which the Glastonbury lake village flourished. He did not, with any certainty, attribute the origin of the lake village to the Brythons, or to a people of mixed Iberic, Goidelic or Brythonic blood, it being more probable that the Belgæ (a partly Teutonic people), who appeared in Britain about B.C. 250, were responsible for the formation of the village. There was a tradition that a colony of Belgæ formerly occupied Glastonbury. Discoveries of lake dwellings in England were rare. Finds of that nature, but of minor importance, had been made in the meres of Norfolk, Suffolk, parts of the Fenland district, near Brecon, in London, and in Berks, and at some of the five stations in Holderness, Yorkshire. Of far greater importance than any of those was the discovery made in March 1892 by Mr. Arthur Bulleid, of the lake village situated one and a quarter miles north of Glastonbury, but in the parish of Meare, from which village it was two and a half miles distant in a bee line. Although the site was about fourteen miles from the coast it was less than 18 feet above mean sea level. The river Brue passed between high banks at no great distance away, and there was good reason to believe that the small natural watercourse which bounded the village at the east side represented the ancient course of the river Brue or a large tributary of it. Mr. Gray then described at some length and in a most interesting manner the formation of the village with its numerous huts, one of which was discovered in 1905. Although it only had two floors it had no fewer than nine superimposed hearths. At the time of the evacuation of the village the upper floors of the huts were at a considerably higher elevation than the

turf-clad mounds were now. Mr. Bulleid counted the sites of sixty-five dwellings at the beginning of the excavations in 1892, but up to last season eighty-three had been recorded. Without considering pottery, the relics found numbered some 4,000, and their interest was considerable, throwing a light, as they did, on the everyday life of the inhabitants. The relics were found, for the most part, on the various floors of the hut and oftentimes broken. In some huts everything of interest was found in a calcined condition, and for this and for other reasons they had been able to determine that they were burnt down. The objects of utility and ornament had been found to consist of bone, wood, shale, jet, amber, bronze, lead, tin, iron, antimony, glass, baked clay, flint and other stone. Amongst the most attractive objects were the weaving-combs, which numbered about 100, and even more numerous were the spindle whorls with which the women twisted their thread. Many shuttle-spools of bone had been found and numbers of loom weights to keep the warp tight on the loom whilst the weft was being worked in with bone shuttles. They had found a loom, or at least the framework of one. Many bone needles had been discovered, but bronze ones were rarer. Mr. Gray next dealt with relics of personal ornament which had been found, and said the most remarkable amulet was a roundel fashioned out of a human skull bone. He also referred to the famous bronze bowl found in the village in 1893. That metallurgy was carried on they were positive from the fact that many crucibles had been found and also the remains of two tuyères—conical tubes through which air was conducted into a furnace by means of bellows. Pieces of glass slag had been discovered, implying that glass-working was also practised. Small furnaces, perhaps used in that connection, had been found. Of the iron objects discovered none surpassed in general interest those which had generally been proved by Mr. Reginald Smith to be currency bars, as a means of barter. In some instances in England they had been found in bundles, in one case no fewer than 394 being discovered in one camp. Evidence of games was not wanting in the village, and cereals and other vegetable products and seeds had been found plentifully. Of human remains many had been found, including a skull with sword cuts in it. There was a slight suspicion of infanticide, judging from the numerous remains of infants found in the huts. On the other hand, it must be borne in mind that the ordinary death rate, especially of children, must have been great in a habitation that was partially flooded. Animal remains were exceedingly plentiful, and several remarkable wooden objects had been recovered. They might infer that these lake villagers were not only farmers and herdsmen, but were advanced in the technical arts. In conclusion, Mr. Gray trusted that he had convinced those present that Somerset had produced the most famous example of late Celtic domestic civilisation in England if not in the world.

SHEFFIELD SOCIETY OF ARCHITECTS.

THE architectural treatment of woodwork formed the subject of a lecture at the last meeting of the Sheffield Society of Architects and Surveyors, by Mr. H. L. Paterson. After a reference to the growth of trees and the nature of wood used for building purposes, the history of architectural design in this material from the earliest times was outlined. The introduction of stone as a building material where only wood had previously been used was considered, and it was shown that, while in some countries the latter material was abandoned, in others it was developed simultaneously with the stone, and modified the design of the buildings. The abandonment of wood for domestic buildings in France in the twelfth century was due to the destructive fires accompanying the constant warfare; but, as Viollet-le-Duc has shown, two centuries later recourse was had once more to wood in order to build as rapidly and economically as possible the great commercial cities springing up in the north and centre of France. The same style of building was characteristic of our own cities, and it was not until the seventeenth century that wood as a building material was virtually abandoned in England. With regard to the wooden roof, the lecturer showed that this feature attained in England its noblest development, and was used in buildings of a monumental character long after it had been abandoned on the Continent. Mr. Paterson dealt with the design of internal ecclesiastical and domestic woodwork from the thirteenth century, through the Early Renaissance period, and down to Grinling Gibbons's work in St. Paul's Cathedral, which may be regarded as the culminating work of the later

Renaissance. The difference in the nature of the carving was emphasised, and it was shown that in the later work the ornament was no longer cut out of the mouldings, but out of separate pieces which were applied to the work, allowing greater freedom in design and greater delicacy in execution, but to a certain extent interfering with the architectural lines. The paper concluded with a plea for the correct use of woodwork, and Mr. Paterson's opinion was that, while it might be losing ground as a constructive material, there was little reason, owing to its intrinsic beauty, to fear that wood would be supplanted for internal decorative work. A large number of slides of English woodwork were employed.

PEVENSEY CASTLE.

THE interest of all antiquarians and historians is aroused in connection with the excavations which are in progress at Pevensey Castle, which is known to be the centre of a Roman camp. The ancient castle is the property of the Duke of Devonshire, who has considerably allowed a specially appointed committee to arrange a thorough course of investigation into the mysteries which lie hidden beneath the soil of the courtyard and within the ruined walls of the castle. About fifty-three years ago excavations were commenced, says the *Sussex Daily News*, but were quickly abandoned in consequence of lack of funds, and it is to be hoped that the committee who have the present work in hand will receive the necessary financial encouragement to enable them to complete their important undertaking. The committee comprises Mr. W. Page, F.S.A., and Mr. C. R. Peers, F.S.A. (editor of the "Victorian History"), Mr. H. Sands, F.S.A., Mr. L. F. Saltzmann and Mr. J. E. Ray; and has the valued assistance of Dr. Haverfield and Mr. Fox. The list of subscribers towards the expense of the scheme includes many well-known personages, prominent among the names being that of the Duke of Norfolk. A visit to the castle, situated in close proximity to the peacefully reposing ancient church, quickly reveals to the visitor the work which is being carried out, the courtyard presenting striking evidence of the temporary excavation by the labourers' pick and shovel.

Work was commenced in the second week of last October, and has been principally under the supervision of Mr. J. E. Ray, of Bexhill, and Mr. L. F. Saltzmann, of Hailsham, who visit the ruins several times during each week. No startling revelations have transpired up to the present, and the expectations of some of the promoters of the excavations have not been realised. The workmen began operations in the vicinity of the old postern stone gateway on the north side of the grounds, which was discovered during the excavations about half a century ago. It was formerly covered by a large archway and led into the main road. The accumulation of years practically buried the gateway from view. The workmen have dug down to the huge foundation, and four substantial oak staves which acted as supports have been disclosed. In another spot there was a very big settlement, which was the cause of the sinking of the foundations and the splitting of the huge wall. Deep trenches have been dug in the hopes of discovering the remains of Roman buildings, acting on the supposition that beneath the grounds of the castle once existed a village. This theory is upset by the quantity of nails found, leading one to surmise that the erections were of wood and were removed when the Romans deserted the place. Even if brick buildings had been erected and demolished by the Romans before departing, some trace must have been found in the accumulation of the walls or foundations. The operations, however, have yielded a large quantity of Roman and Samian relics such as coins, pottery utensils and old iron instruments. Among the curios is a very large "bit" iron belonging to a horse, and parts of millstones with which to grind the corn.

The relics, which would fill a builder's cart, have been transferred to the old town hall before being despatched to London, and in all probability they will be placed on exhibition to help to defray the cost of excavation. Perhaps the most interesting of the relics is an almost perfect specimen of a coin bearing the image of Constantine; but nothing of a specially important character has been unearthed.

The excavations as far as the courtyard is concerned are practically terminated, and it only remains for the trenches to be filled in. The workmen are awaiting instructions concerning their next occupation, and it is probable that the keep in the castle will be explored, it is hoped with more gratifying results.

NOTES AND COMMENTS.

THE Northampton Town Council, having received the promise of a grant from Mr. CARNEGIE, resolved to erect a library from the designs of the borough engineer. We offered some remarks upon the proposals, explaining their ineligibility. The subject has caused much discussion in Northampton, and finally the libraries committee have endeavoured to meet the difficulty by a modified arrangement. It was proposed to obtain the designs in open competition, and that an assessor should be nominated by the President of the Royal Institute of British Architects, his fee being 50*l*. The successful architect would be paid an inclusive fee or commission of 500*l*. for his plans, specifications, designs for furnishing so far as required, and services of supervision in connection with the erection and completion of the building, and the second and third competitors receive a premium of 50*l*. and 25*l*. respectively. Should an architect practising outside the borough prove successful in the competition there would be no allowance, in addition to the 500*l*., for travelling or other incidental expenses. As Mr. CARNEGIE offered 15,000*l*. it will be observed that the sum proposed to be paid is below the usual percentage. The recommendation was not adopted by the Town Council, as by a majority of one vote it was resolved to send back the subject for further consideration.

THE selection of names of representative men for engraving on libraries and other institutions is sometimes difficult, owing to the numbers which can be employed. Some American papers are recalling the method employed by Messrs. McKIM, MEAD & WHITE for the Boston Public Library. Taking a suggestion from the acrostic, they made the names of the member serve as a guide. "McKIM" was in that way represented by MOSES, CICERO, KALIDASA, ISOCRATES and MILTON. "MEAD" was expressed by MOZART, EUCLID, ÆSCHYLUS and DANTE. The unfortunate STANFORD WHITE suggested WREN, HERRICK, IRVING, TITIAN and ERASMUS. All the names were satisfactory, although some citizens might not be aware until they inquired that KALIDASA was the greatest of Indian poets. But the principle adopted became known, and scholars could hardly approve of what was so simple, especially as the great names of HOMER, VIRGIL and SHAKESPEARE were ignored. The names inscribed on the building were accordingly selected by a more systematic process.

ILLUSTRATIONS.

THE NEW WAR OFFICE, WHITEHALL.—QUADRANGLE.

MANCHESTER ROYAL INFIRMARY.

CATHEDRAL SERIES.—CARLISLE: REMAINS OF NORMAN NAVE.

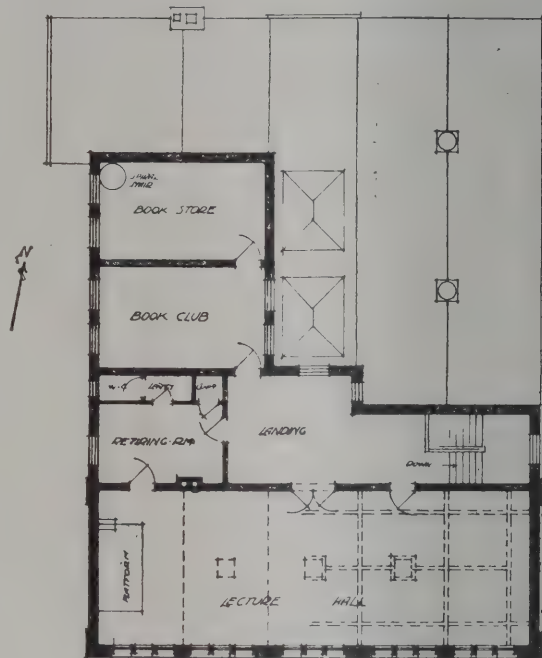
DESIGN FOR NEW NATIONAL GALLERY ON THE CALTON HILL, EDINBURGH.—VIEW FROM THE SOUTH-WEST.

THE design we publish was prepared by Mr. GEORGE SHAW AITKEN, architect, of Edinburgh, at the suggestion of Professor PATRICK GEDDES. The idea was that a new gallery might be erected on the Calton Hill immediately above and grouping with the High School, a remarkably fine work by THOMAS HAMILTON. The gallery would be approached from the west side by spacious flights of steps or by an incline. The plan is cathedral-like, with nave and aisles and centre transepts. The galleries would be top-lighted. The pictures could be arranged according to periods and schools, special places being allotted to large and important works.

WREXHAM PUBLIC LIBRARY.

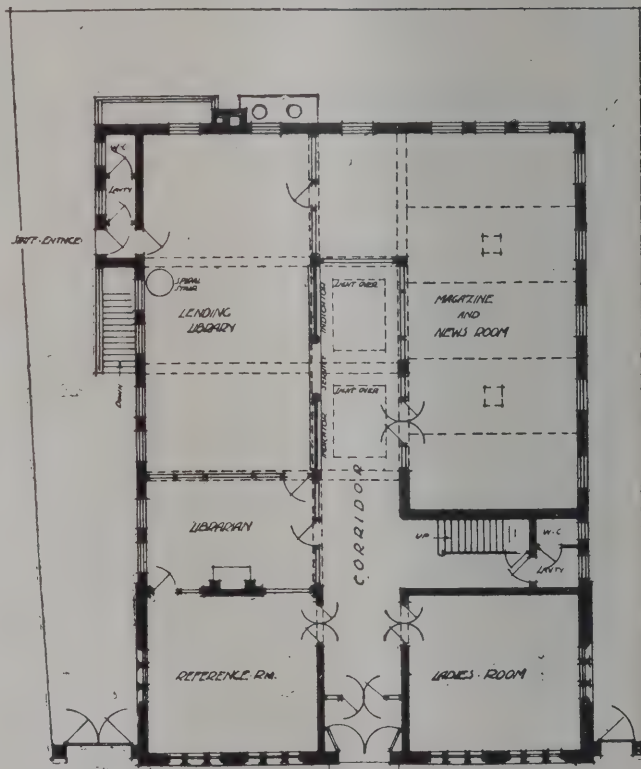
THE design for this library was placed first in competition with over 100 others in April 1905 by Mr. W. E. WILLINK, M.A., of Liverpool. The building is now practically completed. The materials used

are Cefn stone and red pressed facing bricks. The front roof is covered with Westmoreland slates and the back roof with Bangor slates. The interior is treated simply, suitable to the purpose of the building. The contractor is Mr. R. ROWLEY, of Gresford, near Wrexham. The heating has been carried out on the low-pressure system by Messrs. DARGUE, GRIFFITHS & Co., of Liverpool; the electric lighting by the Triplex Company, of Wrexham; the metal casements were supplied by Messrs. BURT & POTTS, of Westminster; and the wrought-iron entrance gates were made by Messrs. HARDMAN, POWELL & Co., of London and Birmingham.



FIRST FLOOR PLAN

*Vernon Hodge
Jeddington*



GROUND FLOOR PLAN

The carving was executed by Mr. BOSKER, of Wrexham. COTGREAVE'S indicators are being used. The amount of the accepted tender was 3,504*l*., the stipulated cost for the building complete (exclusive of furniture) being 3,500*l*. The library is a gift of Mr. ANDREW CARNEGIE. The architect is Mr. VERNON HODGE.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at Tufton Street, Westminster, Mr. Walter Cave, vice-president, in the chair.

Mr. E. L. Hunot was elected a member.

The CHAIRMAN announced the award of a prize, valued at three guineas, to Mr. Francis R. Taylor, for the examples he had submitted in connection with the Architectural Association Photographic Competition.

Mr. TEMPLE MOORE read the following paper on

The Arrangement and Design of Modern Churches.

In selecting this subject for my paper I am afraid there is little that I can say that has not already been said by others. Still, though I do not hope to be able to tell you anything very fresh, I trust that some points I touch upon may prove of some use to our students.

In speaking of the arrangement and design of modern English churches, I am assuming that such a building is in the Gothic manner; for whatever may be the merits of revived modern British Classic, which appears for the present to hold the field so far as civil architecture is concerned, I trust that we are not likely to return to more or less skilfully applied arrangements of the Five Orders for our ecclesiastical buildings.

For one reason, whatever may be the case with our civil buildings, the strictest economy is in most instances a necessity in the ordinary course of modern church building, consistent with a substantial structure, and I believe that well understood Gothic may be so handled that a good architectural effect can be produced in the simplest way, without having to depend on applied architectural ornaments.

Of course, I do not mean to say that the style in which a building may be designed has anything to do with its suitability or convenience, which is entirely a matter of planning and general arrangement; but, on the other hand, one often hears it asserted that such and such a style is quite unsuited to modern requirements, as if the sections of the base moulds or the door and window jambs could in any way affect the convenience or suitability of the building. It is no doubt true that the ordinary modern church possesses as a rule very little of either beauty or interest, and is also often far from satisfactory in general arrangement. I think that the cause of this has often been that the designers of these buildings have had little first-hand knowledge of the proper treatment of their subject, and possibly have taken little interest or pains in the matter, so that it is not fair to lay these failures at the door of the style nor to suppose that had all the caps been Corinthian or Doric the buildings in question would have been one whit better than they are.

The common type of modern church, with a nave divided into comparatively narrow bays with low lean-to aisles, a clerestory with a very high-pitched main open roof, a chancel generally lower than the nave, and divided from it by a heavy chancel arch, with the end of one aisle filled up by a vestry, and the other by an organ chamber, on either side of the chancel, is probably as unsuitable a type as could have been selected for a large congregation. It has been repeated over and over again during the last forty years, and though one now frequently sees departures from it in the better modern work, it is still a type far too prevalent.

How such a plan came to be so general I cannot say. I suppose it has a certain element of cheapness, and somehow got recognised as the correct thing for a church. It is curious that the elder Pugin, who was practically the pioneer in Revived Gothic, generally avoided this defective plan, and it is interesting to cite his churches at Birmingham and Derby, as well as St. George's, Southwark, as excellent examples of planning, suitable to modern requirements.

In speaking of the arrangement of a modern church, let us take the average size of a building suitable to a modern town parish, a building capable of accommodating, say, 600 to 900 people. Some people think that a mistake has been made in multiplying comparatively small parishes, and that it would have been better policy to have built larger churches to serve more extensive areas. Though doubtless such a system would have some advantages, we have to consider things as they are. Taking, then, a church of the above average size as a standard, the first question that should be always considered in laying down the plan is the site.

As a general rule, the sites available in the suburbs of modern English towns have not much to recommend them

in the way of picturesqueness, but however dull they may be, there is generally some peculiarity which should influence the design of the building to be placed upon them. One of the greatest faults in modern work is that this question of the site is not nearly so carefully considered as it should be. This is certainly the case in a great deal of modern church building, and is also true to a certain extent in other branches of modern architecture, buildings looking when they are finished as if they had nothing to do with the place they happen to be in.

Generally, the plan of such a church as I am speaking of will probably resolve itself into a nave with aisles on either side, and I consider that this is often the best plan to be adopted; but it is important to remember that in a church where practically the whole of the space, excepting the choir, is to be occupied by the congregation, that it is well to make the aisles, and the arches separating them from the central nave, as wide and spacious as possible. This makes the building, as much as can be, a single whole internally, and will not make it like two or three buildings placed side by side. It is also important to carry the aisles eastward, beyond the commencement of the chancel, to at least within one bay of the east end; as this opens the whole of the choir to the nave and aisles. A plan on these lines looks, of course, very square on paper, but this is by no means a defect from a practical point of view, as the congregation are more together than in a long and narrow building.

I mentioned that I consider the bays of the arcades should, in my opinion, be kept fairly wide, and I think that the advantage of this is that a few large pillars do not cut up the interior of the building in the same degree as a greater number of smaller ones do.

You must remember that in most old churches where the aisles are divided from the central nave by comparatively speaking narrow bays, the aisles were little used for a general congregation, which was principally accommodated in the central part.

It is, of course, impossible as a rule under present conditions to lavish space in this way, when for reasons of economy every foot has to be considered.

In the English Church the surpliced choir, though often much abused, has practically become a fixed institution, and this being so, it is of the greatest importance that proper and ample space should be provided for it. This, unfortunately—generally, I suppose, from motives of economy—is rarely done in an efficient manner, and churches are disfigured by filling the choir with rows of what are really nothing but pews placed lengthwise, and with quite an insufficient central space between the front desks. There should, of course, be not more than two rows of stalls on either side of the chancel, and the longer the rows are the better the effect.

With regard to the sanctuary, here again it is of the utmost importance to provide ample space, especially in length, as without this no dignity of effect can be obtained. Steps should be kept low and broad, and arranged as far as possible in groups, so as to give wide platforms in front of the altar and between the communion-rail and the stalls.

A few years ago it was the fashion to very much exaggerate the elevation of the choir and altar; and latterly the tendency has been rather to the other extreme. I think myself that for a church such as I am speaking of an elevation of seven or eight steps from the nave up to the altar would be quite sufficient.

The organ is another important consideration; the modern instrument, as a rule, has become so large that it is often a great difficulty to provide for it. It is fatal to the internal effect of the building to block up the end of one of the choir aisles with the organ. Probably a chamber projecting from the aisles is, generally speaking, the best plan, but it is essential that there should be plenty of height, and that the front should be as open as possible. Sometimes it is possible to arrange for the organ over the vestries, and where this is practicable it is probably as good a plan as any.

The rules laid down by the Ecclesiastical Commissioners and the Incorporated Church Building Society are, of course, useful as a guide for the spacing of seats, widths of passages, &c. These rules lay down quite the minimum space which should be allowed for these purposes, and in my opinion rather more space should, where possible, be allowed.

With regard to towers and spires, these are probably in most cases better omitted in a town church, unless there is some prospect of enough money to build them of sufficient

size without stinting the rest of the building. The poor little spire which one sometimes sees, with its top not very much higher than a neighbouring warehouse or gin palace, is not an object worth spending money on. With regard to the position of the tower, the centre of the west end is no doubt, generally speaking, the right place; but frequently the exigencies of the site, especially in a town, render a departure from this very good general rule desirable. Regarding doorways, you must remember that most urban by-laws have now stringent regulations which affect the design of these features, and in most cases make a departure from the traditional treatment absolutely necessary.

To return for a moment to the question of a general plan. You must not suppose that I think a central nave with side aisles is the only right arrangement; this is a point that should, to a great extent, be governed by the nature of the site.

Where this happens to be a long and narrow site, probably a single span, with comparatively narrow side aisles or passage ways, is the best solution; but it must be remembered that a building of this type requires considerable height to the wall-plate in proportion to the clear width if a good internal effect is to be obtained. A proportion something after the manner of a covered railway station is certain to be unsatisfactory.

Another very simple and practical plan which might be much more frequently adopted than it is, especially where economy has to be considered, is a nave and chancel of fair width, with an aisle on one side only, of about the same width and height. The seventeenth-century church of St. John's, Leeds, is a good example (though wanting in internal height) of how well a church of this type may look.

There are, however, many ways by which a more or less difficult or irregular site may be successfully covered while keeping in view the necessity for a spacious and open interior. Many suggestive examples of planning of this type may be found in the old towns of Germany and Belgium as well as in France, where the churches have had to be fitted on to confined sites.

In this country our old churches generally stand surrounded by churchyards, and the type of treatment I am speaking of is therefore comparatively rare here. The beautiful and interesting old church of St. Crux, York, barbarously pulled down some twenty-five years ago, was however, if I remember rightly, a good example of it. This question of planning is one that hardly too much care and attention can be given to if a satisfactory result is to be expected. However simple the plan may be the success or otherwise of the building depends upon it, quite as much from the æsthetic point of view as from the practical. Far too little attention is, in my opinion, given by students and others to the study of the plans of our old churches. One is far too apt to be content with making pretty little sketches of details and parts, and neglecting the main dimensions of an old building.

Having settled the main lines of the general plan, the next question is the section, and this again is a matter that is largely governed by the question of cost. Generally speaking, the higher in reason the wall-plate can be the finer will be the effect internally.

I do not think myself that much internal effect is gained by a very high-pitched open roof, which is also likely to have practical disadvantages, both acoustically and for purposes of warming and ventilation. The real proportion of the building is practically settled by the height of the walls, though the proportion may be completed, so to speak, by the total height of the highest point of the internal ceiling, which may be of barrel or other form. Of course, there is no internal roof for a Gothic building equal to a stone or brick-groined vault, but this is a very expensive method, and I am rather confining myself at present to what may be done in ordinary cases.

Where only a moderate height to the wall-plate is possible it is, I think, better not to attempt a clerestory, but to carry the nave arcades up to the full height. If the aisle or aisles are of about the same width as the nave they can be similarly roofed, and the aisle walls in this case being the same height as the nave the side windows can be kept well up so as to thoroughly light the interior.

This is a style of church very common, as you know, in the west country, though as a rule they are too low in their proportion. There are, however, some exceptions, such as the church at Dartmouth, which is a very good example of this class. This section of church is also common in Germany, where it is often seen carried out on a grand scale with vaulted roofs. Where your plan is arranged for

narrower aisles than the type I have been describing, these may be roofed with flat or lean-to roofs; but in this latter case it will be generally found advisable to increase the height of the nave wall-plate, as otherwise the aisle walls will be too low to allow of sufficient elevation being given to the windows, the result being that the interior will be badly lighted. This is a defect in this particular type which has to be guarded against. Where, however, you can get a height of 25 to 30 feet to the aisle wall-plate and about 35 feet to the nave wall-plate, the difficulty I have mentioned will not occur, and you will have sufficient height in the nave to have a really stately arcade. Of course, the lighting from a clerestory which is at all well designed is always very fine; but it should be remembered that the building being intended to be used altogether, the effect of the interior should be a spacious whole; this effect will be lost if the arcades are robbed for the sake of the clerestory, and the aisles thus become, as it were, subsidiary buildings to the nave. This is a perfectly right and proper treatment in certain cases, but not one to be aimed at in a building that should, I consider, be designed to be used as a whole.

As a rule it is better in a modern church, such as I am speaking of, to omit the chancel arch altogether, and to carry the building at one height through from end to end, because the large piers of the chancel arch tend to obstruct the view from the aisles into the choir, though there are cases where a building has to be carried out in sections where the structural division between the nave and choir may be highly desirable. Of course this feature is the general rule in our ancient parish churches, though there are plenty of exceptions to it, such as St. Peter Mancroft, Norwich, and many others. It is also to be remembered, as regards the chancel arch, that its upper part was very often practically entirely covered by the great rood-loft and rood, with the space behind the rood filled in with boarding, on which was generally a painting of the Last Judgment. This, no doubt, would have a very fine architectural effect, but it is one that is rarely possible under modern conditions.

Where a chancel arch is introduced, I feel myself that the choir wants to be of very considerable length; the ordinary modern custom of making it equal in length to two bays of the nave, and separated from the latter by an arch, never to my mind can give a satisfactory architectural result, and only unnecessarily cuts up and confuses the interior. If you look at the plan of almost any old English parish church, you will nearly always be struck by the great length of the eastern limb, and this is an essential feature to the good architectural effect of what is with us the more common type of a Mediæval church. This, however, is not the type which in my opinion is the most suitable to our present requirements, and is shorn of its beauty of proportion when the eastern limb is, in the usual modern way, cut down to about half its proper length. As to windows, the question is rather a difficult one in the present day, when as a rule it is not easy to get them filled with good stained glass. The most part of modern stained glasswork is certainly not worth providing extra large windows for, and it is seldom that one sees large windows filled in a really satisfactory manner, even by the best modern glass. On the other hand, it is a great mistake to under window a building, as a gloomy interior in this climate is generally very unattractive and depressing.

The great point, I think, is to keep the side windows as high up as possible in the walls, and this, of course, is the advantage of a clerestory; but where the clerestory is lacking a fine effect may be obtained by the proper arrangement of the west windows. The effect of the light coming in from a good height in the west wall has often as good a result as that from the clerestory.

The arrangement of the east window or windows is a matter which may be so much varied according to the general design of the building that it is hardly possible to lay down any general rule on the subject. The large east window traditional to English Gothic work is a splendid thing when well designed, but it is certainly not satisfactory without its stained glass. This is rarely now put in when a church is built, with the result that the effect possibly of a really well designed window can often hardly be seen on account of the glare through the white glass.

On the other hand, the east wall, which is, of course, the most conspicuous internal feature of the church, requires a good deal of breaking up, and I think that a grouping of windows with large piers between them would often give a better result than one very large window, especially where the stained glass has to be left to the future.

The proportion and detail of the piers and arches is another matter of the greatest importance. More may be done by fine ample proportions and good simple mouldings than by a quantity of carving and ornament, and in this case, as well as with other features of the building, careful and continual study of our good ancient examples is, I believe, absolutely essential if satisfactorily designed modern work is to be produced. You cannot expect to be able to make up a successful Gothic building from plates in some particular book on ecclesiastical architecture; valuable as many of these are, the old examples must be studied first-hand.

A chapel with a second altar is a very usual feature in modern churches, and where properly managed adds much to the interest of the interior. It is generally placed on one side of the choir as a sort of pendant to the vestry and organ chamber, but I do not consider that this always is the best or only position possible. Where there is sufficient length in the site, the chapel might very well be placed to the east of the end of the choir; this would have the advantage of adding to the apparent length of the building, and the effect of the high altar is always more dignified if it is not placed immediately against the end wall of the church.

The chapel or chapels should, however, properly speaking, be always enclosed with suitable screenwork.

We have so far been considering the plans and sections of a building mainly as affecting the interior.

With regard to the exterior, I think it will generally be found that where the plan and sections have been carefully thought out the external elevations will, as a rule, come into shape without any great difficulty. I am certain that it is a mistake, generally speaking, to start with some fixed notion as to the external appearance and then try to fit the interior to it.

A building in the Gothic manner should, if it is to be successful, be designed from the inside outwards, and here I may point out that such very usual features as buttresses in a Gothic church are, properly speaking, part of the construction, and should not be introduced merely for the sake of dividing up the wall spaces, and making the drawings look a little more busy and interesting.

Well designed buttresses, where they are required structurally, are, of course, one of the finest features of Gothic work; but they must not be used as the pilasters in a Classic front, merely as ornaments. I think it well to remind you of this very obvious distinction, as one frequently hears the remark made in criticising a set of plans, "Would not such and such a wall be improved by being 'broken up' by some buttresses, quite irrespective of the structural necessity or otherwise of these features?"

A good outline is of far greater importance to a building externally than any amount of ornamental detail, and it is a frequent fault with modern work that it is often overloaded with trivial detail, which, though it may make a set of drawings look more attractive, has only a harmful result when carried out in actual work. A good, well-proportioned building may very possibly be greatly improved by well-designed and suitable detail and enrichment; but no amount of either of these latter will conceal a bad design. Many people do not realise the fact that a building is never seen in the way that it is shown on architectural elevations and sections, and with the view of making these latter attractive looking features are often put in that the actual building would be better without. Good Gothic does not consist in the endless multiplication of cusps and pateræ or monograms, charming as these ornaments may be when judiciously used. A great deal also depends on the proper use of materials. A good design may easily be reduced to a very dull level in actual work if the modern method of having every stone exactly the same colour and size, and every brick the same colour and so on, is followed. It is extraordinary how difficult it often is to get workmen and others to understand this, and I suppose it will take years to eradicate the traditions of Portland cement stucco.

It has often seemed to me that the apparent ideal of modern stonework is to try and make it look as like as possible to the Portland or Roman cement imitations of stone forty or fifty years ago. This also applies to other trades where, for instance, it is most difficult to get men who should know how to carry out Gothic oakwork properly. They cannot forbear the use of sandpaper and glue unless they are most carefully watched.

Having dealt so far with the general structure of the building, I will say a few words in conclusion as to its internal fittings and furniture. These, of course, are of great importance to the successful completion. Unfortu-

nately it often happens that gifts are made of fittings and furniture, of metal, woodwork, &c., bought ready made from the ecclesiastical furniture shops, and these things, as a rule, are of the very worst and poorest description, and in design and artistic workmanship. It is not, however, fair to overlook the fact that furniture and accessories such as I am speaking of, which have been specially designed, are often little better so far as their architectural character is concerned than the ready-made article, and this is no doubt due to the lack of proper knowledge of old work on the part of those who have designed them. No opportunity should be missed of carefully studying any of the fittings of an old church that still remain. Unfortunately, so much has been destroyed in this country that this class of work is comparatively scarce. Still, however, there is a good deal left, and it is always, I think, advisable to take careful note of the more simple examples, especially as these are far more likely to be useful under the generally straitened conditions which influence the fitting up of a modern church. So much modern work so obviously looks as if it had been founded on some old design of a very much more sumptuous character, and had been thinned and skinned down to meet the available price. It is usual enough, for instance, to see modern stallwork and such like covered with tracery and carving, and done in the thinnest possible wood. Work of this character cannot look well, while a quite satisfactory effect could have been got by reducing the amount of detail to a minimum, and keeping the material to the proper size.

In old work even it is by no means the rule that the most elaborate designs are the best—the reverse of this is very frequently the case.

These remarks as to woodwork may to some extent equally apply to metalwork. There has been the same tendency to disguise ill-designed form with a superfluity of detail. Latterly one has noticed a certain reaction against this, where practically the detail is left out altogether, without, however, obtaining a particularly successful result.

Enumerating briefly the most important fittings of the interior of the church, taking first the altar, it is important that this should be of ample size and properly proportioned, and that it should not, speaking generally, be overshadowed by its ornaments and surroundings.

I think myself that the reredos, for instance, is a feature that is often very greatly overdone. Splendid as our old wall reredoses are, even they, I consider, rather tend to overpower the altar they were intended to adorn, and this defect is even more pronounced in some modern work. The triptychs of the late Flemish or German Gothic type, charming as they are in their own surroundings, are as a rule not a very suitable type of altar-piece for our English churches, their proportions being generally too tall for our buildings. As there is practically very little work of this class left in this country, even in a mutilated state, it is necessary often to look abroad for models. I think more suitable types of altar-pieces for our buildings are to be found in France, or among examples of Italian Gothic, though these latter especially require to be entirely translated in their detail for our purposes. The eastern light should, I think, always be visible from the body of the church below the traceried heads of the bays of the chancel screen.

The plan of omitting the east window altogether and filling the whole end of the church with the reredos is not to be recommended, except, of course, where there are practical difficulties with regard to light. I need hardly say that, whether the reredos is of wood or stone, it should be as a general rule richly gilt and coloured. Of course the altar-piece may be entirely treated with hangings, and where this is properly done probably there is no more suitable or dignified treatment. An exaggerated dossal, however, with its narrow tester, looking rather like a portion of a very big bed, is to my mind to be avoided, and a superfluity of upholstery is undesirable. Where the chancel can be of considerable length, there is no doubt that a high rood-screen is the greatest possible ornament to the interior, but I think it requires very considerable depth behind it to give it its true value. It is curious, however, the prejudice one frequently meets against a screen. It is certainly not the case that a properly designed oak rood-screen of the type suitable to a parish church obstructs any necessary view, though many people seem to think so. This is sometimes avoided by the use of iron, but I do not think that iron screenwork ever looks quite satisfactory with our English work, and certainly the modern examples one sees are rarely successful.

The font should stand in the western part of the nave, preferably in the centre near to the western doors. As a rule the font is not now generally given at all a sufficiently prominent position. It should always have a cover, however simple, and this latter feature may be, as you know, very beautifully treated.

The pulpit is another important piece of furniture, which should be carefully designed, and I think that as a rule wood is preferable to stone. It requires carefully proportioning as to height in accordance with the size of the building, and may often with advantage have a sounding-board or canopy. The front of the organ (it is hardly correct now to speak of an organ case where the instrument is frequently as big as a cottage) facing the church or chancel can be made to look very well if skilfully treated. There are unfortunately no Gothic examples left in England (there is but one in Wales), though there are some very good seventeenth-century ones. The illustrations in Hill's book on the organ give a number of Gothic examples from abroad, many of which are most suggestive. The introduction of electric light has made the treatment of this very important modern requirement much easier than in the days of gas, one of the chief advantages being that a great deal of dirt will be avoided, and may make possible a more frequent use of coloured wall decoration; and if this could take the form of simple figure subjects, painted in distemper on the walls, such as one finds traces of in almost every old church, I believe it would add greatly to the interest of the interior, judiciously introduced and designed and executed on the right lines.

I think I have now kept you long enough wandering in and about this imaginary church. My old friend and master, the late George Gilbert Scott, used to say that it was of the utmost importance that you should walk about a building before you drew it, and taken with a careful study of ancient examples, I do not think this advice can be much improved on.

Mr. G. H. FELLOWES PRYNNE, in proposing a vote of thanks to the author of the paper, said there were few men better able to speak on the subject than Mr. Temple Moore. The speaker agreed with most of the views expressed in the paper, and especially the first proposition suggesting that proportion in church architecture was essential to good design. It was the one thing to be aimed at, he said, and of far greater importance than detail. In modern work, when nearly all architects were more or less compelled to design their churches to be built for very limited means, it was a great pity that money should be frittered away in rather poor detail. Under such conditions the beauty of a church must rest in its proportions, for even when sculptured ornament could be introduced it would not be quite in the same line as that of earlier examples, because the spirit of the work was not the same as that which encouraged the old carvers. But one idea should be there, and that was an aim at proportion rather than inferior detail. Another terse remark in the paper, said Mr. Prynne, was the designing of the church from the inside outwards. Although they would wish to make their churches picturesque on the outside, yet they must remember that the use of a church was internal, and the more effect obtained in the interior the better was the design. Mr. Moore knew, said the speaker, as well as most church architects, the impediments they found in carrying out their own wishes, and the difficulties of getting chancels enclosed by screens. Dioceses had different rules and faculties and they were not consistent, and architects consequently often had to suffer through the fads of chancellors of different dioceses. Another point in the paper was the choir, and Mr. Prynne said he did not quite agree with the view that two rows of stalls on either side of the chancel were enough, and he suggested that three rows on either side was better musically. In conclusion, the speaker wished that younger architects and students would do as older members of the profession had done in the past, and try to study ancient churches more as a whole. It was interesting to make sketches of important details, but it was profitable study to take the proportion of the parts and understand the rules which governed the whole building.

Mr. F. HOOPER seconded the vote of thanks, which was supported by MESSRS. LEONARD WILLIAMS, J. E. NEWBERRY and W. MILLARD.

Mr. J. B. Carter has been appointed director of the American Archaeological Institute in Rome, in place of Mr. Norton. Mr. Carter was formerly professor at Princeton University, and translated Professor Hülsen's book on the Forum. He has resided in Rome for two years.

THE PRACTICE OF ARCHITECTURE IN OUR SMALLER CITIES AND TOWNS.*

THE practice of architecture in our large provincial centres, such as Manchester, Liverpool, Glasgow, Leeds and others of similar dimensions, is carried on under conditions closely allied to those existing in the Metropolis. Firstly, there are to a great extent the same opportunities for specialising: one man makes a study of, and acquires a reputation for, successful church design; another one for theatres, another for hospitals, others for schools, hotels and so on. If one takes up the year-book published by any of the large Nonconformist bodies, showing, among other items of interest, the various churches and chapels erected during the year, it is surprising to find how often the same architect has been employed on this special work in different parts of the country. And these special practitioners, of various kinds, almost invariably have their office addresses either in London or in one of the large provincial towns. Secondly, talented and ambitious young men are attracted to these large towns, as to London, by the opportunities afforded for special supplementary training in well-equipped schools of art and science, on the one hand; and on the other, for gaining practical experience upon the details of large works, in the course of their daily office duties; and further, each one knows that should he be able to establish a practice, and meet with a fair amount of success, such success will be more pronounced, and secure more tangible results than would be possible in a small town; because in the latter the average cost of a building is only about one-tenth of what would be spent upon a building for similar purposes in any of the large and important centres. Therefore, in considering the practice of architecture in our smaller cities and towns, I wish it to be understood that I am referring to cities and towns having a population of about 60,000 or less.

Provincial Practice.

Here we find an architect practising under very different conditions to those obtaining in the Metropolis; he cannot specialise, the difficulties to be overcome are greater, the qualifications required to insure success are more varied (for it does not by any means follow that a successful London architect would have been equally successful in the provinces), and success, when assured, even at its best, must necessarily be upon a lower plane, both architecturally and financially.

Thirty or forty years ago all the best work in each of the cities and towns now under consideration was probably performed by one or at the most two architects, with a small staff of assistants; things generally moved slowly, and pupils were comparatively few. But during this period public enterprise has been great in all directions. With moneys borrowed at a low rate of interest, with repayments extended over a period of thirty years (the municipal debts of England and Wales stand at the present moment at something over 200,000,000*l.*, and a great part of this has been spent upon building works), our local governing bodies have built town halls, municipal offices, libraries, baths, schools, and infectious diseases hospitals. Then again, the Local Government Board insisted upon a higher standard of accommodation in our workhouses, necessitating the erection of improved buildings for the use of the sick and infirm, cottage homes for the children, and new kitchens and laundries suitable for the reception of steam-cooking and washing apparatus. The whisky money gave a great impetus to the erection of technical institutes. The construction of electric tramways necessitated the widening of a great many old business streets, thus compelling tradesmen to rebuild their premises, and a general rise in the prosperity of the country, combined with the introduction of new and rapid means of communication, created a desire for suburban residences.

An Overcrowded Profession.

One might naturally expect that the effect of this combined public and private enterprise would have been beneficial to every member of the profession, but such was not the case; whatever may have been the effect in the large centres, it certainly was not altogether to the advantage of architects then practising in the smaller towns. The large centres of population were naturally first in the field, the high values of property and their large areas for rating purposes enabling them, with the assistance of the moneys borrowed on easy terms, to provide those large and costly

* A paper read before the Society of Architects, January 17, by G. E. Bond, past member of Council.

buildings, without adding very materially to the rates. Thus began a period of prosperity for local practitioners. Parents recognising this desired their sons to become members of a profession with such bright prospects, and pupils flocked in, every successful man having twenty applications for one vacancy, with the inevitable result that, within a period of from fifteen to twenty years, these towns were overcrowded with young, ambitious men having varying degrees of experience, but all seeking opportunities for a practical demonstration of their talents and abilities.

The Coming of "Competitions."

By this time the spirit of enterprise had filtered through to the smaller cities and towns, and necessity or desire led to building developments of more or less important character. But, concurrently with the growth of municipal enterprise, came a development upon doubtful lines of the system of architectural competitions, and the local men, who had been looking forward to the enjoyment of a big share in the prosperity necessarily following upon the progress of their towns, had their hopes dashed to the ground by the action of unsympathetic, democratic councils and boards of guardians, who insisted upon submitting all the new and important work to public competition, with the result that those old-established practitioners who would not or could not adapt themselves to the new order of things gradually dropped out of sight, and new men full of energy and determination, trained and educated to the new conditions (and frequently they were those who had been crowded out of the nearest centre), stepped into their places, fought for and secured the prizes, and, as a result of those early struggles, are to-day firmly established and able to carry on an honourable and lucrative practice.

A Great Injustice.

But even at the present time, one of the chief annoyances to which an experienced and conscientious architect is subject is to find the best work in his town either thrown open to public competition or handed over to a specialist in London or the nearest provincial centre; he feels it to be a great injustice that, as a ratepayer, he should be called upon to pay an outsider for services which he, or a local *confrère*, could have rendered equally well, perhaps better. That knowledge of local conditions and resources, which he has acquired only as the result of a number of years continuous observation and experience, and which would have enabled him to secure the best results at the lowest possible cost, is ignored. He knows that, as a local man, with a local reputation to maintain, he is bound to keep the cost of a building within the limits of the estimate, and this knowledge is a very heavy handicap in a public competition, whereas his rival from a distance can, and frequently does, exceed the estimate by anything from 25 to 50 per cent. The evil results of competition of this character are most acutely felt in small towns, for it is only in such towns that competitions for buildings costing very small sums are invited; these sums may be anything from 1,500*l.* to 15,000*l.*, and are too small to attract experienced and successful men, the result being that the competitors are generally young men who have nothing else to do, who in some cases have not had sufficient experience to work out an estimate, but who are capable of presenting a set of drawings, worked up to a high state of artistic excellence, thus completely outshining, in the eyes of an inexperienced council or committee, the more solid productions of experienced local competitors who are not prepared to spend their time in elaborating their drawings.

A Choice of Two Evils.

No matter how unfair or unjust are the conditions, councils and committees are always able to obtain any number of competitors, so the local man must either compete or, as he more frequently does, stand upon his dignity and allow an outsider to secure the work; and he subsequently has the doubtful satisfaction of seeing the same carried out by a man lacking all sense of local responsibility, to the general dissatisfaction of the promoters and at a cost increased to the extent of 20 or 25 per cent. by the competitor's want of local knowledge. But in this respect conditions are not as bad as they were twenty or twenty-five years ago, when the competition craze had reached its highest, or rather its lowest development. In those days in some districts it became the rule to invite competition for every small job of a public or semi-public nature; in fact, my first successful competition, twenty-seven years ago, was for remodelling the end of a church, at a cost of 130*l.*

But country practitioners may congratulate themselves upon the fact that all councils and committees did not

pursue this doubtful course. In many cases the local man, having proved his ability and trustworthiness during a number of years upon smaller work, was given the necessary opportunity to prove his worth upon a work of importance; and seldom did he fail, because the experience gained during his years of trial enabled him to rise to the occasion, and carry out that work with credit to himself and satisfaction to all concerned. His success on this occasion placed him at once in the front rank locally, and he may go on from success to success; he has the ball at his feet, but he will still have to exercise the greatest tact and skill and strain every nerve to keep it there; he must continuously put his best into every attempt, for his position is never secure; a single failure may undo the work of years; he cannot, like a medical man, bury his failures; his works stand out boldly open to the criticism of all; by them he is judged, and they will remain monuments, either to his success or failure; it is his lot in life to be surrounded by rivals, ready to take advantage of every mistake he may make, so that throughout the remainder of his career he is compelled to labour just as hard and unceasingly to keep his place as he did when struggling to secure it.

The Keynote of Success.

Individual effort is the keynote of architectural practice, and to this may be attributed the comparative want of success attending all our attempts to initiate some effective form of combination, and I venture to suggest that, while encouraging in every possible way individualism, with regard to professional and artistic ideals, we ought to strive strenuously to break down that insularity which leads us to look upon our brethren as antagonists and causes every man to fight solely for his own hand; let us endeavour to make the profession socially and morally a concrete whole.

But should the successful practitioner be able to maintain his position, just consider what a variety of works he may be called upon to carry through during the course of a twenty-five or thirty years active practice in one of these small towns. He may run the whole gamut, from a town hall on the one hand to a common lodging-house on the other; including, perhaps, a theatre or music hall, churches, chapels, technical institutes, public libraries, banks, schools, baths, fever and general hospitals, infirmaries, cottage homes and other workhouse buildings, clubs, hotels, public-houses, steam laundries, factories, warehouses, business premises of all descriptions and residences of all dimensions and varieties; and during the third decade of that practice it may well happen that, as a consolation for the loss of the best work of his town in his earlier day, he may be then employed upon important works in various parts of his county.

A Valuable Training.

In the course of a practice such as this, the knowledge and experience gained ought to make the practitioner one of the most useful men in the district, for during his career he must necessarily have been associated with all kinds and conditions of men. He has received instructions from a bishop and has accepted practical suggestions from the labour-master of a tramp ward. He has met the elders and deacons in the vestry of a Nonconformist church, and has been behind the scenes in a theatre and behind the bar in a public-house, and tradesmen have explained to him the routine of their various businesses. He is frequently appointed arbitrator by the Courts in building cases, is called upon to give expert evidence before judges and magistrates; he is usually the expert member of deputations to the Local Government Board, Board of Education, Charity Commissioners and other bodies having administrative functions, and has possibly been appointed assessor in architectural competitions. He must understand the working of the Poor Law, the Licensing Law and the by-laws of all public bodies, and, without doubt, he is compelled by the circumstances of his position to be thoughtful, tactful and businesslike in all his undertakings.

Qualifications for Success.

Let us for a moment consider what are the necessary qualifications for successful practice in a small town. Putting aside the question of the influence of powerful friends and relatives, which is the same everywhere, I may say that after the usual artistic and practical knowledge of one's profession, business aptitude becomes a necessity combined with a keen, practical sense of proportion.

As a rule, the business man in such a town places use before ornament. He cares far more to have his premises suitable and convenient in every respect for his particular business than he does about the style or quality of his ele-

vation, and as it is usually only by making a special effort that he is able to rebuild at all, he naturally desires to cut down the cost to the lowest possible point. These being normal conditions, they require serious consideration, and it is here a young architect usually makes his first mistake. With possibly a London or large town training, and having undertaken the commission, instead of devoting his energies to the task of making himself acquainted with the methods of his client's business with a view to making the plans perfect in their convenience, his thoughts are chiefly centred upon the elevation; he is far more anxious that the building shall be a monument to himself than that it shall be perfectly adapted to its purpose. Now this is an injustice to the client and a great error in tactics on the part of a young architect anxious to succeed.

Study a Client's Interest.

In a very varied practical experience, extending over thirty years, I have always found it the best policy to study my client's wishes, interests and circumstances, and to carry out his instructions to the letter. With tact one can generally persuade him to allow one to suitably arrange the elevation. He may not understand the plans, but there is no excuse for the architect not understanding him; it is one's duty as expert adviser to get a thorough grasp of his ideas before committing himself to the fulfilment of a contract. I do not wish to labour this point, but I have known several instances where a client, with the intention of doing a good turn to a young fellow starting a practice, has placed a small job in his hands only to find that he, having big ideas of how the work should be done, practically ignores the instructions he has received, with unsatisfactory results to both parties; and this is the reason why clients with little money to spend fight shy of the highly-educated young architect, and instead employ a builder's clerk or one other of the many persons who are to be found in every town capable of geometrically arranging upon paper a man's requirements, and who will treat the matter strictly as a matter of business and carefully obey instructions, rather than try to earn a reputation as an artist at a client's expense.

Ideals of Common Sense.

It may be said that these idealistic young men are comparatively few in number, but nevertheless they are capable of causing a deal of trouble and of inducing in the public mind a want of confidence in the business qualifications of architects generally. I remember sitting next to one of these young gentlemen at the Society's annual dinner some seventeen or eighteen years ago; he was about twenty-four or twenty-five years of age, and assured me, as the result of his experience, that clients, as a rule, knew nothing about architecture: that one only had to bluff the Jonnnies to get one's own way. He said he was always careful that all parts of his buildings should be in perfect harmony; and to secure this result he had to prepare drawings for every part, down to the smallest details, even to designing his own knockers and door furniture. That young man must now be at least forty years of age, and it would be interesting to know whether he still designs knockers and door furniture.

The necessary qualifications, therefore, include the possession of a sufficient amount of common sense to enable one to recognise the fact that it is possible for a client to understand his own wants best. To succeed a man must be prepared to study carefully and conscientiously the requirements and routine of every class of business, and the manner in which each of the religious bodies conduct their services, before he can design either business premises or churches or chapels, perfectly adapted to their various uses; and the same may be said of every other class of building with which he may be associated.

The Coming Men.

In the whole of the preceding remarks we have been considering to a great extent the position and the opportunities of the successful man only, say, perhaps one man in twenty; what about the other nineteen? These are the gentlemen who would chiefly benefit by the passing of a Registration Bill, and for whom this Society has been, and is now, strenuously working. The men at the top, whether in London or in the provinces, who are effectively taking the cream, can well afford to sit still while their less successful brethren are struggling to secure a share of the skimmed milk. Of course, among such is to be found a large percentage of mediocrity, but a large majority are capable and conscientious practitioners. Some of the younger men have great talent and are fighting their way

to recognition, and with fair opportunities and that experience which time only can bring, will in the future take the places of the successful men of to-day; others there are who are artists to the core, but lack method and business aptitude; and, as in all other professions, a small percentage are failures from other causes. While some are not smart enough, others have earned a reputation for being too smart; but one and all suffer from the inroads made into their opportunities of employment in the honourable profession they have adopted as a means of livelihood by a host of persons who adopt architecture, generally in its lowest form, as an auxiliary means of adding a few pounds per annum to the incomes they earn from their more legitimate callings.

The Need for Registration.

What with the large general furnishing firms, builders, shopfitters, bar fitters, horticultural builders, and others who advertise themselves as willing to send down, take measurements, and prepare plans, specifications and estimates, free of cost, on the one hand, and estate agents, auctioneers, business valuers and commission agents who add architecture and surveying to their other work, on the other, the profession is becoming one of the worst a young man could possibly enter, and it is small wonder to find some of our less successful brethren adding insurance agencies and rent collecting to their legitimate calling, and as a strong reaction has set in with regard to municipal expenditure, the general outlook is black indeed.

The Training of an Architect.

Under the conditions previously referred to it must be perfectly obvious that the training of a number of pupils will be poor, their opportunities, as far as practical work is concerned, being in some cases nil; while pupils and assistants in the best offices have unique advantages—better, I venture to suggest, than could be obtained in a large specialist's office—for they are employed upon works of the most diverse character, giving them such a wide experience that in the future they will be prepared to solve almost any building problem. They can visit the buildings upon the drawings of which they have been engaged, discuss constructional difficulties with the clerk of works or general foreman, acquire a practical knowledge of materials, and are brought into contact during the course of their daily work with clients of all kinds.

But taking the other extreme, those opportunities are reduced to vanishing point, for it is well known to all of us that there are at the present moment men in practice who do not possess a single architectural qualification; who earn a scanty living by preparing plans for small speculative builders and other odds and ends, such as small alterations and repairs, dilapidations, schedules and working out builders' accounts, with possibly a rent-collecting business thrown in to fill up time; they cannot afford to keep a clerk, but take a pupil, whose opportunities are small. His duties commence with holding the ring end of a tape and minding the office, and finish with tracing and copying such odds and ends as his master has been able to secure; and between these extremes pupils and assistants have very varying opportunities for acquiring a knowledge of their profession.

About Office Hours.

But, as we all know, a young man cannot acquire a sound working knowledge of his profession should he confine his study to office hours, so let us see what are his opportunities for supplementing his office training in a small town. He cannot, as in the large towns, gain a knowledge of materials and tools by attending a polytechnic, nor attend schools under teachers having special qualifications for teaching the art and science of architecture and building. True, there may be an art school or technical institute where he may be taught building construction by a schoolmaster in possession of an advanced stage certificate, and he may receive art teaching, including architecture, from an elementary school teacher, assisted possibly by a lady who had qualified in the same school; but as a rule, no attempt is made to teach a student how to practically apply what little knowledge he has been able to gain, the *raison d'être* of the technical institute's existence being apparently not so much to impart useful and practical knowledge, as to earn the Science and Arts grants from the Government.

Mediocrity and Incompetence.

So pupils and assistants who are in earnest and who are determined to succeed leave these institutes severely alone and more usefully employ their time in private study, assisted by the ever-increasing number and variety of really

excellent books now published on architecture and the allied arts and sciences. But with so many other opportunities of agreeably spending their spare time, comparatively few apply their minds to study out of office hours; therefore, considering how little real training it is possible to obtain in some offices, we are quite prepared for the fact that a large number of incompetent young men are constantly being turned adrift on an already overcrowded market; some are never again able to retain a position, but drift about from one office to another for a few years, and, ultimately abandoning all ideas of practice, settle down in some business more adapted to their peculiar qualifications.

The First Effect of Registration.

The compulsory examination, which would necessarily be a corollary of registration, would tend to check this flow of mediocrity and incompetence into the ranks of the profession, for a pupil would then appreciate the absolute necessity for study were he compelled to pass a qualifying examination; as it is he does not recognise any such necessity, many permitting themselves to carelessly slide just at the time when they ought to be laying the foundation of future success. I can speak from personal experience, for in the case of my own pupils two are Associates of the Institute, two have passed the intermediate examination, and one is a member of this Society, while two others never did an hour's study outside the offices.

The Development of the Society.

Now, with regard to the future membership of the Society, we ought strenuously to seek the co-operation of the younger men in the profession, whether in practice or not, for we must remember that the assistant of to-day will be the practising architect of to-morrow. I feel sure that many members have in their offices capable assistants, whose careful and excellent work shows distinct promise for the future, and who would be pleased to accept nomination at the hands of their principals; I introduced two such last year. The necessity for registration ought to be an article of faith with all young men; they are the persons who, in their efforts to establish a practice, find the natural difficulties of the task enormously increased by the unfair competition of a heterogeneous multitude who now tout for most of the smaller works. The leaders are apathetic, because these evils do not affect them; they are engaged in the otherwise commendable task of demonstrating to the public their individual capacities for the performance of the highest class of work; many of their buildings compare favourably with those of the great designers of the past, and will undoubtedly be a source of inspiration, both to their contemporaries and their successors, but this is not enough to secure the ultimate good of the profession as a whole. The head may hold itself high, enjoying the bright sunshine, but if the body is held down by the tangled weeds of unfair conditions and attacked by an ever-increasing number and variety of parasites, sapping its life blood and cutting off its proper and legitimate nourishment, the time must come when that head will be dragged down and the whole body brought to a level, overwhelmed by the noxious growth which has fattened on its vitals.

The Supreme Test of Architectural Ability.

But whatever the head may do, the body is now fighting for life, and is determined to clear itself of the tangled growth by which it is fettered. The steady growth during recent years of collective consciousness has opened up an avenue of hope leading us to look forward with confidence to the day when our objects will meet with ultimate success.

The opportunity for designing buildings of a monumental character cannot possibly be given to us all; environment to a great extent regulates the character and quality of our opportunities. We country practitioners must adapt ourselves to circumstances and be prepared to carry out conscientiously the more or less humble works required by our public and private clients; any lofty ideas we may have must necessarily be subordinated to considerations of a financial nature, our ideals in most cases having to be modified in order to bring the cost within the limits laid down by our employers. Therefore, I venture to suggest that the man who, as the result of a wise and thoughtful exercise of his energy and ability, has been able to secure and maintain through a number of years the confidence of his fellow townsmen, and who has carried out to their satisfaction a large proportion of their most important works, is equally deserving of credit with his more prominent metropolitan confrère. For after all the supreme test of architectural skill is the ability to design a building

perfectly adapted by convenience of its internal arrangement to meet all the requirements of its users, and in a style suitable to and in harmony with its environment, whether simple or ornate.

The Use of Opportunities.

We have men in our ranks who have attained this local eminence, and also a large number of talented and conscientious men awaiting the time of recognition. Some of these, and perhaps not the least deserving, may never be fully recognised, for the sentiments expressed in Gray's "Elegy" are as applicable to members of our profession as to those of other callings. While their more ambitious and energetic brethren are laboriously and strenuously climbing the steep hillside, turning neither to the right nor to the left, unceasing in their efforts to reach an ever-receding goal of success and fame, these others seem to have been "born to blush unseen;" usually having grand ideals, they lack enterprise. They dream of cathedrals and palaces on the heights of success, while their less talented, but more strenuous, brethren are securing all the coigns of vantage leading to those heights. They love not the feverish bustle and excitement of modern life, they avoid the busy haunts of men, and meander at their own sweet will along the quiet and easy roads in the valley, stopping frequently to pluck the flowers at their feet, and absorbing all the beauty and fragrance by which they are surrounded, because they have not the power (through lack of opportunity) to reflect it in their works.

The late Dean Hole, in his book on roses, says:—"He who would have beautiful roses in his garden must have beautiful roses in his heart." Applied to our art this sentiment may be rendered:—"He who would design beautiful buildings must have beauty in his heart." To bring forth architecture in its best, purest and most abiding form, one must have not only the ability to appreciate and enthusiastically admire the finished product, he must also have power to conceive, and his soul must be filled with the thoroughness, reverence and tenderness of love to enable him to overcome the difficulties necessarily involved in the execution of his work, down to its smallest detail, whether conceived in grandeur or simplicity. His ideals need not be dominated nor trammelled by the dogmatic art-teaching of any special school, nor yet by the more ephemeral caprice of fashion; for beautiful lines, beautiful forms and beautiful colours are constant in the effect they produce upon the mind, and are capable of an infinite variety of harmonious combinations.

These great artistic qualifications are not monopolised by the prominent practitioners either in London or the large provincial centres, but are diffused in varying proportions throughout the provinces, and their effects may be seen and recognised as often in the country as the town. And as it is now to us a source of pleasure and inspiration to visit, sketch and contemplate the beautiful old country churches, guildhalls, mansions and cottages designed by unknown or forgotten masters of past ages, so will future generations of architects, when hard lines and harsh tints shall have been softened and mellowed by the hand of time, discover new beauties in the scattered architectural gems of our smaller towns and villages, the work of our present-day architects. Their names will be then equally unknown or forgotten, but I am sure their works will form a strong and genuine link in the long chain of architectural evolution, inspiring their successors to still higher and nobler developments.



Discovery of Roman Remains in Manchester.

SIR,—Excavations now being conducted on a site in the centre of Manchester by the local branch of the Classical Association have already yielded results of more than local importance, and we should be glad if you will allow us to make them briefly known.

The plot of land in question, which lies within half a mile of the Central Station and is bounded on the south by the curve of the Manchester South Junction Railway, has never been occupied by any buildings since Roman times, and it was the information that this area had been let for building purposes that led our excavation committee to take immediate action. The results that have been obtained are

due to the enterprise and determination of its hon. secretary, Mr. F. A. Bruton, M.A., of the Manchester grammar school, who conducted the work for more than a fortnight amid the recent snow and rain, aided by the advice of Mr. John Henry Hopkinson, M.A., lecturer in archæology in the University of Manchester.

Observers like Whittaker in 1771 and Corbett in 1849, when some scanty traces of the Roman fortifications could still be traced among the mounds and hollows of a waste grassy meadow, had placed the western wall of the Roman camp of Mancunium at varying distances from Duke Street, which bounds the site on the east; and our present search was directed, in the first instance, to locating this rampart precisely. Corbett's notes pointed to its being found just inside our enclosure, but the stone remains uncovered there by Mr. Bruton, about 4 feet below the present surface, proved to be those of a building at least 14 feet wide. On this were found well-preserved portions of a beautiful Samian vase from Lezoux (130-200 A.D.). Another set of foundations 10 feet further west again disappointed—and delighted—us by proving to be not the wall, but the base of another building. Pushing some 20 feet further west we had the satisfaction of uncovering what was unmistakably the base of a rampart, a breadth of some 6 feet of Roman concrete about $2\frac{1}{2}$ feet deep imposed on the characteristic stratum of boulder stones embedded in puddled clay about 18 inches deep; beneath that about a foot of solid clay spread over the natural gravel. A large number of squared blocks of sandstone, clearly taken from the wall, had been found a little above the concrete, though not *in situ*. Just inside the rampart, in the sand and gravel which represent the Roman surface, we found two coins—one of the ill-fated Geta (211-2 A.D.), the other of the mother of Geta and his murderer Caracalla, Julia Domna, the wife of Septimius Severus, struck some time after his accession (193 A.D.), and his death at York in 211. The combination points to a rather precise date for the dropping of the coins in the camp. The discovery exactly confirms Whittaker's measurements.

Among other interesting finds we may mention a perfect grindstone, of a pattern not yet recorded, and several well-worn floor tiles. It is clear that Mancunium was a camp containing rows of permanent stone buildings.

Completely to explore the half acre of Roman soil now happily defined a large sum will be needed. The Lord Mayor and citizens of Manchester are doing their part generously, but we may be allowed to appeal to all who are interested in Roman Britain and the work of the Classical Association generally to send contributions towards the fund to our treasurer, Mr. Harold Williamson, M.A., the Grammar School, Manchester.—We are, yours faithfully,

EDWARD LEE HICKS, }
ROBERT SEYMOUR CONWAY. }
Vice-Presidents of the Classical Association;
President and Chairman of the Manchester and District Branch.

Manchester: January 12.

GENERAL.

The Architects elected as members of the committee of the Salon for 1907, 1908 and 1909 are MM. Pascal, Laloux, Daumet, Vaudremer, Nénot, Moyaux, Louis Bonnier, Raulin, Deglane, Blavette.

The Library Committee of the City Corporation have issued a report showing that the attendance at the recent exhibition of Flemish masterpieces at the Guildhall Art Gallery was 137,521, bringing the total attendances at special art loan exhibitions to 2,662,292. The average daily attendance was 1,800, while the Sunday attendances reached 4,624. Catalogues to the number of 15,796 copies were sold, these representing a sum of nearly 400*l*. The total expenses of the recent exhibition were 1,232*l*., from which must be deducted the amount received by the sale of catalogues. The sum expended was 387*l*. in excess of the grant made by the Court of Common Council. The next art loan exhibition will be one of Danish and Norwegian masterpieces.

A Special Effort has been inaugurated by a committee of women for a definite share in the restoration of Selby Abbey. They have resolved to form an "Association of the Women of England," to whom shall be assigned the definite work of raising funds for the restoration of the "glorious choir of Selby," including its sanctuary, stalls, screen, pavement, &c. It is desired to collect a sum of 20,000*l*.

The Birmingham Town Council have formally appointed Messrs. H. V. Ashley & Winton Newman as architects of the Council House extension.

The Art Union of Ireland have resolved unanimously:—That the committee of the Art Union of Ireland, having read the report of the Parliamentary committee of inquiry into the working of the Royal Hibernian Academy and the Metropolitan School of Art, desire emphatically to protest against the report and recommendations of the majority of the Parliamentary committee, and that the minority report commends itself to all those interested in the cause of art in Ireland and in the encouragement of the schools.

A Meeting was held at Shrewsbury on the 11th inst. to appeal for funds for the restoration of the abbey church, Shrewsbury, which was founded by Roger de Montgomery. The monastery was formerly one of the greatest in England, and the abbot had a seat in Parliament. The bones of St. Winifred first rested in the abbey, and were reputed to have worked many miracles. The principal weakness is in the stately tower, which is threatened with destruction. Four thousand pounds is required to make the structure safe, and 1,000*l*. has been subscribed. The church will probably become the cathedral of the proposed bishopric of Shropshire.

At Llandudno, during the making of Mostyn Broadway a new thoroughfare connecting Llandudno with Craig-y-don a large quantity of soil has been carted from the slope of the Little Ormes Head, above Craigsidde Hydro. A carter shovelling earth came across a case of bronze. It broke, and was discovered to be full of bronze Roman coins, which are believed to be of the third century, and the bust of the Emperor Aurelius upon some of the best preserved is recognised from the design of Roman coins in the British Museum.

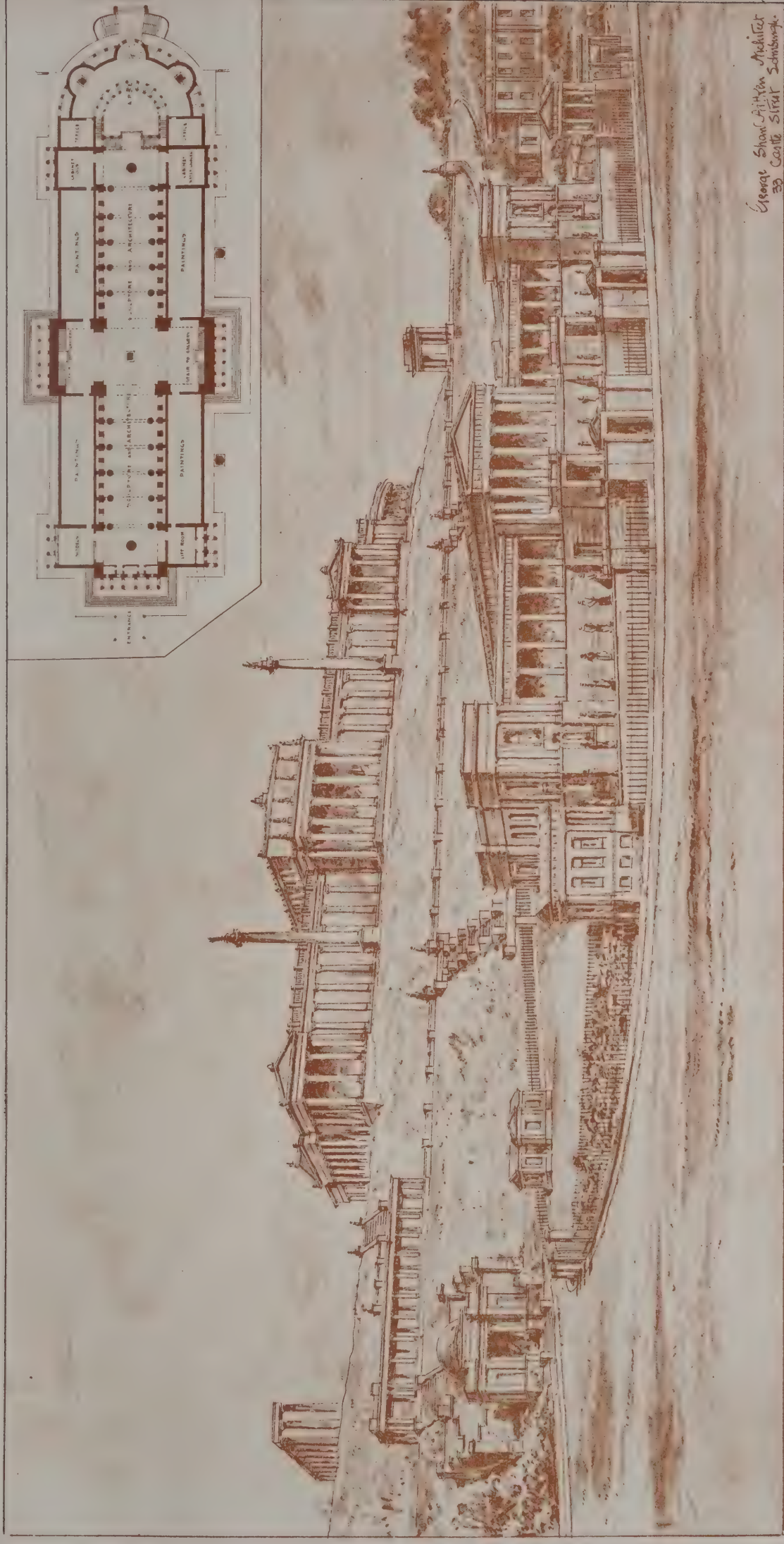
The Hertfordshire County Council have agreed that Mr. A. Dryland, county surveyor, having been appointed county surveyor of Wiltshire, a successor be advertised for to commence his duties on March 31, the salary to be 500*l*. per annum, the surveyor to give his whole time to the duties and to undertake no private practice.

The Chairman of the Glasgow School of Art has received a letter from the chairman of the Royal Glasgow Institute of the Fine Arts in which he states:—"I hoped to arrange for a contribution to be made from the funds of the Institute towards the erection of the proposed extension of the School of Art buildings, and it was with very great disappointment that I received an intimation from our law agents that the Institute was not at liberty, under its constitution, to give a subscription to your building fund. It was the unanimous feeling of the Council that, although we could not assist you substantially, we should convey to you our best wishes and an expression of the highest appreciation of the work which the School of Art is performing in our city. We all hope that the funds you desire may be secured promptly and easily, and we regret that it is not in our power (in our corporate capacity) to assist you."

A Resolution will be proposed by Alderman Bicker-Caarten at the next meeting of the Paddington Borough Council, expressing the opinion that the time has come when steps should be taken to erect a public hall for the Borough of Paddington, and that the question should be considered by the general purposes committee.

The Original Coloured Drawings, from which the reproductions of the old masters issued by the Arundel Society were made, have recently been rearranged in the National Gallery, and are divided into their separate schools and arranged in historical order. In addition, about a dozen drawings have been transferred on loan from the education department of the Victoria and Albert Museum at South Kensington to complete the collection.

The British Academy has received the sum of 10,000*l*. for the purpose of establishing a memorial to the late Mr. Leopold Schweich, of Paris. The endowment is to be devoted to the furtherance of research in the archæology, art, history, languages and literature of ancient civilisation with reference to Biblical study. Any article of interest which may be obtained by excavators is to be offered in the first instance as a gift to the British Museum, or if the class of article be already adequately represented in the museum, then such article is to be offered as a gift to some other museum in the United Kingdom.



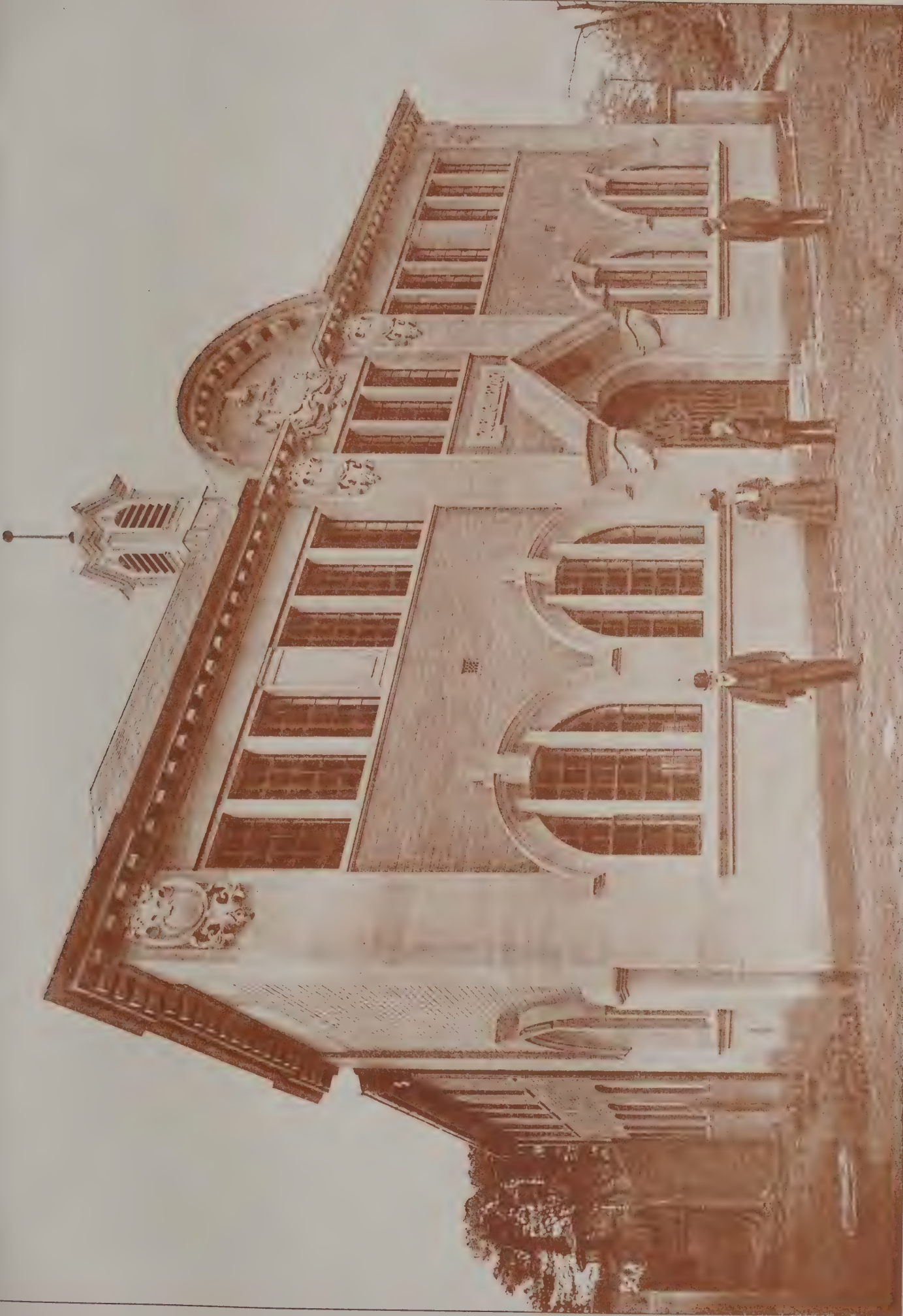
DESIGN FOR NEW NATIONAL GALLERY ON THE CALTON HILL, EDINBURGH.

VIEW FROM THE SOUTH-WEST.

GEORGE SHAW AITKEN, Architect.

George Shon-Fitzhen Architect
33 Castle Street Schenck.

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PHOTOGRAPH BY J. A. S. EAST HARDING STREET, LITTER LANE, E.C.

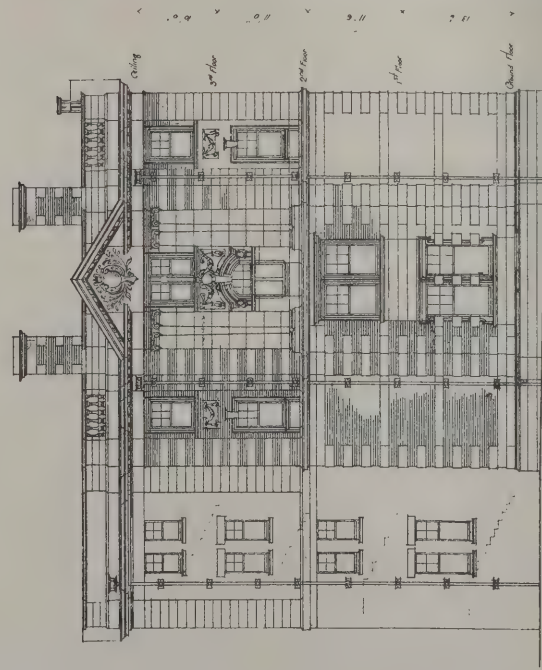
WREXHAM PUBLIC LIBRARY.
VERNON HODGE, Architect.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

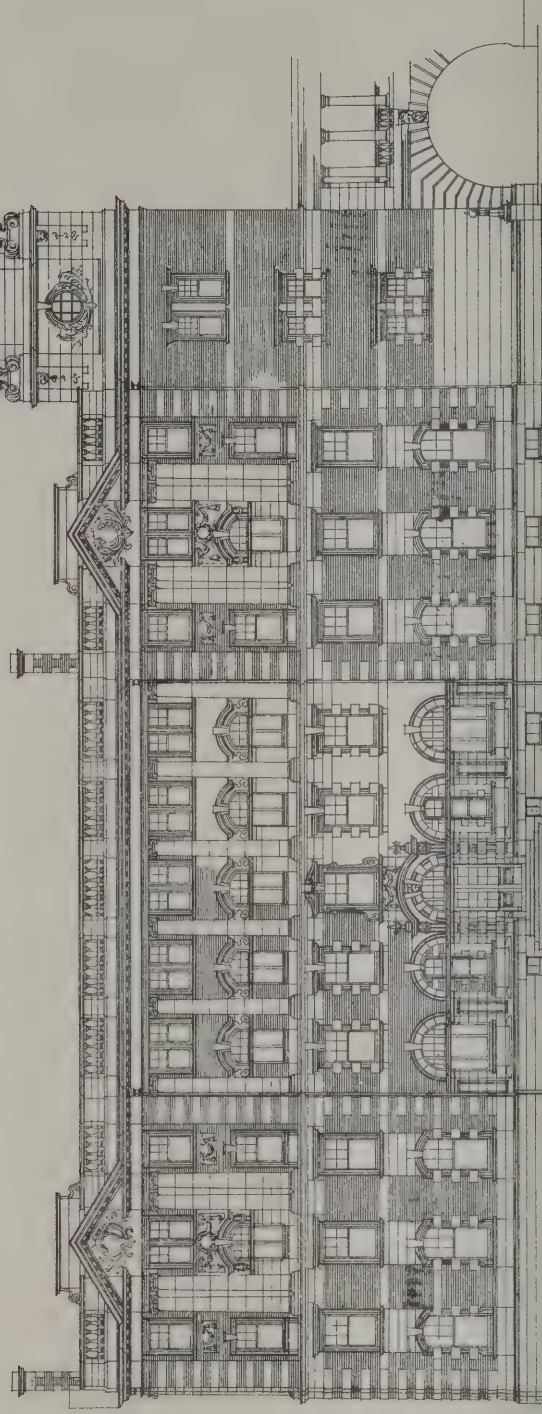
Oliver Architect, Jan 3 18th 1907.

MANCHESTER ROYAL INFIRMARY.

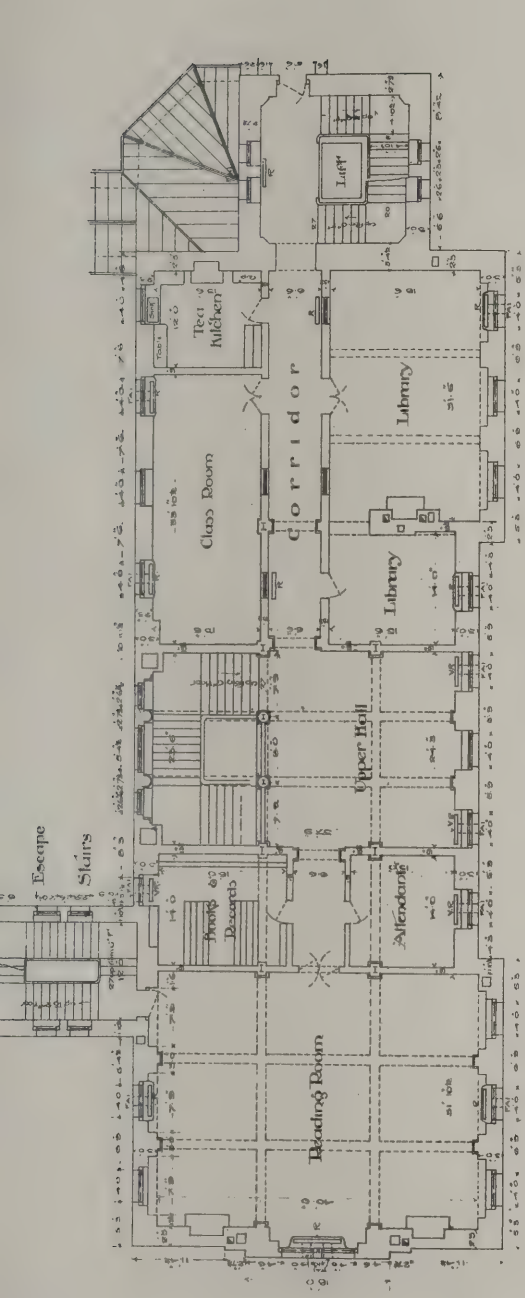
TEACHING DEPARTMENT



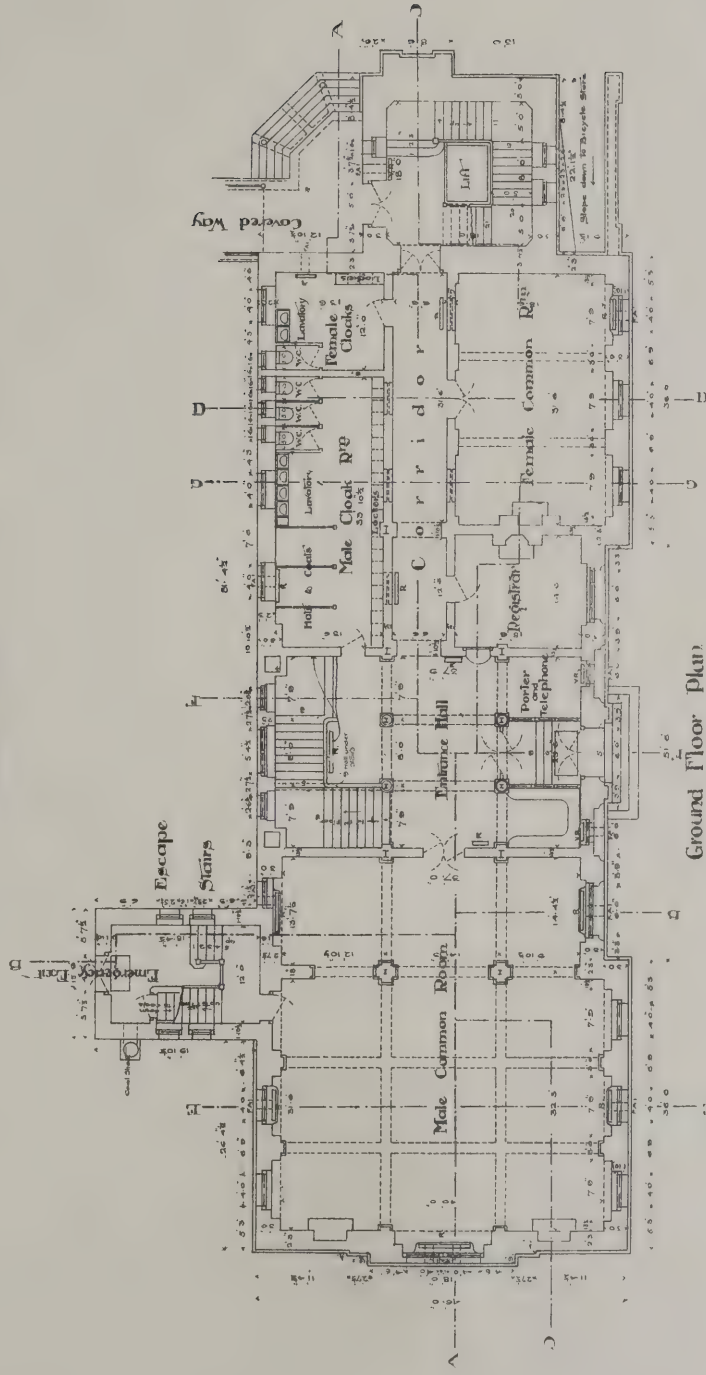
NORTH · ELEVATION



WEST · ELEVATION



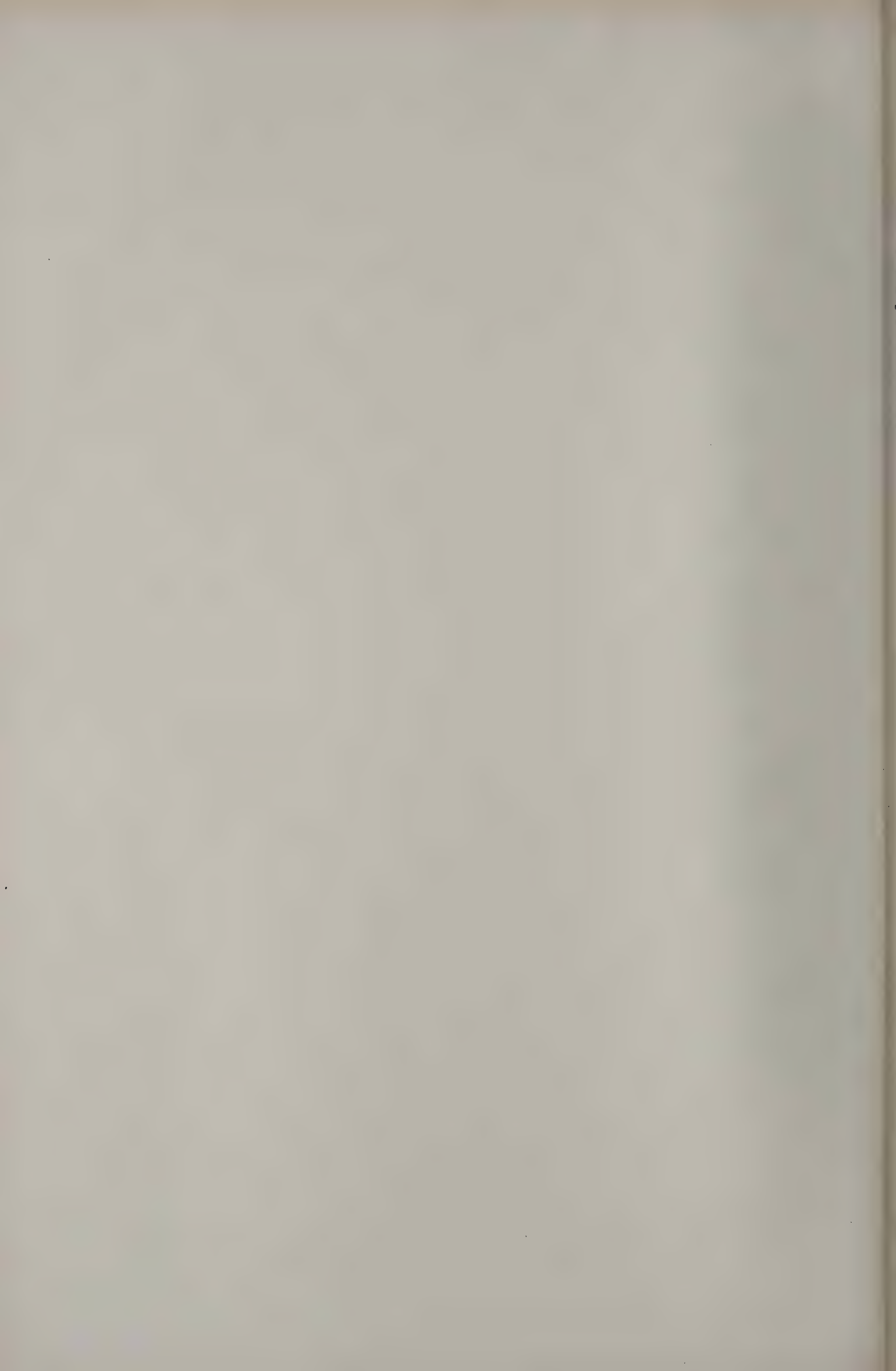
1st Floor Plan



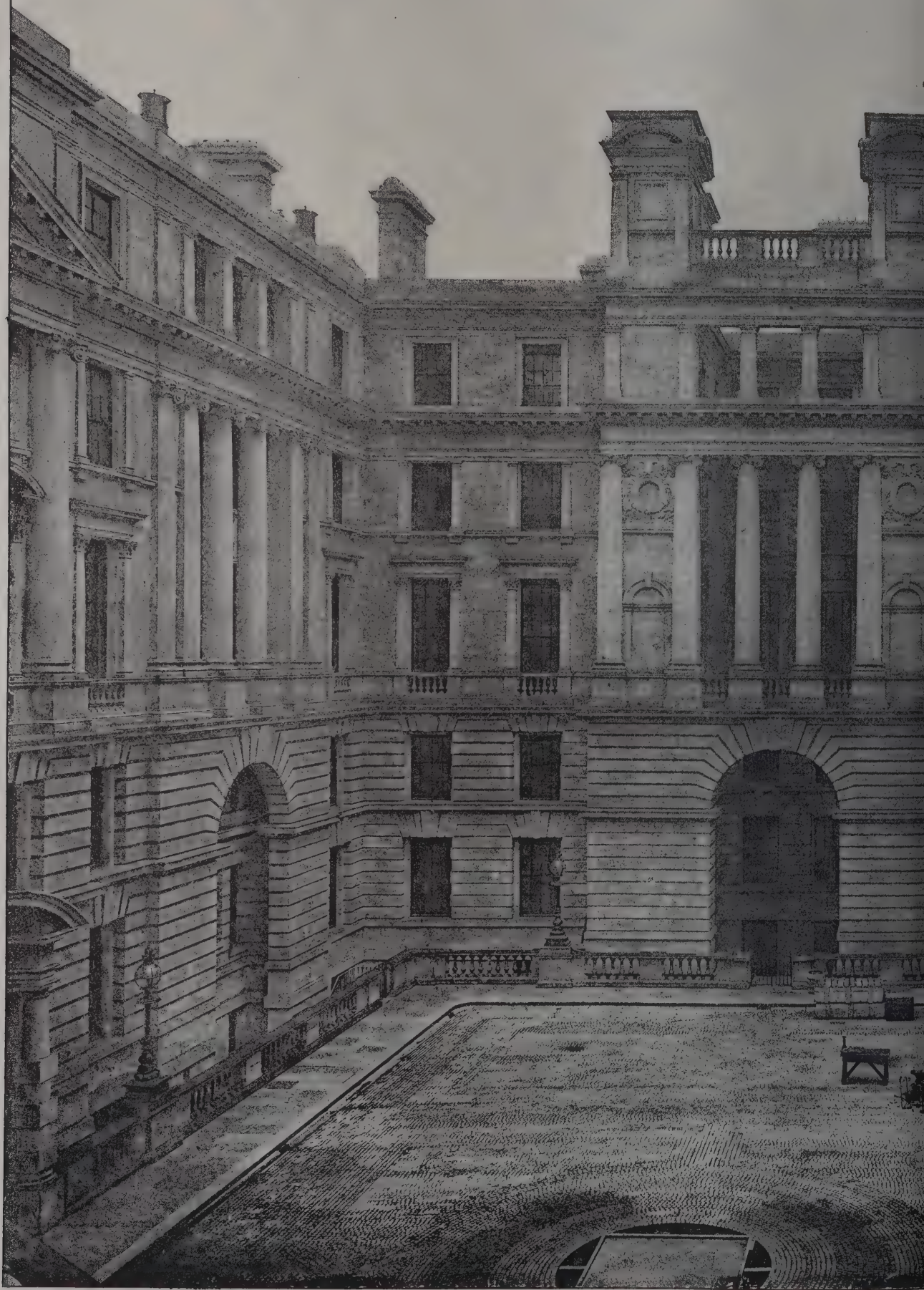
Ground Floor Plan

Scale of 1" = 10' 0"

Architects, { EDWIN T. HALL, V.P.R.I.B.A., London.
JOHN BROOKE, A.R.I.B.A., Manchester.



LIBRARY
OF THE
UNIVERSITY OF CHICAGO



PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

THE NEW WAR OFFICE,

The late WILLIAM

Carried out by CLYDE YOUNG, with the



"INK PHOTO," SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

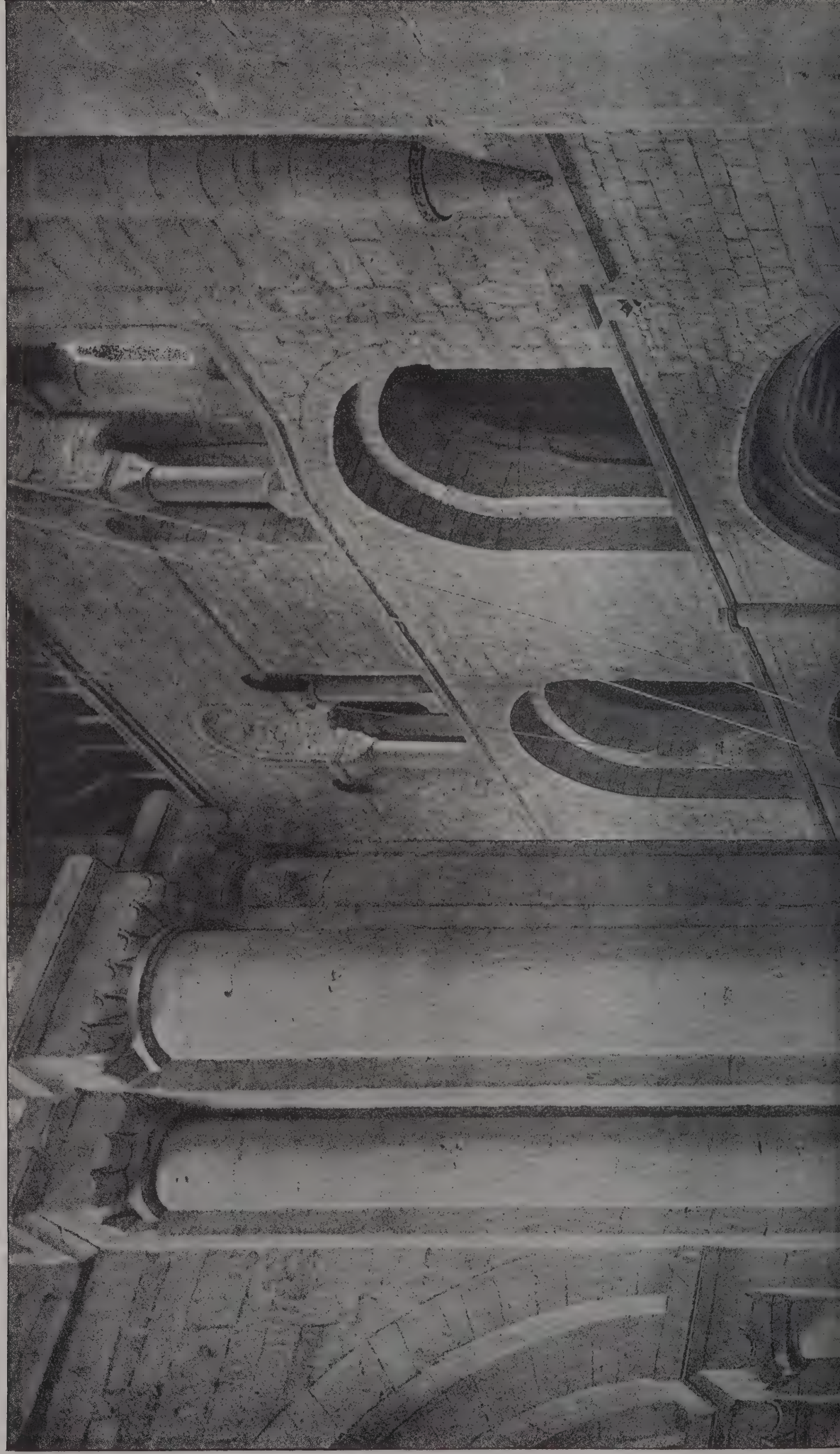
TEHALL: QUADRANGLE.

G., Architect.

operation of Sir JOHN TAYLOR, K.C.B.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.

The Architect, Jan 21st 1907.





INK-PHOTO, SPRAGUE & CO. L^{TD} 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES, No. 591.—CARLISLE: REMAINS OF NORMAN NAVE.

(Taken from South Transept, looking North-west.)

The Architect.

THE WEEK.

THE claim made by the late WILLIAM MACKISON, the engineer to the Corporation of Dundee, on account of extra work, has not lapsed through his death. Originally the claim was for 49,601*l.* But Mr. MACKISON reduced it to 15,000*l.* A preliminary skirmish took place in the Court of Session recently. Counsel for the Corporation sought to obtain a detailed account of all the items in order to ascertain on what grounds the reduction took place. Lord ARDWALL, the judge, said the plaintiff was competent to reduce and that he was not bound to specify his reasons in each case. The words used by his Lordship will possess interest for borough officials throughout the country. His Lordship said that corporations must know perfectly well when works are carried out. They did not need to be informed of that. He did not know that it was suggested that a detailed account should be presented of all the work which was done by the deceased gentleman in preparing plans for special works under special Acts. Such an account was not, as a rule, demanded in such matters. Engineers and architects and persons in similar positions did not charge as masons or bricklayers did—so much per hour—for their services. They were allowed a certain amount, proportionate to the value and importance of the works done, and it was on that footing that the memorandum in this case was priced. He thought it was a perfectly competent and sufficient statement of action, and he did not think, when the case went to trial, the Corporation would have any difficulty in determining as to the items. Costs were given to Mr. MACKISON's representatives. The trial will be important, for it remains to be seen whether a borough engineer, who is usually engaged to perform specified duties, is obliged to undertake others, or which high fees are usually paid to unofficial engineers and architects, without receiving additional remuneration. The case will also determine whether the Statute of Limitations applies in cases when it can be said that the work was continuous.

In the early part of 1906 we reported some unusual cases which were tried at Leicester. In one, plaintiff, a builder, sought to recover 465*l.* from a building owner. The defendant's plea was that the money had been paid to the architect. Although formal judgment was not given, it was known to be in favour of plaintiff, but the money remains unpaid. The case of CHAPMAN v. BURLEY came again before Mr. Justice WALTON but in the King's Bench Division. Counsel for plaintiff asked that judgment should be entered for him, as it was understood the defendant intended to bring the case to the Court of Appeal and possibly to the House of Lords. Counsel for the defendant said that Mr. BURLEY had handed over to Mr. JOHN GOODACRE, the architect, a large sum of money, and, naturally, he did not want to pay for the same work twice over. The architect had attempted to commit suicide, and had been removed to a lunatic asylum, and in this case the plaintiff looked to the architect for his money, and gave him his receipts. Moreover, the work had not been really done by the plaintiff, but by other persons. Of the 465*l.* alleged to be due only 125*l.* was claimed by the plaintiff, the remainder being alleged to be due to other tradesmen in various sums. Mr. Justice WALTON said he considered that the money ought to be paid, but upon the understanding that the defendant should have a discharge from the other persons to whom certain portions of the money was due, so that the defendant should be protected from any claim by any of the tradesmen who were said to have actually done the work. It was then agreed that the money was to be paid subject to a guarantee being given, and the question of costs should be held over.

The contract was entered into in March 1903, and amounted to 3,990*l.* The question really turned upon whether a client can pay an architect as an intermediary instead of settling with the contractor directly.

THE last exhibition which was held in the Guildhall could be considered successful, inasmuch as the Corporation of London enabled the public to see a great many examples of ancient and modern Flemish art which were novelties to the majority of visitors. The galleries were enjoyed by 137,521 persons. The expenses amounted to 1,232*l.* 6*s.* 10*d.* Of that sum 555*l.* had to be paid for insurance, the value of the works being estimated at 366,580*l.* For the catalogues 394*l.* 18*s.* was paid. The Court of Common Council allow 450*l.*, and consequently there has been an excess of 387*l.* 8*s.* 10*d.* It was anticipated that a larger sum would be received from the sale of catalogues. Only 15,796 copies were sold at 6*d.* each, and the profit derived from them was only 183*l.* 7*s.* From the catalogues of the Spanish exhibition the profit was much larger. The subjects of the pictures could not have been familiar to the majority of visitors, yet only one out of every eight visitors cared to invest in the catalogue, which as usual contained a large amount of information.

THE subscribers to *L'Art* may well congratulate themselves on the excellent plates which they obtain as supplements at the end of the year. Those for 1906 comprise a very large etching, *Un Quai à Rouen*, by E. DAUMONT, after a painting by CH. APOSTOLET; *Autour du Piano*, by the regretted A. LALAUZE, after one of JEAN BÉRAUD's Parisian scenes; *La Leçon de Lecture*, from a painting by TERBURG; *La Culture des Tulipes*, by M. CHAUVEL, the director, after the painting by the American artist, G. HITCHCOCK. The portrait of VICTOR HUGO after the marble relief by DENYS PUECH is enough to suggest that the art of wood-engraving is well supported in France. The latest number contains several reproductions of exquisite seventeenth-century miniatures. After twenty-six years *L'Art* continues to be entitled to its prominence among French publications relating to art.

ROAD contractors in Ireland are legally authorised to enter on lands where stone is easily obtainable, and by paying a nominal rent of, say, 1*l.* a year, to quarry and remove as much stone as is required for repairing roads in the district. The contractor may not, however, use the stones for any other purpose. This was decided at the Antrim Court of Sessions a few days ago. The tenant who held the lands claimed 20*l.* from two road contractors for removing a quantity of stones from his land and converting them to their own use. The defendants stated that five years had elapsed since they obtained the magistrate's order, and that no objections were raised to their operations. The Judge decided that it was illegal to remove any stones which were not required in the public interest, and gave a decree to the plaintiff. The case exemplifies a practice which is common in Ireland, and which is an abuse of an Act passed for the benefit of the public by reducing the cost of roadwork.

THE tower of Shrewsbury Abbey is in a dangerous condition. Last summer scaffolding was erected to enable Mr. HAROLD BRAKSPEAR to make a close examination. He reported that on the south and west faces the stone for a depth of 6 inches is so friable it can be scraped with a stick. The sills of windows are hopelessly decayed. Some of the buttresses require renewing. It is proposed to use selected Runcom stone for the reparations. A tender has been accepted amounting to 2,625*l.* if the whole of the work is put in hand, or 100*l.* additional if in sections. Altogether 3,500*l.* will be needed. Towards that sum about 1,050*l.* has been subscribed.

INTELLECTUAL INFLUENCE OF ARCHITECTURE.

ON Thursday in last week one of those events occurred which give delight to everyone in Paris who has respect for intellectual pursuits. There was a formal reception of a new member at the Académie Française. M. MAURICE BARRÈS has succeeded to the chair last occupied by M. HEREDIA, the poet, and, in accordance with custom, he delivered an eulogium of his predecessor. So practised a writer as the new Academician could hardly fail to compose an eloquent discourse on such an occasion. But we need not attempt to criticise what was said on a purely literary subject. It is the rule when the discourse is ended for another Academician to reply. Sometimes the second discourse, although always courteous, is not laudatory, especially when the two Academicians belong to different schools of literature. On the last occasion the duty was undertaken by Vicomte DE VOGÜÉ.

Like his father, the Marquis, M. DE VOGÜÉ is an amateur of architecture, and no one present was surprised when he endeavoured to prove that the art of arts exercised a formative influence upon the mind of M. BARRÈS. The new Academician it appears was educated in the University of Nancy, and some Frenchmen consider there is no provincial city in their country possessing a higher architectural value. Accordingly, in addressing him and tracing his career M. DE VOGÜÉ declared that while studying in the noble capital of Lorraine its edifices insinuated in the mind of M. BARRÈS lessons of taste, discipline and harmony. At such a time the representative of the traditions of the French Academy knows that every one of his words will be weighed, and he has therefore to be careful in his utterances and to avoid the slightest exaggeration. Was M. DE VOGÜÉ right in attributing so much power to the architecture of Nancy?

We must admit that at the present day it would be difficult for any patriotic student who did not possess extraordinary power of concentration to give much attention to the buildings in that city. Nancy is close to the frontier, and some of the battlefields of 1870-1 are almost within sight. It has become one of the most important of military stations. There are warlike evolutions almost daily, and the scenes have so much attraction, a university student in his spare hours would be likely to prefer the manœuvres which take place amidst picturesque surroundings to gazing on architecture. But in the old days Nancy was likely to surprise not only people from rural districts, but even from Paris. In the seventeenth and eighteenth centuries much was done to render Nancy beautiful. STANISLAS, the Polish prince who obtained through his wife the dukedom of Lorraine, was not only an enthusiast for architecture, but a man who could realise the necessity of laying-out streets with a view to the future. At a time when so much is said about remodelling cities and towns, it is surprising that Nancy is not selected as an example, for it suggests what can be done on a limited scale. In the time of STANISLAS the population was not likely to exceed 20,000 inhabitants. But there are public places, promenades and open spaces which can now serve for three or four times that population. The official buildings, if judged by modern ideas, now appear to be small, as it is common to see only a couple of storeys and an attic in them. But if we remember the circumstances of the time when they were erected, it can be realised that they were all on an adequate scale. It would be difficult to discover a more satisfactory group than that which surrounds the Place Stanislas, and which helps to suggest that other picturesque spots are near. The architecture is Renaissance of the eighteenth century, and gratifies the eye by its modesty. It upholds tradition, for the fragment which remains of the ducal palace enables one to conclude that in the fifteenth century no public building found in Nancy was remarkable for the loftiness of its elevation.

A man must have an odd organisation who does not derive pleasure from what he sees in Nancy. It does not consist entirely of palaces. There are streets which vary in their architectural merit. But those which belong to the eighteenth century, forming the majority, are not commonplace. STANISLAS had a *penchant* for wrought-ironwork—a strange hobby for a ruler of the Ancien Régime era—and the people gratified him by employing wrought-iron screens for their windows and balconies. There is, in fact, so much that is pleasing to a visitor, he is likely to draw the conclusion that the people who live in the city and walk every day through the streets must be benefited by what they see. Evidently M. DE VOGÜÉ holds that opinion also.

When, however, he suggests that the sight of the buildings in Nancy can have much to do with the making of an Academician, sceptics are likely to ask how many celebrities have come from the city. CLAUDE the landscapist, who has a memorial in it, could not have been inspired by the eighteenth-century buildings. JOAN OF ARC, although there is an equestrian statue in an out-of-the-way street, belonged to Domremy, which is thirty miles distant. CALLOT, the etcher, and ISABEAU the miniaturist, are the artists who are most associated with Nancy, although it might be supposed that with such surroundings art in all forms would flourish. The tombs in the older churches would be enough to inspire a youth who had the least tendency towards sculpture to abandon everything for its sake. Particular tests of the kind we have mentioned can, however, rarely be employed, for who can determine the rules for genius? University towns, although they may possess scholarship, somehow are rarely rich in distinguished natives. Much else is required besides a beautiful environment to make a man successful in either literature or art. But in a lesser degree there can be no question that fine buildings have an appreciable effect in mental cultivation, or it may be in disposing the mind for cultivation. If GOETHE was right when he said that it was a duty for everyone to make it a rule to see a pleasing picture, drawing or engraving, to read a poem, and to express a few reasonable sentences every day, can we not suppose that a number of buildings which could be considered as true representatives of architecture would be no less effectual? We are in this country so self-reliant, we are apt to forget that service can be rendered to us by works which belong to other men, and in the creation of which we have taken no part. Foreigners, who are brought up under different conditions, look on the things around to benefit by them. Accordingly they visit our museums, and on leaving would be able to render an intelligent account of what they saw, whilst true Britons imagine they have discharged their duty by passing through the galleries with more or less expedition. M. DE VOGÜÉ was addressing his own countrymen when he spoke about the lessons in good taste, discipline and harmony to be derived from the buildings at Nancy, and it would be unfair to judge him by an ordinary English standard.

In looking at buildings or other things it is well to remember that the intellect may be either active or passive. In the latter case the impressions derived cannot be very deep and are only transitory. For observers in that state such a city as Nancy may afford few lessons and will not be an aid in training. It is to be feared that too many of our countrymen when they look at buildings are without that attention which is connected with activity of intellect. Indeed, the criticism which has been expressed about modern buildings in London would appear to have come from men who had no clear recollections of what they saw, and who made up for negligent observation by drawing on their imagination for defects which were supposed to be inevitable. DICKENS described Venice as if he saw it in a dream and did not waken until he found himself in Verona. Many other English travellers appear to have seen things while in a similar condition.

In an academy, even though it may be the highest of all, it is fitting to talk of discipline and the educational influences of buildings. But men were not made to be always learning. It is likewise advantageous, and we ought to be grateful for the susceptibility, that beautiful objects can give us pleasure of a refined kind. Buildings, fortunately, can serve that end as well as pictures or statues. To those who are qualified to understand them, examples of architecture can be more influential than those of the subsidiary arts. A building may be wanting in colour, but statuary generally suffers from the same privation; moreover, all that can be obtained by lines and contours and their contrasts, by diversity of masses, and the variations of light and shade can be provided by a building. Largeness, when properly managed, is also an element of mental pleasure, and no work of painter or sculptor is in that respect equal to an architect's building. We must allow that in variety of subjects the architect is more handicapped than his brother artists. But he can at least provide that quality by calling in their aid. We may compare an architectural work to the shield of ACHILLES. At first it was a strong and specious piece of metal of varying hues, surrounded by a triple ring and with a silver handle on the back. In that state it afforded ample protection to a warrior, and would have been coveted by a Greek or Trojan chief. But the godlike metal-worker was dissatisfied until, for his own pleasure and the delight of all who saw it, he made the shield become a mirror of human life. Architecture can be satisfactory and give pleasure through its own qualities. But when supplemented by the work of other artists it becomes incomparable. If it were not so architecture would not have such a history.

Buildings which are works of art cannot, like paintings and statuary, be reserved solely for the enjoyment of the owner. It is very hard to conceal a building, and precautions for the attainment of that end only whet curiosity. Like everything else made by human hands, temples and palaces can be destroyed, but in spite of all the vicissitudes they have sustained, the world still possesses buildings commenced at a very distant period, and their ruins still afford pleasure. For the associations which gather around a building appeal with stronger force than those connected with the works of either painters or sculptors. The associations are a source of pleasure, and hence it is that the work of the architect, as long as fragments survive, appeals to men with a power which is irresistible. To go back to Nancy, the tomb of STANISLAS in one of the churches is impressive. But there are others which rival it in that quality. Who would care to distinguish him from the other dukes if he possessed no other memorial? But when we stand in the place which bears his name we seem to have the man himself before us more clearly than he would appear in any history of his reign. For we can realise by looking around that although he was a stranger, he endeavoured to make his subjects happier by providing for them spectacles in which art and nature were auxiliaries, and which could not fail to render their lives more agreeable. No doubt STANISLAS could not lay out such a number of streets in straight lines and right angles without destroying some relics of the past. But he respected whatever was of importance, and the city he created is sufficiently satisfactory in itself. It can give pleasure to natives and visitors, and it may be, as M. DE VOGÜÉ maintains, do still more for a superior class of minds.

Mr. H. Wilson, examiner, in his report on the annual exhibition of work by students at the Vittoria Street Jewellers' School, Birmingham, insists on the necessity of opening the school in the daytime, thus turning it into a raining school for the production of practical workmen in all branches of the trade. The establishment of day classes would obviate inconveniences at present experienced, and be of the greatest possible benefit to pupils, teachers and employers.

MARBLE DECORATION.

THE extent of the admiration for coloured marbles in England is suggested when we find that even at the present day cheap wall-papers representing marble slabs are a marketable commodity, and that house-painters endeavour to create something with their brushes which will have a resemblance to them. Respect for marble real or sham is an inherited quality. In a country like England, where commerce has such power, it was hardly possible to prevent the importation of a variety of marbles at an early period. But the prices charged for them and the difficulty of working them necessarily limited their use in construction. Every Englishman who made the Grand Tour could not avoid observing marble in foreign buildings and must have desired to see so beautiful a material in his mansion. Trade is always equal to meet demands, and it is likely that the introduction of marble chimneypieces in this country was mainly owing to the desire to possess some example of so beautiful a material. JOHN EVELYN in the time of CHARLES II. describes a visit to a "rare magazine of marble" in Lambeth, where he went to order chimneypieces for a friend's house. The owner was a Dutchman, who, we are told, "had contracted with the Genoese for all their marble." Foreign workmen were, no doubt, employed on the production of chimneypieces in England, but after a time it became a rather important national industry. In old-fashioned books on building we can find instructions not only for setting out such work according to the styles in vogue, but also for staining the marble. Evidently efforts were common to make cheap marbles resemble those varieties which were expensive.

The material that was generally used was obtained from foreign quarries. Although it was known that in England there was fine alabaster, yet the wealth of this country in marbles had not been revealed, and there was not sufficient desire for native products to justify expensive investigation and more costly quarrying. Certain of the most prized varieties are not to be derived from the strata of any part of Great Britain. For instance, we cannot compete with Carrara for the marble which sculptors require. But there can be no doubt that an abundance of coloured marble is available. Questions of cost have, however, to be considered. Competition in building is too close to admit of sacrifices to patriotism, and if coloured slabs can be offered in London or any English town from Belgium and from Galway, it is easy to imagine which will be preferred by a building-owner. This is the more to be regretted, for as there is a wide field for the use of marble for lining or casing walls, it is unsatisfactory that foreigners should be profiting by the demand rather than the quarry-owners and stone merchants in this country. The subject is one which deserves more consideration than it receives. The desire to employ marbles to cover walls of inferior material cannot be considered as enduring. The demand for slabs is increasing no doubt. But the genius of architecture is whimsical, and in a year or two something else may become the fashion. When WILLIAM BURGESS proposed to introduce marble veneering in St. Paul's he was supposed to have committed a sacrilege. English thoroughness revolted against the attempt, although it cannot be said that St. Paul's has gained by what was substituted. Those engaged in the preparation of marble, therefore, are disposed to pause before they crowd the markets with slabs which may not be immediately required. The railway companies, it is needless to say, never aid in the promotion of any industry, and especially of one connected with building. The consequence is that beautiful marbles from Devonshire, Cornwall, Kilkenny and the West of Ireland have a price laid on them which ordinary speculators hesitate to give. It would not be difficult for the Tariff Commission to make out a case for the English or Irish producer. But what is needed is some authority suffi-

ciently powerful to prevail with railway and shipping companies and other carriers in order to obtain a suspension of prohibitive prices, at least until the marble industry has firmly established itself. If in the United States marbles can be used in nearly all kinds of buildings, it is hard that in England the material is employed only in exceptional cases.

Marble has the advantage of forming by itself an admirable wall decoration. Some people may consider it is suggestive of coldness and is unfitted for rooms used in winter. But marbles are to be obtained which are warm in colour, and which would not be repellent when the air outside is chilling. It is not necessary to assume that marble is an obstacle to painted decoration. An admirable example of the combination of the two is to be seen in the Sessions House, Old Bailey. Marble and painted decoration are also common enough in the large American hotels. One of the first attempts in this country at a similar union of art and nature was carried out under the auspices of Cardinal NEWMAN half a century ago. In the University Church he had erected in Dublin the lower part of the walls was lined with coloured Irish marbles, while for the upper part copies were obtained of the tapestries which RAPHAEL designed for the Sistine Chapel. The experiment, we believe, was successful, and a similar arrangement might be adopted in many places.

The word marble is supposed to be expressive of the shining qualities of the material. Although in our prosaic time marble is thought to be mainly applicable for decorative purposes, partly because it can be polished, it possesses real constructive value. Rome alone is able to offer about 6,000 ancient columns to the attention of the student, and nearly all of them have been doing work for more than a thousand years. But columns that would sustain heavy loads and are monoliths become costly, and if marble is not used for columns it is not likely to be adopted for lintels or as frames for doors and windows in modern buildings. We may therefore allow the ancients to surpass us in the use of marble for a variety of purposes. It has been the most precious of all materials for the architect and the sculptor. But while marble statues possess a character of their own which is not to be obtained by the use of bronze and *vice versa*, it cannot be said that marble has led to the creation of any architectural style. There is nothing in marble buildings which cannot be executed in stone of inferior value. Corinthian and other floriated caps have been successfully carved from stones that cannot be comprised among the varieties of marble. The nearest approach to original work will be found in the slabs and inlaying of some Italian Gothic churches. But the material is deserving of veneration when we consider the noble buildings and statues which were created from it. If PLINY's statement can be accepted, that the shepherd who discovered the marble quarries from which the materials of the temples of Ephesus were obtained was rewarded, we can admire the people who could value a material which lent itself to so many possibilities. If we remember that the ancient sculptors, by the process known as *circumlitio*, made a marble statue appear as if it were carved from fine ivory, we are able to understand why so much importance was attached to a material which was supposed to surpass bronze in its fitness for creating figures of gods and heroes.

Some of the districts from which Greeks and Romans derived their marbles are not yet exhausted. By using stone from those sources modern architects and sculptors unite themselves with the men who were so successful, and in that way a bond of union is formed which is entitled to respectful consideration. If one touch of nature can make the whole world kin, the admiration for the beautiful colours of marble or its subservience to the sculptor's hand reveals that men continue to have the same characteristics as their predecessors of an earlier time. Marble then succeeded as it could now if employed with a like knowledge of its qualities.

WHO IS A WORKMAN?

THE Workmen's Compensation Acts do not define the term "workman," and consequently cases from time to time arise as to the class of persons who are entitled to benefit under the Acts. It was decided in the case of *SIMPSON v. The Ebbw Vale Steel and Iron Company*—noted in *The Architect* for March 24, 1905—that the manager of a mine at a salary of 400*l.* a year, a house rent free, and coal who was not required to do any menial work was not a workman within the meaning of the Acts. The ground of the decision in that case was that the Acts used popular terms, and that those terms must be interpreted in a popular sense. The recent case of *BAGNALL v. LEVINSTEIN, LTD.*, raises a similar problem. In that case the deceased, for whose death compensation was claimed, had been educated at Manchester University and was a master of science. He entered the employment of the defendants, who were manufacturers of dyes and chemicals, for a period of five years, at a salary which began at 200*l.* and rose to 260*l.* He was to give all the results of his work to his employers, who were to pay him a commission of 4 per cent. on any inventions he made which they considered worth patenting. He was obliged to do certain manual labour in connection with some parts of his work, and while so engaged worked with the other workmen. For five-sixths of his time he was thus engaged. For one-sixth of his time he worked in the laboratory. He was paid monthly, but his name did not appear in the wages book. The Court of Appeal, COLLINS, M.R., and COZENS-HARDY, L.J., FARWELL, L.J., dissenting, held that the deceased was not a workman within the meaning of the Acts, and that his widow could not claim compensation. The Master of the Rolls pointed out that some attention should be paid to the purposes for which a person was employed. If a person was employed to bring his scientific knowledge to bear upon his employer's business, or to discover improvements in the scientific processes used in that business, the mere fact that he performed manual tasks in connection with his employment would not make him a workman. He was employed as a scientific expert, and not as a workman.

With the principle of this decision we entirely agree. Both this case and the earlier case noted above lay down clear rules as to who are not workmen. But these cases also make it quite evident that some statutory definition of a workman is needed. When we get a judge of the eminence of FARWELL, L.J., differing from his equally eminent brethren it is abundantly clear that the law is far too uncertain. In defining the workmen who come within the Acts we think that the Legislature would do well to consider the principle upon which this legislation rests. The Acts really provide a statutory insurance for workmen at the expense of the employer. This statutory insurance was confined originally to the more dangerous classes of employment. It has been gradually extended to classes of employment which cannot by any stretch of the imagination be called dangerous. We take it, therefore, that the Acts lay down the principle that persons who cannot be expected to insure themselves shall be insured by the employer. Now capacity to insure oneself depends upon the remuneration received, whether we call that remuneration wages or salary. We think that whether or no an employé is within the Acts should depend upon the amount of remuneration which he has received during a certain period, say, for instance, the past year or six months. We take it that no one will deny the truism that the State should encourage the virtues of thrift and self-reliance. A definition based upon this principle would tend to bring about this desirable result; for though we think that in many cases the principle of these Acts is just, because the employé does not earn enough to insure himself, we think that there are some cases in which they do harm, by removing from shoulders which could quite well bear it the duty of making an adequate provision for the risks of employment.

NEW BOOKS.

Building Contracts, Building Leases and Building Statutes. With Precedents of Building Leases and Contracts and other forms connected with Building, and the Statute Law relating to Building (including the London Building Acts, 1894-1905). With Notes and Cases under the various Sections, together with an Appendix of Unreported Cases. By His Honour Judge Emden. Fourth Edition by Joseph Bridges Matthews, of the Middle Temple and the Oxford Circuit, and W. Valentine Ball, of Lincoln's Inn and the North-Eastern Circuit, Barristers-at-Law. With a Glossary of Architectural and Building Terms, revised and extended by Maurice B. Adams, F.R.I.B.A. (London: Butterworth & Co. 27s. 6d.)

Building Cases. Being a Digest of reported Decisions affecting Architects, Surveyors, Builders and Building Owners. By F. St. John Morrow, LL.D. (Dub.), of the Inner Temple and the South-Eastern Circuit, Barrister-at-Law. (London: Butterworth & Co. 15s. net.)

WE have much pleasure in again recommending to the notice both of architects and lawyers the fourth edition of Judge EMDEN's well known book. It is invaluable alike to both professions, and the present edition will fully maintain the reputation which it has already acquired. The most recent cases are noted up and introduced into their appropriate places. In all cases, so far as we have observed, the gist of the decision is correctly given, and its effect upon the existing law accurately stated. Even upon subjects so thorny as prescription, covenants running with the lease at law and in equity, covenants by tenants to pay rates, taxes and other outgoings, the law is stated so clearly that a layman may gather many correct ideas upon these technical matters. The general principles of the law are stated with great completeness and clearness in the First Part, which occupies 370 pp. The only defect which we have noted is the omission of all mention of the Public Authorities Protection Act. We think that some mention of this and the cases thereon should be made in the next edition. It is a subject of quite as much importance to architects and builders who contract with public authorities as, for instance, the rules as to the requirement of a seal in contracts with corporations, with which the learned authors deal fully and adequately. Part II. of the book deals with forms and precedents, and Part III. contains the text of the London Building Acts, the various Metropolis Management Acts, the Public Health Act and the London County Council By-Laws. The Acts and the by-laws are accompanied by notes which refer to the cases in which their meaning has been judicially determined or discussed. The glossary of architectural terms and the list of unreported cases is very complete, and should be of great service to lawyers.

The second of the books which stands at the head of this article contains a collection of cases dealing with architectural and building subjects, arranged under alphabetical headings. It contains also an appendix which comprises (1) a form of agreement and schedule of conditions for building contracts, (2) the professional practice approved by the Royal Institute of Architects as to the charges of architects, and (3) RYDE's scale of surveyor's fees. The list of subjects with which the cases deal is by no means exhaustive. There are no cases upon the subjects of the mortgagee's right to tack or to consolidate, nor upon the tenant's covenant to pay rates, &c., nor upon covenants running with the land. Sometimes cases are not placed in the order which we should expect to see them. Then we should have expected to find the case of *LAWFORD v. Billericay Rural District Council* under the head of "Contract not under Seal." Instead it appears under the head "Executed Consideration." Sometimes one case is inserted upon a subject which, if it was to be illustrated at all, should be illustrated by several cases. Thus at page 287 we have one inconclusive case upon a petition of right. The subject, if it appeared at all, should have been illus-

trated by cases which clearly pointed out the scope of this remedy. There are, in fact, several cases more recent than the one cited which might have appeared. The cases which appear are on the whole accurately summarised; and, though we think that both the topics selected and the cases to illustrate those topics have been chosen with too little system, we think that the digest will be useful to lawyers who cannot consult the regular reports. The book could be improved if the cases were arranged under more general headings, and if a few more subjects were included. This could easily be done without increasing the size of the volume if the appendix were omitted. A really complete digest, summarised as in this book, would be very useful to both lawyers and laymen.

Writers are fortunate who can have their books introduced among Messrs. GRIFFIN's standard publications, for the majority of the technical volumes published by the company have to be reprinted several times. Great care is of course exercised in the selection. We have now before us the thirteenth edition of Dr. GEORGE REID's "Practical Sanitation: A Handbook for Sanitary Inspectors and others interested in Sanitation," to which an appendix on sanitary law has been added by Mr. HERBERT MANLEY. The authors have had experience as medical officers of health, and what they say about requirements and about what should be avoided can be accepted with confidence. The information is conveyed in such simple language the pages can be understood by others besides officials, and the volume is well deserving of the attention of the owners of property.

"Painters' Colours, Oils and Varnishes," a practical manual by Mr. T. H. HURST, is another volume from Messrs. CHARLES GRIFFIN & Co., Ltd. It is a fourth edition of a comprehensive treatise, and has been derived in a large measure from the author's experience as a specialist. Mr. HURST describes the latest processes in the manufacture of colours and compares them when necessary with those of an earlier time. The comments on colours will be found useful by contractors. Thus of zinc white he says:—"Charlton white is an excellent substitute for white lead; its colour is good, its body is superior to that of white lead; in well-made samples it has about twice the colouring power, while it possesses the advantages of not being discoloured by sulphuretted hydrogen, by sulphur gases or pigments, and of being non-poisonous. It mixes well with all vehicles, so that it may be used for all kinds of painting with good results." The author treats not only of pigments but of vehicles, driers and varnishes, and on all the subjects he supplies valuable information.

Under the title "Apollo" a new edition has been published by Mr. HEINEMANN of the lectures delivered by M. S. REINACH, of the French Institut, on the history of art throughout the ages. It may be compared to a careful map of the world or the pocket-books which are adapted for the use of students of various sciences, and who wish to have laws expressed by formulæ. The six hundred illustrations are mainly reproductions of photographs, and clearly suggest the character of typical works of art, from the incised figures on bones of the cave-dwellers to M. BARTHOLOMÉ's expressive "Monument to the Dead." The author is no compiler. He expresses his own opinions about the value of the works, and often offers novel suggestions, as when he says that the Venus of Melos probably represents AMPHITRITE, and held a trident in the extended left arm. One remarkable feature is the bibliography. "Apollo" should be the constant companion of all students of art, for it is an encyclopædia in a small way.

ANTONY AND CLEOPATRA.

THERE is still discussion among playgoers about the accuracy of the costumes and buildings introduced in "Antony and Cleopatra" at His Majesty's Theatre. The following article by the late Edward W. Godwin will suggest that he had considered both sides of the question concerning the influence of Hellenism in Egypt:—

The Rome of the time of Antony would be in every respect much the same as the Rome of Julius Cæsar. The difference in date between the two stories is only a very few years. Indeed Antony and Cleopatra may be taken as a continuation of Julius Cæsar. The latter play ended with the fall of Brutus at the battle of Philippi, B.C. 42. The other tragedy begins with the death of Flavia, B.C. 40, and concludes with the death of Cleopatra, B.C. 30. The last of the Ptolemies, passionate and animal as she was, seems to have been no worse than were many members of her distinguished family before her. The legitimate dynasty became extinct on the death of Ptolemy Alexander II. But Alexander had a natural brother—one Dionysius Auletes—who, after much trouble, secured for himself the throne of Egypt, leaving it to his eldest child—the Cleopatra of the drama—who was born B.C. 68. There had been already four generations of Kleopatras. The first was a Syrian princess, who was married to Ptolemy Epiphanes, and who bore him two sons and two daughters, both of the latter being named after their mother. One of these girls was taken to wife by her brothers in succession and had a family by each, the eldest son of the youngest brother being Ptolemy Soter II., the grandfather of our Kleopatra.

In the tragedy before us we have no less than thirty-six scenes. Of these twenty-five are architectural, including the one on board Pompey's galley, which belongs to naval architecture. The other twenty-four are divided between Alexandria, Rome, Messina and Athens, or the respective residences of Cleopatra, Cæsar, Pompeius and Antonius, but by far the most important of these are those which belong to the city of the Ptolemies. It is next to impossible to reduce this play to set scenes, for the unities of time and place are quite disregarded by the author. In the first and last Acts a very slight change would enable us to bring these into two scenes, if the fourth Scene of the first Act were carried on to the second Act and the first Scene of the fifth Act omitted, but the second Act carries us in seven scenes from Pompey's house at Messina to the house of Lepidus at Rome, thence into Cæsar's palace, thence into the streets of Rome, thence to the palace at Alexandria, thence to Misenum, and finally leaves us floating on the sea. In the third Act (eleven scenes) we are in Alexandria, Rome and Athens; now on the plains of Syria and now on the promontory of Actium. In the fourth Act of thirteen scenes we are certainly confined to Alexandria and its neighbourhood, but we are perpetually moved about from the inside of the palace to the outside, from within to without the walls, from one camp to the other, until we are brought to rest in that remarkable scene—"the monument." I see no reason why the scene in the house of Lepidus (Act ii. Scene 2), should not be laid in a lesche or under a colonnade before Cæsar's house, and thus serve also for the two scenes which follow it. Indeed, by the exercise of some little thought and care, the whole number of the architectural scenes may be fairly reduced, and it is possible without serious mutilation to prevent some of the abrupt changes, as for example that brought about by the introduction of Alexandria in the fifth Scene of the second Act; for there does not exist, as it seems to me, any great obstacle to this scene forming part of the third in the third Act. I cannot at present see that we can do with less architectural scenery than that set down in the following list, unless the scenes at Athens and Messina are omitted altogether:—

1. The palace at Alexandria—interior.
2. A monument at Alexandria.
3. Cæsar's house at Rome—a lesche or colonnade.
4. Antony's house at Athens—interior.
5. Pompey's house at Messina—interior.

Of the interior of Cleopatra's palace the play presents us with no less than twelve scenes, and with one laid outside or before the palace (Act i. Scene 3), but all thirteen could reasonably pass in one hall if attention was given to the planning of it. The remains of the temples at Philæ, Dendera and Kalabsche, the relic of the palace at Medinet Habou and the representations of domestic architecture in the fragments of wall-paintings in our museums are the only authorities available for this important scene, for what is left of the old city of Alexandria is little more than an inchoate mass of ruin. The temples and palace, however,

that I have just mentioned must be held to be far inferior to the temples and palaces of the royal city. A city founded by such a man as Alexander, and that, too, for his favourite natural brother; a city whose chief street was 100 feet wide and nearly four miles long, whose geographical position was such as to command the commerce of the known world; a city where the last dynasty of Egypt's kings resided for nearly three centuries, where one Ptolemy devoted his powers to the advancement of art and science by originating and devising educational schemes—schemes that would put to shame the largest efforts of modern governments; where another Ptolemy carried these designs into noblest execution by the establishment, among other things, of a museum—school and a library that were among the wonders of the world; a court where Euclid and Nicomachus, Antiphrilos and Apelles were by no means remarkable men; a city where the Aryan and the Semitic nations were united, where the Egyptian, the Jew and the Greek met, as it were, on a level platform—was not a place where architecture or any other art would be likely to be underrated. The picturesque irregularity visible in the work at Philæ must not, however, be taken as applicable to the palace of the Ptolemies at Alexandria. That the spirit of Greek freedom—that freedom without which the Propylea would never have been—might have struck root in Alexandria is more than probable, but the day of freedom, of original art-thought was already far spent; law was taking the place of feeling; geometry was being substituted for the eye; instead of ideas being created facts were collated; the beautiful was reduced to a system and art was made science. The evidence of material wealth—a splendour lavish as daylight—would be there. Whatever marble and basalt, porphyry and serpentine, bronze or silver or gold, or any other precious material could do we may be quite sure was not lacking. Mechanics would shine like the sun in construction; multitudes of pillars, and miles of avenue and corridor and labyrinth would speak of the mighty mass of labour in the service of Egypt; but the creative art power had passed its meridian a full century before the city was founded, and quite two centuries before the Ptolemies began the objectionable practice of marrying their own sisters.†

The "monument" of the play is evidently nothing more than the raised stage at the back of the main stage, so common in the theatres of Shakespeare's time. An Egyptian monument or tomb was constructed on principles which could not possibly admit the poet's idea. But the Greek monument was altogether different. In the one case we find a tomb, an architectural grave, a sepulchre; in the other we have a house, a shrine, a temple. The little memorial of Lysicrates at Athens, and the temple-like Lycian monument discovered at Xanthus, and now in our National Museum, are extreme illustrations of one principle of design. In both the structure consists of two storeys; the ground storey solid and comparatively plain, the upper storey open and enriched with columns, figure sculpture and other ornamental accessories. Now, although acting on a higher platform than the stage is always made to look more or less ridiculous by modern scenic arrangements, in proof of which assertion I may cite Juliet's balcony as a flagrant example, and although I know of no instance where this division of stage level has been well carried out, yet even in the Veronese and Venetian plays there is no room for reasonable excuse if the scene results in failure; still less in the play under consideration should the acting suffer, inasmuch as the area of the monument of Egypt's queen may be of almost any size. In its architecture, as compared with that of the palace, there might well be marked the vast difference between the arts under the first Ptolemies, when the *Aphrodite Anadyomene* was painted, and the low condition to which 150 years of rapid decline had brought them, when the last of the Macedonian dynasty ascended the throne.

Our third Scene—Cæsar's house at Rome—needs no further description than what has already been given in the notes on Julius Cæsar. Antony's house at Athens might be one of the old Greek houses or palaces, with its double arrangement of Andronitis and Gynaecitis, or the men's and women's quarters. The fourth and fifth Scenes of the third Act introduce us to two rooms in this house, but there is no reason why one interior should not suffice for

* Arsinoë, one of the concubines of Philip of Macedonia, was pregnant with the child afterwards known as Ptolemy I., surnamed Soter, when she married Lagus.

† Ptolemy, the big-belly (146-17), not only married his sister, and this too after she had become his brother's widow, but divorced her in order to marry her daughter by his brother.

both scenes if the proper room be selected, which I take it should be the pillared hall (*aule*) of the Andronitis, which in a Greek house occupies the place of the Roman atrium. The floor might be of mosaic, whilst both the ceiling and walls might be painted. Pompey's house at Messina, or Messina, might be either Roman or Greek, or half and half. The old Greek city was destroyed by the Carthaginians in B.C. 396, but Dionysius, tyrant of Syracuse, at once rebuilt it, so that its buildings were well seasoned—neither too new nor yet too old—when the Romans came into possession after the First Punic War, B.C. 240.

The *Costume* of this play may be taken to be somewhat mixed. That the Roman fashions were for the most part accepted wherever the power of Rome had made itself a reality may be safely assumed, but then these fashions were themselves moulded on those of other nations. Nor was this spirit of imitation or copyism altogether confined to the people by the banks of the Tiber. It is said of the great Alexander that, after his Persian conquests, becoming partial to some of the things he saw in Asia, and desiring to make himself popular with his new subjects, he actually assumed the Persian habit and adopted many of their customs. Everyone knows that the Romans followed his example in regard to Greece with a sort of alacrity which was at times almost amusing. But fashion, in old as in modern times, belongs to the upper classes, so that while I have little hesitation in clothing Kleopatra and her court in the habit, or some slight modification of the habit, prevalent among Greeks—more or less adopted also by the Roman aristocracy—the poor people, the clown especially, and perhaps the soothsayer, might very well exhibit in their dress some tradition of the old nation to which they belonged.* The Ionic chiton, the chlamys, the peplos, the transparent fine-linen vest, chemise or under tunic were dresses which obtained throughout the shores of the Mediterranean with but little variation beyond that resulting from increase or decrease in length or breadth of material. No doubt, too, the fashionable ladies of Alexandria had their parasols or umbracula just the same as the ladies of Athens, Rome or Pompeii. Broad-brimmed straw hats, with low, saucer-shaped crowns, were also probably worn. Octavia, after her marriage, might appear in the stola and the square-cut white pallium, fastened with a fibula or brooch on the right shoulder, leaving the right arm free. For the details of the costume for this play it will be sufficient to refer to the marbles and bronzes in the British Museum. Among the references to costume in the text of (1) Julius Cæsar and (2) Antony and Cleopatra we may find mention made of (1) leather aprons, crowns, coronets, doublets, cloaks, kerchiefs, nightgowns, dressing-gowns, with pockets, spurs; (2) the points of a doublet, crowns, "crownets" and pockets. In Julius Cæsar the architectural passages are few and slight—

— Many a time and oft
Have you climb'd up to walls and battlements,
To towers and windows, yea to chimney-tops,
&c., &c.

Mention is also made of stone towers and walls of beaten brass, and there are references to buildings and places in Rome, e.g. Pompey's porch, Pompey's theatre, the statues of "Old Brutus" and Pompey, images decked with ceremonies or hung with trophies, public pulpits, and Cæsar's walks, arbours and orchards. In Antony and Cleopatra there is not one word about architecture or building, but then we have a description of the Queen's barge, which was all overlaid with gold and "like a burnish'd throne burnt on the water;" its poop was of beaten or *repoussé* gold, its sails were purple and perfumed, the tackle of silk, the oars of silver, and the pavilion or canopy of dais which shadowed the rare Egyptian was cloth of gold of tissue. If a throne was wanted in the market-place for the serpent of old Nile and her lover it was got by setting chairs of gold upon a platform of silver—"a tribunal silver'd." Shakespeare's idea of Kleopatra's person may be gathered from a few scattered expressions. According to the poet she was of a dark or tawny complexion; the words he puts into her own mouth would even go so far as to make her black and wrinkled:—

— Think on me,
That am with Phœbus' amorous pinches black,
And wrinkled deep in time?

* The queen, according to the text, which follows history in this particular, appeared often "in the habiliments of the goddess Isis"—the goddess of the moon; in other words, in a long, transparent, fine linen tunic, and a pallium fastened by a knot in front, a crown of lotus flowers on her head, and a sistrum in her hand.

Allowing for the exaggerated language of the woman, we must still, I think, conclude that her charms were not to be found in beauty such as Pericles or Phidias delighted in. She was old, very old for Egypt; but even the rough soldier, Enobarbus, says that "age cannot wither her nor custom stale her infinite variety." Not in measured beauty of form or face, but rather in the serpentine or undulating movements of her body, in the changing *expressions* of her full-lipped wavy mouth and large dark eyes, in her expansive brow—a feature not so much admired now as in Shakespeare's time; above all, in her wit must we seek for the strange witchery she exercised over Julius Cæsar and Mark Antony.

CAEN STONE.

ANOTHER letter from Mr. W. D. Caröe respecting the decay of Canterbury Cathedral through coal smoke has appeared in the *Times*. Among the remarks are the following:—

Every expert in masonry is alive to the evil of face-bedding. In some qualities of stone the results are much more serious than in others, and Caen stone is by no means the worst of them. Unfortunately it is not the case that the Mediæval builders were careful to avoid face-bedding. Technically skilful as their masons were in the manipulation of stone, they were singularly careless, or often, I believe, ignorant in this important particular. It is also a pure fiction that the Angel Tower at Canterbury was largely erected out of reused material. A few of the Norman stones were reused at its base, below the level of the cathedral roofs. The rest was entirely constructed externally of new stone. The outcome is that certain portions of the stonework are indubitably face-bedded, and some decay is due to this fact.

But the general and recent rapid decay and the special condition to which I referred in my previous letter have nothing whatever to do with face-bedding. The fact that stone which has stood in a purer atmosphere for hundreds of years is now beginning rapidly to disintegrate owing to a definite chemical change in its structure would seem to afford evidence enough of some fresh stress to convince the most incredulous. Chemical analysis proves to the hilt that the fresh stress is coal smoke. Obviously, face-bedded stone, being the more tender, is generally the first to give way to such adverse influences; but even so, some of the face-bedded stone is in better condition than some of the other. The sporadic character of the decay depends upon the quality of each stone and its original position in the quarry. The long transport would naturally tend to mix up the stones from different parts of the quarry.

It is interesting that not only at Canterbury, but elsewhere, the Caen stone used by the Normans was of superior quality to that imported later; in fact, at Canterbury it may be accepted as a general rule that the older the Caen stone the better its quality and condition. Of Lanfranc's stonework there is not, regrettably, much left to us, but what there is happens to be fairly well protected. Yet after 800 years of sturdy existence, mostly in the purer air of the past, it is showing signs of giving way to modern conditions. It should be understood that good stone once set to the weather may erode (as, typically, at Stonehenge) under long exposure. It will not decay, after a long life, except under fresh influences.

We have, then, to face the disagreeable fact that if the Angel Tower were standing in the open country it would remain to us nearly as perfect as it was when Goldstone fixed the last stone in 1503, and much more beautiful—mellowed by the clean hand of Time and by the slight and soft erosion of some of the face-bedded masonry.

WOLVERHAMPTON ASSOCIATION.

THE annual meeting of the Wolverhampton and District Architectural Association was held last Friday evening, at the Law Library, Lych Gates, when the officers for the ensuing year were elected as follows:—Mr. William Edwards, president; Mr. William J. Oliver, M.S.A., vice-president; Messrs. Fred. T. Beck (past president), Joseph Lavender (past president) and T. H. Fleeming, members of the Council. The following officers were re-elected:—Mr. J. Harrison Weller, hon. treasurer; Mr. A. Eaton Painter, hon. auditor; and Mr. William J. Oliver, 1 Darlington Street, hon. secretary. The retiring president, Mr. F. T. Beck, who has held that office during the past three years, later in the evening read a paper which was appreciated by the members.

NOTES AND COMMENTS.

WE have already pointed out (see *The Architect* for November 23, 1906, p. 335) that the law as to what is such serious and wilful misconduct as will debar a workman or his representatives from his or their right to compensation is in a by no means satisfactory state. The need for some further definition is illustrated by the recent case of *BROOKER v. WARREN*. In that case a workman was employed in working at a circular saw. Both his employer and the factory inspector told him to keep the guard on the saw when it was in use. In defiance of their orders he declined to do so and was killed in consequence. Yet, in spite of this, the County Court Judge held that he had not been guilty of such serious and wilful misconduct as would disentitle his widow to compensation. The Court of Appeal reversed this decision. As the Master of the Rolls said, it would be difficult to imagine a clearer case of serious and wilful misconduct. The point which we wish to emphasise is the glorious uncertainty which must attach to the phrase "serious and wilful misconduct," if it is possible for anyone—even a County Court Judge—to suppose that such misconduct was not present in this case.

THE summer meetings and excursions of the Royal Society of Antiquaries of Ireland are held in rotation in the four provinces. This year it is the turn of Connaught. The Urban District Council of Athlone have formally invited the Society to meet there in the last week of June or the first week in July. The town is only partly in Connaught. It is explained that several excursions could be arranged from Athlone—two days by steamer—the first to visit the interesting ruins on the islands in Lough Ree, the second day down the Shannon to Clonmacnoise; a visit could be paid to Roscommon to examine the castle and abbey, and a day could be spent in Athlone visiting the ancient castle and town walls, with an afternoon drive to "Auburn" and GOLD-SMITH'S country. During 1906 the number of Fellows and members has decreased from 1,232 to 1,197. Four Fellows and forty-three members joined the Society last year. An effort was made to obtain from the Department of Agriculture and Technical Instruction accommodation for meetings and other business in the new College of Science. The use of a lecture-room was offered, but rooms for permanent occupation could not be given. The lease of the Society's hall and offices expires in 1912.

THE paper read at the first meeting of the session of the Applied Art Section of the Society of Arts was "Basket-making," by Mr. THOMAS OKEY. In these pessimistic days it is satisfactory to find a man who is proud of his craft. He claimed that it was not only important in itself, it has been the cause of greatness in other crafts. It was the parent of all the textile arts, for basketwork is literally a weaving process. The willow pattern in old china, the basket capitals and braided mouldings in Byzantine architecture are derived from basketwork, and the curious patterns found on some old ceramic ware have been traced to the marks left on the clay by the basket mould which was in use before the invention of the potter's wheel, and to this day wicker shapes are used by the Japanese for their vessels of lacquer ware. The earlier settlers in Rome and in Western Europe generally constructed their houses of osierwork plastered with clay, and they raised their defensive walls of the same material. From a letter of CASSIODORUS we learn that in the early sixth century the Venetians opposed a dyke of twisted and knotted osiers to the devouring fury of the waves. Mr. OKEY might have referred to the theory of the late WILLIAM SIMPSON, the artist, who was engaged in war expeditions, but who found opportunities to investigate relics of ancient architecture. From what he saw in

the East he came to the conclusion that the dome, although it is supposed to be a late development of architecture, originated with primitive people who made huts by first setting up osiers or willows around a circular plan, and then bending the uprights together at the top, when they formed an enclosure which might well have suggested the dome. He said that the Romans found osier boats in Britain. But coracles are still known on the west coast of Ireland and in the neighbouring islands. It might also be mentioned that Sir WALTER SCOTT believed in HALL's theory that Gothic tracery was no more than an imitation of the work of the basket-maker.

It is a remarkable coincidence that the Manchester and district branch of the Classical Association should be able to find an interesting subject for investigation without going beyond Cottonopolis. It is also remarkable that until Christmas last there existed half an acre of ground in the city which had not been opened by a builder since the time of the Romans. The excavation committee have been allowed to operate on the spot until April 10. It cannot be said that any startling discoveries have rewarded the labours of the explorers. But there is no doubt that if the work is carried out systematically it will help to define the limits of the ancient Mancunium. Very little is known concerning the station. It was generally supposed that the Romans had only erected buildings needed for military occupation. Whether the remains on the site in Duke Place are those of a big barrack has to be ascertained, and it will be discreditable to so wealthy a city if the 300% cannot be obtained.

ILLUSTRATIONS.

THE NEW WAR OFFICE, WHITEHALL.—COUNCIL OF WAR ROOM.

CATHEDRAL SERIES.—CARLISLE: TOWER AND SOUTH TRANSEPT.

HAMPDEN PARK HOTEL.

THIS building has been erected for the Public-House Trust Company at Hampden Park, a growing district about two and a half miles inland from Eastbourne, and is one of the 210 houses in the United Kingdom in which Earl GREY'S scheme of public-house reform is being carried on by the thirty-eight county trust companies formed for that purpose. Simplicity of design and homely comfort, with the various rooms and the entrances planned in such a way as will enable the manager to exercise complete control and supervision over all parts, are essential features here as they are in all Trust houses. The accommodation provided on the ground floor consists of a large general bar with ingle-nook, jug bar, tap-room, parlour and tea-room, with access to the extensive grounds and gardens. The manager's office, kitchen and usual offices are conveniently arranged in connection. On the first floor there is a large club-room, a ladies' tea-room with separate retiring-room, three bedrooms for letting to visitors, bath-room, &c. On the attic are the bedrooms of the manager and staff. Ample cellarage and storage are provided in the basement. Lavatory and sanitary accommodation are provided on each floor. There is arranged around a spacious yard adjoining a three-stall stable with coach-house, harness-room and store, also a large motor-shed with pit and acetylene generating house and store. This new license was obtained at the last brewster sessions to serve a residential district that had no license. The walls have been built hollow with local bricks, the upper part finished with rough-cast and half timber. The roofs are covered with Broseley tiles. The stone was Doulling. The general contractor was Mr. JOHN WHITE, of Eastbourne; the acetylene installation and the fittings were executed by LOCKERBIE & WILKINSON, and the architect was Mr. J. DOUGLAS SCOTT, A.R.I.B.A., of 23 Bedford Row, W.C.

BOROUGH OF GLOSSOP PROPOSED CONVALESCENT AND NURSES' HOME.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. T. E. Colcutt, president, in the chair.

Mr. ALEXANDER GRAHAM (hon. secretary) said those members who had read in the *Times* that morning the announcement of the death of Lieutenant-Colonel Lenox Prendergast must have felt that they had lost an old friend and a kind well-wisher of the Institute. Elected as honorary Associate in 1878, Colonel Prendergast evinced a very lively interest in their work, and when the Institute established standing committees he was one of the first to serve on the literature committee, and as a member of it he showed his knowledge of architecture and a desire to extend the usefulness of their library, more particularly towards Classical revivalism, of which he was an earnest student. The speaker said that in attending the Institute meetings the deceased not only showed appreciation of their work but he was always ready to take an active part in their discussions. Mr. Graham moved that a letter of condolence be sent to the widow and family of Lieutenant-Colonel Prendergast, in which they should express their full appreciation of the interest he took in their work, and his endeavours at all times wherever he was to encourage the study of architecture as one of the fine arts.

Sir L. ALMA-TADEMA, O.M., R.A., and Mr. WILLIAM BRINDLEY read papers on

Marbles: Their Ancient and Modern Application.

Sir L. ALMA-TADEMA, discussing the earliest use of marble in buildings, said that, setting aside the sculptured slabs at Nineveh, he had been unable to discover where marble was first used for decoration. Judging from the discoveries at Pompeii its use went back to great antiquity. In the house of Salustius many painted imitations of marble slabs and dados are to be seen. Very precious marbles were put to common use in Pompeii. He had found in quite ordinary houses bronze door-sockets let into rough blocks of Oriental alabaster, evidently remnants of a marble-mason's workshop. The only marble columns he recollected in Pompeii were some unfinished ones in the new bath which was being built when the town was buried, and some in the Temple of Venus and Rome, also in course of erection. He remembered only one marble public fountain in the streets of Pompeii, the one behind the oldest bath; but the sculptured heads for the outlet of the water are more often in that material. The floors are mostly of marble, either slabs or mosaic, and many impluviums in the richer houses are covered with white marbles, as are some of the altars and pedestals in and near the Forum. One of the finest bits of marble in Pompeii was the door-frame of the house of Eumachia, now in the Naples Museum. In Pompeii marble was also largely used for funeral monuments, but always as a veneer over brick or concrete, proving that it was a costly material. The Romans obtained great dexterity in applying thin slabs of marble, and saved the material itself greatly. This way of utilising marble had a considerable influence upon the form of the mouldings, in most instances the slabs being applied to the bed of cement in such inclination as the body of the moulding required, the moulding becoming subservient to the thickness of the slab. In Rome, during the Republic, marble was most luxuriously used. Julius Caesar found a successful way of replenishing the Treasury by levying a tax on marble columns. The author cited some descriptions in Mazois's *Palace of Scæurus* to illustrate the luxury of marble in Rome at the end of the Republic, and went on to quote Lanciani's description of the landing-stage for marble near the Campus Martius, built in the reign of Augustus, and discovered some twenty years ago when the course of the river was being rectified. Wealthy patricians and personal friends of Augustus covered the Campus Martius with colossal constructions of marble. Having referred to the painting of their marble buildings by the Greeks and Etruscans, the author stated that marble found its highest development, perhaps, in Byzantine architecture, when painting was replaced by mosaic and when colour reigned supreme; then the outside of the buildings had become severe and simple and the richness of days gone by found its place in the interior. In the best times of Roman architecture those overwrought Corinthian capitals and cornices with undercutting and overcarving look more like lacework than architecture, and make us wonder. They are a marvel of workmanship and must have been effective in the Italian sunshine; the white marble being transparent the shadows

became warmed by light as well as by reflection. When used for interior work nothing is finer, nothing more precious, nothing more wonderful than a well-adjusted and well-disposed marble decoration. It is so clean and bright, so solid and never harsh or unpleasant, provided it be applied by a man of taste.

Mr. WM. BRINDLEY in his paper treated of the modern aspect of marblework in architecture, lamenting the fact that the bulk of the money spent in marble in this country should go to foreign manufacturers and workmen. We have in this country many excellent marbles, and if it were not for foreign competition, with cheap labour and low freights, against our high railway rates, many of the marble rocks now dormant would be worked to the advantage of the land proprietors and the workmen. The ability of the Greeks to work marble seems to run in the blood; they cut it with as much ease and freedom as masons here do soft stone. They execute long fluted columns from blocks lying on the ground, with no more setting out than a circle described at each end. They are now equally good at quarrying. All this skill has been acquired within the last generation. Dealing with the sources of supply, the author said that the produce of white marble at Carrara almost supplies the civilised world. The ancient quarries of verde antico in Thessaly are turning out immense quantities of splendid sound material of every kind that is to be found in the old buildings of Rome and Constantinople. Of late years many important monoliths have been quarried and used in England—blocks can be got as large as those used in St. Sophia, Constantinople. The old Carystian quarries of cipollino, on the island of Eubœa, have produced during the last few years over a hundred monoliths of large size. The noblest coloured marble the world has ever known (imperial Egyptian porphyry of Mons Porphyrites) remains unworked. There is any amount of material remaining, and the author offered all the assistance in his power to anyone having an honest desire to rework these unique quarries.

Coming to present-day uses of marble, the author said that within the last few years a large number of coloured monoliths, extracted from at least eighteen different quarries, have been used in important buildings, chiefly by Fellows of the Institute. When selected and appropriately used as supporting columns they have the same impressive dignity as those remaining in Rome, Constantinople, &c. Monoliths of rich marble used as architraves in large doorways or openings are always effective. Where boldly figured marble is used, the mason's horizontal joint sometimes destroys the continuance of the coloured pattern. The author suggested the adoption of mitre-jointing in such cases, and in small works like mouldings round panels in monuments fixed on a slab.

As regards the erection in London of buildings in white marble, if cost is no consideration, there is no difficulty, for the marble would then be used as any good building stone; and if the material is properly selected the work would be as lasting. If economy is desired, the Italian method of built brickwork, with marble slab casing, is a good one. The slab for bond and surface need not be more than 3 inches thick, and even less will make good, durable work by using ashlar courses—say, of 12 or 15 inches high—slightly projected, over 3-inch bond courses. Another method for a good town house would be a brick building with white marble facing in which plaques of porphyry and colour were inserted. For marblework in London simple mouldings would save cost; small detail soon gets filled with soot. Cleaning of marble buildings must be done with caution; two or three methods now in use destroy the silicified surface, which is a preservative.

Discussing pavements, the author said the demand has so increased that it now pays to manufacture them out of block slab. There is much demand for tiles about a foot square or more of verde antico, Greek cipollino and breccias. A pattern made with either of these and white is effective. A white or a black tile floor of different shapes forming a pattern by jointing only always makes a quiet, effective floor.

Thin tiles of marble can be prepared for walls, to be used for the same purpose as encaustic ones are now used, and fixed by ordinary workmen in the usual way. Stone staircases to dark offices would be improved by white risers of tiles or slips of marble.

The author suggested some improvement in the design and treatment of marble chimney-pieces and fenders, and went on to sketch the employment of marble in sepulchral art and memorial monuments from Greek times down to

the present day. Many good monuments have been designed by architects and appropriately thought out to fit them unobtrusively for the buildings in which they have been placed. The author expressed regret that this country imports annually thousands of tons of ready-made monuments in marble and granite for cemeteries and churchyards, most of them void of artistic character of any sort.

The present advance in the use of marble as a decorative material for important buildings may be considered to have commenced about thirty-five years ago with the building of M. Garnier's Paris Opera House. The marble decoration of this edifice is still one of the sights of that city.

Discussing English work in Purbeck and other marbles belonging to the country, the author said that our English alabaster is a very useful material for interior decorative work, but it should not be used where it would be exposed to a heat of over 200 degrees Fahr. It is especially adapted for the walls and operating-rooms of hospitals, as it is not acted upon by ordinary acids. As examples of very successful marble wall-linings, Sir L. Alma-Tadema's studio was cited, and the beautiful church of Charlemagne, at Aix-la-Chapelle, really cased with marble and exceptionally well done, being covered all over with slabs of light-coloured cipollino in the handsomest way imaginable.

The author considered that marble was now being used in architecture in a broader and more dignified manner than was generally done thirty years ago. The nearer we keep to working as the Romans did, with as few colours as possible, the healthier will be the effect obtained. Young men should make notes of marble colour combination they see, not only of old work but of new, if only to know what to avoid.

Mr. J. J. BURNET, having been asked to propose a vote of thanks to the authors of the two papers, said the task of replying to what Sir Alma-Tadema had enabled them to enjoy required greater erudition than he would lay claim to. However, he said, he would plead second to none in his admiration of the skill and affection Sir Lawrence Alma-Tadema had shown for the material they had been considering, and, indeed, for all marblework. Mr. Burnet said he was sorry he was not prepared to say more than a few words on the subject of the two papers, but he was proud to voice the feelings of the meeting and express their thanks. In one respect the papers had increased the burden of an architect's professional responsibilities, since he would in future have to more carefully consider the beauty of marbles with innumerable markings, their decorative treatment and an infinite number of other materials.

Mr. H. STANNUS seconded the vote of thanks, and said he would suggest that the treatment of marbles might be divided into two branches. Firstly, marble would be valued as a rather fine stone, and its use could be exemplified by the wonderful sculptures of the past. Secondly, it might be considered in a decorative sense. In the first would be found the monochrome marbles, but when, as in the second division, they were engaged with coloured marbles, there nature had added the colour decoration of the material and with so much variety as would not allow any other decorative treatment to be applied. It was because of this that the remark made by Mr. Brindley against the fluting of variegated columns had his entire sympathy. Sir Lawrence Alma-Tadema had spoken about the Roman use of marble veneer, and Mr. Stannus said he was reminded of some examples in Roman temples, notably the great Temple of Castor and Pollux. The speaker congratulated Mr. Brindley on his success in re-working the fine old marble quarries of the ancient world, and placing as it were great riches at the feet of the architect, who had only to enter in and possess them. In the question of the use of marbles, said Mr. Stannus, one would have to embark upon a treatise on colour decoration almost, and this was outside the limits of the meeting. In their lifetime they had seen a wonderful development in the use of marbles in their principal buildings, the material replacing details that formerly had been constructed of wood. It would seem that the demand for the material had brought the supply, and it was to such men as Mr. Brindley and Sir Lawrence Alma-Tadema, who had spread abroad the taste for marble, that they were indebted for its introduction.

Mr. A. H. REID, of Cape Town, supported the vote of thanks, and testified to the interest that was taken in the proceedings of the Institute by architects practising in the Colonies. He said he could not say much that was appropriate to the papers they had heard that evening, coming

as he did from a country which engaged mostly in digging for gold and the importing of slaves. There was, however, in Africa an aboriginal art confined purely and simply to stone, and curious to relate, the races which produced that art were now extinct, but evidence of their attainments was seen in the work that remained at Zimbabwe, in Northern Rhodesia.

THE PRESIDENT, in some concluding remarks, said that as marble was being greatly used in modern buildings he wished to draw attention to the mistake that was often made in polishing it. In the great majority of cases marbles would lose their quality by high polishing, and there were certain varieties which were better without any polish at all.

Prizes and Studentships, 1906.

The Council's deed of award made under seal pursuant to by-law 66, and read at the meeting, states that the Council have examined the works submitted for the Institute silver medals, the Soane medallion, the Owen Jones and Pugin studentships, the Godwin bursary, the Tite prize, the Arthur Cates prize and the Grissell gold medal, and gives particulars of the competitions and the results thereof as follows:—

THE ROYAL INSTITUTE SILVER MEDALS—THE ESSAY MEDAL AND 25 GUINEAS.

Six essays on "The Influence of the Use of Iron and Steel on Modern Architectural Design" were received.

The Council have awarded the medal and 25 guineas to the author of the essay submitted under motto "Three Ages" (Mr. Victor D. Horsburgh, 23 Rutland Square, Edinburgh); a certificate of honourable mention to the author of the essay bearing the motto "Fonte" (Mr. A. Halcrow Verstage, of Godalming).

THE MEASURED DRAWINGS—MEDAL AND 10 GUINEAS.

Six sets of drawings were sent in of the various buildings indicated. The Council have not awarded the medal but give certificates of honourable mention to the delineators of Stoke Castle, Shropshire, and Magdalen College, Oxford, submitted under the mottoes "Swallow" (Mr. David Robertson, Huntley Terrace, Kelvinside, Glasgow), and "Waynflete" (Mr. R. Wynn Owen, 60 Castle Street, Liverpool).

THE TRAVELLING STUDENTSHIPS—THE SOANE MEDALLION AND 100/.

Fifteen designs for a large city hotel facing a public square were submitted. The Council have awarded the medallion and (subject to the specified conditions) the sum of 100/ to the author of the design bearing the motto "Cameo" (Mr. Harold Cooper, 21 Oakley Crescent, Chelsea), and certificates of honourable mention to the authors of the designs bearing the mottoes "Simplex" (Mr. Anthony R. Barker, Greenhill, Harrow) and "Urn" (Mr. A. J. Pitcher, Launcestone, Worcester Park).

THE OWEN JONES STUDENTSHIP AND 100/.

Two applications were received for the Owen Jones Studentship from the following:—Mr. Robert Atkinson, six strainers; Mr. Arthur R. H. Jackson, six strainers. The Council awarded the certificate and (subject to the specified conditions) the sum of 100/ to Mr. A. R. H. Jackson, Royal College of Art, South Kensington.

THE PUGIN STUDENTSHIP AND 40/.

Three applications were received for this studentship from the following:—Mr. F. Townson Clark, six strainers; Mr. A. J. Margetson, six strainers; and Mr. Wilfrid J. Travers, six strainers. The Council have awarded the medal and (subject to the specified conditions) the sum of 40/ to Mr. A. J. Margetson, Gordon Road, Handsworth, Birmingham.

THE TITE CERTIFICATE AND 30/.

Twenty-one designs for a loggia for sculpture to screen the blind end (150 feet long) of a building were submitted. The Council awarded the certificate and (subject to the specified conditions) a sum of 30/ (augmented by the sum of 20/ from the funds of the Wimperis Bursary, on the condition that the period of travel be extended from four to six weeks) to the author of the design bearing the motto "Vignolia" (Mr. G. Salway Nicol, Colmore Row, Birmingham); and a certificate of honourable mention and 10 guineas to Mr. Napier Hemy, Hampden House, Phoenix Street, London.

THE GODWIN MEDAL AND 65/.

The Council do not make an award this year.

THE ARTHUR CATES PRIZE, 40/.

Three applications were received from the following:—W. W. J. Calthrop, six strainers; Frank Dyer, six strainers;

W. Dathy Quirke, six strainers. The Council have awarded the prize to Mr. W. W. J. Calthrop, London.

THE GRISSSELL GOLD MEDAL AND 10 GUINEAS.

Four designs for a grand stand constructed of timber on a race course were submitted. The Council have awarded the medal and 10 guineas (with an additional 10 guineas from the funds of the Wimperis Bursary) to the author of the design bearing the motto "Royal Ascot" (Mr. W. A. Mellon, Westminster, London).

THE ASHPITEL PRIZE.

Mr. J. T. Halliday, Stockport.

The designs and drawings submitted for the Institute Prizes and Studentships are on exhibition in the Gallery of the Alpine Club.

THE LATE STANFORD WHITE.

IN the *Brickbuilder*, of Boston, U.S., are some recollections of the late Mr. Stanford White by a few of the architects trained in his office, from which we take the following:—

By Mr. J. Monroe Hewlett.

His tremendous enthusiasm in his work invariably communicated itself to all who were engaged with him upon any given problem, and the rapidity with which he reached a conviction as to what he was trying to do in any given case was equalled only by his tenacity in adhering to that conviction, and refusing to be satisfied until the result was brought absolutely into line with his mental picture. From this it resulted that he never ceased studying his work until its actual construction prevented further study; and though words of commendation from him to those working under him were few and far between, yet, when won, they were so spontaneous and sincere as to carry absolute conviction to the mind of the recipient and prove an incentive to redoubled effort.

No one who has ever worked with Stanford White in the development of an architectural or decorative scheme and the supervision of its execution can have failed to realise that in his mind the execution of the design exceeded in importance the production of the design itself. To work with and under him was to appreciate as never before the fact that the building, not the drawing, is and should be the architect's chief concern; and that no vigour of conception or beauty of composition in the finished work can compensate for the absence of that fragrance which results from the embodiment in it of knowledge and love of the refinements of form, colour and texture.

It is safe to say that his influence will not be a passing one, but even as that of the French school has been the most powerful factor in the orderly development of our architectural education, so that of Stanford White is and will continue to be pre-eminent in the creation and preservation of standards of good taste and refinement in our architecture and decoration.

By Mr. F. L. V. Hoppin.

Perhaps of the many who came into personal contact with him, none are better equipped to judge of his genius and ability than those who had the privilege of being for many years his students and his draughtsmen, for he was quite at his best when engaged in the heat of his work, and beset by the intricate problems of plan and design which, by his very progress of creation, he constantly encountered; but his versatility was marvellous, and had Stanford White seriously undertaken to be a painter or a sculptor, there cannot be a shadow of doubt that he would have been among the foremost artists of his day.

His great knowledge of drawing and perspective enabled him to give instant expression and form to his conceptions through the medium of his well-trained office force.

For many years he found a rich field for his ability in the erection of numberless country houses, and it is to him in a very large measure that a desire for more substantial and architecturally beautiful residences of this nature was created. His frequent visits in Europe, and especially in Italy, in the early years of his practice, gave him a sense of proportion and a versatility of expedient in designing that was remarkable, and he and his firm soon became the exponents of the Italian Renaissance in this country, and their devotion to Classic lines in all their work was consistent throughout and from which style they rarely departed.

His nature was an impatient one, yet generous to a fault, his manner often brusque and harsh; yet did he realise that he had given hurt to anyone he would go to infinite pains to relieve the distress he had caused.

He sometimes fell into the common error of over-

ornamentation in his exteriors, and frequently in his interiors, impelled by his innate sense of colour and combination of values, would daringly mix his epochs which, carried out by another hand, would have been ludicrous and bizarre in the extreme, but, which, almost invariably, were peculiarly charming and in some instances magnificent.

He was extremely optimistic by nature, and enthusiastic to a degree, which latter he invariably conveyed to all about him, whether clients, draughtsmen or builders, and in his unflagging spirits and enormous vitality would accomplish a vast amount of work. He had a wonderful memory and grasp of detail, and his knowledge of precedents and where to lay his hands upon them, whether in his library or elsewhere, was of the greatest service to him, and most remarkable. He was intensely keen in his work, his attitude towards his clients was very convincing, his enthusiasm for his conceptions was tremendous in its courage of conviction whether in small or large undertakings invariably.

He was a born leader and instinctive superintendent, for he always had the instant sympathy and co-operation of the builders and workmen, who cheerfully at all times catered and responded to his directions and impulses, whether they considered them vagaries or otherwise. He was possessed of a charming sense of humour, and was a most delightful companion.

His place in the world of art will always be most unique and individual, and his influence and that of his colleagues has been a most distinct factor in the development of American architecture and decoration.

By Mr. Albert Randolph Ross.

I shall never forget the first time I saw him, many years ago, at his old office in No. 52 Broadway, where I was sitting with my heart in my boots waiting to see Mr. Mead, with the hope of being taken into their office as a draughtsman. Swish! bang! went the outer double swing doors; swish! bang! went the inner swing doors, and in much less time than it takes to tell there shot across my vision a lithe, fierce-moustached giant with a big hat on a head of close-cropped blonde hair standing straight out in every direction. That was Stanford White, and was generally characteristic of the immense nervous vitality that enabled him to accomplish such an incredible amount of work that would have sent most men into nervous prostration. But there were times, however, when this mad haste abated. At the end of the short winter days when the office lamps were lighted and all but a few of the faithful draughtsmen had gone to their homes, and the worry of the day's routine was over, in the most affable frame of mind, softly whistling to himself, he found the time and inclination to carefully review his work and put the finishing touches to his conceptions. Those were indeed happy times. Then were he and his two associates in their best vein; then did McKim "go fishing," as he was pleased to call poring over old volumes of Roman masterpieces, and then did they admire or aid with criticism each other's work.

His designs were conceived spontaneously, and he was little bothered by precedent or the formal principles of architectural planning. In directing his draughtsmen he expressed his thought always with a pencil rather than by discussion. After covering, oftentimes, yards of tracing-paper with alternative suggestions for work under consideration, he would eliminate all but two or three of the most pleasing and turn the matter over to his draughtsmen to "do something," which he would either reject at sight or, if this "something" was found favourable, used it as the basis of future study.

Unlike the influence of his patron Richardson, in whose office I believe he received his architectural training, the study of his work or even an attempt to follow in his footsteps will make for the advancement of our architecture and her allies.

Men with such high and pure ideals in art are few indeed, and the many beautiful things he has conceived and left us will most fittingly commemorate this big, versatile, impatient and kindly man.

By Mr. Philip Sawyer.

While so many of us are tired and our work perfunctory at the end of ten years' practice, McKim, Mead & White show in their design the vitality and light-heartedness of perennial youth. And it seems to me that this was in part Mr. White's contribution. He was an engine for energy, promising recklessly impossible things, and causing everyone he came in contact with to accomplish them.

Never tired, never indifferent, you might find him hammering for the porter, hatless, his hands full of papers, at seven in the morning, and leave him striding up and down the deserted office at seven in the evening, while it was always likely that he would shoot in at any hour of the night, throw off his coat and, pouncing upon a lone draughtsman, begin working upon a new problem, on the assumption apparently that sleep is unnecessary and night non-existent. Office hours meant nothing to him, nor to anyone identified with the work in which he was interested.

To work for him was at first a fearful experience, later an inspiration; a terse statement of the requirements, a few hieroglyphics and we're off on an endurance run which, last it for days, or weeks, or months, never cooled.

To him, an artist, architecture meant colour first and form and texture next, and proportion afterward and plan last of all. To handle material fitly, to adjust it to a new use, to devise its characteristic detail, to combine it with others consummately, to employ all that is beautiful in the old with all that is practical in the new; these things were a constant pleasure to him and to all who know and enjoy his work. I wonder how many, even among architects, appreciate how much the appearance of our cities—varied with light bricks and terra-cottas—owes to his single initiative.

Quick to recognise ambition and capacity, he gave great latitude to a man of proved ability, generous credit for good work done, and he showed an habitual indifference to one's previous failures; a constant assumption that you were just the man for the job and capable of anything, which brought results from the unlikely material.

Full of originality, seething with ideas, he had that rare sense which prevented him from adopting anything new merely for its newness. It must also be better intrinsically than any possible adaptation of the old if it were to win.

An experimenter always, the result was oftenest in the direction of some old beauty revived, new to the use and time, but centuries old in inspiration and of seasoned good.

PROFESSOR VON HERKOMER ON "THE PAINTER."

IN his lecture at the Royal Academy last week Professor von Herkomer said to his audience that he intended to speak as if to a lay audience. His lecture and the three that would follow it would be in a popular vein and largely autobiographical, and if he said things that seemed platitudes to the artists and students before him he begged that they would just "sit loose" for the time being. When you looked at a picture that pleased you you sometimes wondered what the painter was like, but it was difficult to satisfy this curiosity. Painters' portraits were not shown in the shop windows. There was no money in them, so they did not figure beside those of the ballet girls and others, and perhaps it was as well, for the artist's appearance might not be in sympathy with the kind of work he produced. Turner was said to have refused to sit for his portrait because he thought that if people saw what he was like they would not buy his pictures. Painters were not like those inventors of hair washes and similar things—noble and manly in their beauty—whose portraits they saw in advertisements. However, they would have the painter out and look at him. There was nothing now in his outward appearance to distinguish the artist from the stockbroker. Sixty years ago a man might ask his hostess at a reception who was the untidy man with touzled hair, and he would be told he was an artist. Now he would ask, "Who is that handsome young man, so well groomed and turned out?" and be told it was Mr. So-and-So, the distinguished portrait painter. Commenting on the still existent peculiarities of costume of the French art student, the lecturer remarked that all these artistic eccentricities were more or less modern. If we looked back at portraits of painters of old times we saw that they were dressed exactly like other men. In the Bohemianism of the art student there was pride, of course, and why should not the artist be proud? He has a power of seeing the beauties of nature that most others have not—one of the greatest of God's gifts to men—and he can show to others in clear form visions they are unable to shape for themselves. The great painter proves a truth with every stroke and touches the heart. He is one of the moral forces of the world. His ideality need not be disturbed by the forces of life if he have character. And Professor von Herkomer, cited in this connection the

example of his father to whom he owes so much, who in spite of every difficulty and opposition never swerved from his ideal when he determined that he would make his son a painter.

The lecturer touched next, says the *Morning Post*, on the dangers to the painter of sudden success, the importance of which he was apt to overrate. It did not make life a path of roses. Was he to go on reproducing the same class of subject and thus sacrifice his artistic freedom, or should he enlarge his formula and lose his public? The successful man has struck a vein, but he must dig deep to see if it contained enough ore to last through his life. A small accident would sometimes turn the painter's life from affluence to want. He was motoring in the country and met an old artist who when young had enjoyed a good reputation and had built upon its endurance. A dealer offered to buy all he did, and asked him among other things to copy a picture for him. The artist did it, but refused to forge the signature, and for this the dealer ruined him. Yet this man's sketches would be a credit to any landscape painter. Some of them the Professor took home, and when people saw them in his studio and thought they were his they admired them. But when they heard they were the work of an unknown man most of them turned their back upon them. Such was the value of a name, a thing that influenced even painters who ought to know better. After a reference to the worship of Raphael, even of what were the "pot boilers" of that artist, and some comparison of Raphael with Millais, the Professor spoke of his own younger days.

The youth of to-day, he thought, had a different character from the youth of his time. In his own recent experience as a teacher he had not found the same earnestness and industry as of old, perhaps because the students were better off. The general standard of excellence had certainly risen largely since his student days, but the question as to whether the improvement would be maintained was in the balance. Art requires youthfulness. Not youth, for we do not have infant prodigies in painting. But from eighteen to thirty-five you get your best efforts, and although you may keep up your standard for years you cannot make your type of art after thirty-five. To-day nearly all subject painters produced portraits, and aroused jealousy because they made more money at it. But it should be remembered that the portrait painter has things to contend with that make his the most exacting of all the branches of the graphic arts. The portrait painter cannot go to his studio like a clerk to his desk, but he must be prepared at any moment to do his best work. Then the difficulties, the constant change of feature, the conflicting claims of his art and his client. The portrait painter has to live a more expensive life, he has to have a good studio, he must have about him a certain sumptuousness, and be able to ask his clients to dinner. He may have to go out into society when he wants most to rest. The lecturer compared this with the life of a landscape painter who goes out into the fields with only a sketch to think of. Perhaps he does a little fishing in the intervals and only paints his pictures at his own convenience when he returns to town. He has but one public to please—the portrait painter has in addition to please the sitter's friends. On the other hand the portrait painter has the inestimable value of the close relationship that is established between the artist and the sitter. With all its exactions, portrait painting was a great human art.

HOLYROOD CHAPEL.

A MEETING of the Edinburgh Architectural Association was held last week to consider the following notice of motion by Mr. James Bruce, W.S.:—"That, looking to the public interest that has been aroused on the question of the repair and restoration of the Chapel Royal, Holyrood, through the intimation of a legacy of 40,000*l.* for these purposes by the late Earl of Leven and Melville, it is desirable that the Association should, through a committee of its Fellows, obtain a report on the following points, viz.:—1. What remains of the structure exist. 2. The conditions and capabilities of the parts remaining. 3. Whether the evidence of these parts is sufficient to enable a satisfactory repair and restoration of the structure to be made. And that the committee consist of the following, viz.:—Mr. Hippolyte J. Blanc, R.S.A., president; and Messrs. J. T. Baillie, Henry F. Kerr, David Robertson, Harold O. Tarbolton and John Watson—Mr. Blanc to be convener." Mr. H. F. Kerr presided.

The Secretary said that Mr. Bruce was unable to be present, and that the motion would be moved by Mr. Daniel Macfie. A letter was read from Mr. John Watson intimating that he desired that his name should be removed from the proposed committee.

Mr. Macfie, in submitting the motion, said that in his view the motion spoke for itself and required no apology or elaboration. If it did it would ill become him, a mere layman, to enter a field where even experts might fear to tread. He might, however, recall the feeling of satisfaction and expectation with which the public read of the pious intention of the Earl of Leven and Melville with regard to the restoration of the ancient chapel of Holyrood. They would also remember the disappointment the public felt when they read the announcement of Professor Lethaby's report and the decision consequent on it. He thought it was very generally felt that that report considered rather too much only one view, and that there was some call in the public interest for an independent inquiry such as the motion contemplated. The public were entitled to assume that the donor had, in the most reverent spirit and under expert advice, carefully considered the whole matter. They who knew Mr. Ross knew that he was nothing if not conscientious, and that any opinion that he might have formed would be the result of careful and exhaustive study of a difficult and complicated question. It seemed to him that the Association was clearly entitled to say something on that very important public question. The motion was wise and cautious. It did not impute blame. It did not commit them to any course of action but that of inquiry and report. He was sure that the representative committee that had been suggested would properly carry out the inquiry, and that with their accomplished President as convener they might be sure that its deliberations would be safely and surely guided.

Mr. F. W. Deas said they had had very short time to consider the motion. The subject was very important. They should proceed very cautiously before they committed the Association to any course of action regarding it. In view of the absence of Mr. Bruce, Mr. Tarbolton and Mr. Hunter Crawford, and in view also of Mr. Watson's intimation, he urged that consideration of the matter be delayed.

Mr. R. S. Lorimer said that the terms of the Earl of Leven and Melville's will were very precise. Two trustees were appointed, and he understood that if Mr. Ross, for any reason, did not take up the work, or if either of the trustees refused to act, then the scheme fell to the ground. The question was, Could any good purpose be served by the motion in view of the terms of Lord Leven and Melville's will? He was in sympathy with the feeling of disappointment aroused by the decision of the trustees that the chapel could not be restored, but at the same time he thought the proposer of the motion had not known, or had forgotten, the terms of the will.

The Chairman said they had lawyers in their Association, and one of them was Mr. Bruce. He supposed Mr. Bruce knew quite well the terms of the will. But with all deference to Mr. Lorimer, he did not see what they had to do with the will. As an abstract question, Professor Lethaby's report brought out several points which, in his opinion, made Holyrood Chapel incapable of restoration. The supporters of the motion thought the chapel might be restored, and they proposed measures to find that out. He did not suppose that even if the committee reported favourably, it would have any influence in the matter. But the Association had nothing to do with that.

Mr. Deas moved that the matter be delayed. It seemed to him that the Association should guard itself against any action that would stultify itself and which might weaken its action on future occasions when its influence might be very great. He did not want the Association to go before the public saying they should do this or that unless they had solid ground to go upon. He did not wish the Association to do anything which was not business-like.

Mr. Macfie said it would be unfortunate if they went to a vote on the question. In view of the opinions that had been expressed, and in the absence of the President—which he thought was the only absence that ought to count—he was quite disposed to allow the matter to be delayed. In taking that action there was nothing to be lost but time. It was one of the conditions of the will that the King should be consulted. So far as they knew, that had not been done. But he did not think they had anything to do with the terms of the will.

The Chairman said Mr. Blanc had received a letter from Professor Cooper, Glasgow, which contained the following

passage:—"I am unable to be with you to hear the discussion on Mr. Bruce's motion at the Architectural Association. I earnestly hope it will be carried. It is too soon, of course, to anticipate the result of such an inquiry, but if its results be as I expect, I hope we shall hear no more of the 'artistic objection.' The Gothic masons certainly gave us beautiful stonework, but the glory of their architecture, though enhanced by that and the fine sculpture which they occasionally produced, was not in the detail but in the mass—the soaring pile, the pillars, the arches, the vaulted roof, the majesty of light and shade. Many of the details at York were destroyed by fire, but the magnificent sense of spaciousness was hardly impaired at all. These effects can be got back at Holyrood, and Scotland needs a chapel royal where our king 'and his nobles all' may be seen in Scotland worshipping on high occasion the King of kings. The use of Holyrood on these days would be enormous."

It was agreed to convene a special meeting on a date not fixed for the discussion of the subject.

Mr. Walter Gilbert, Bromsgrove Guild, Worcestershire, read a paper entitled "The Sculptor and the Garden." The paper was illustrated by limelight views.

HEREFORD CATHEDRAL.

IN connection with the completion of the new west front of Hereford Cathedral, work on which has been carried on since 1901, it is interesting to note that there now only remains to be finished the west front of the south aisle. This is estimated to cost 2,800*l.*, and an appeal for a sum of 3,000*l.* to meet the expenditure is being made. The total cost of the new front is set forth as 14,800*l.*, including the new window, statues, &c. The erection of the west window was commenced in 1901 as a memorial to the late Queen Victoria from upwards of 8,000 women of the county and diocese of Hereford, at a cost of 1,500*l.* It was unveiled by Princess Henry of Battenberg on May 13, 1902. Subsequently it was found necessary to carry on the further renewal of the west front, the pinnacles and upper part of which had been rendered insecure by the earthquake of 1896, while the whole façade, as rebuilt by Wyatt in 1786, was utterly unworthy of the rest of the cathedral. The upper portion was completed and paid for at a cost of 3,000*l.*, making a total of 4,500*l.*

After this the completion of the west end of the nave was undertaken. This involved the projection of the two heavy buttresses, between which there is a west portal with double doorways into the cathedral. This work has been done at an additional cost of 4,500*l.*, and was dedicated by the Archbishop of Canterbury in March 1904. The renewal of the west front of the north aisle, with addition of massive turret and carved medallion, at an expenditure of 2,800*l.*, was completed in December 1905.

GLASGOW UNIVERSITY BUILDINGS.

A CORRESPONDENT of the *Glasgow Herald*, who appears to be a painter, has called attention to the absence of mural paintings in the buildings. He says:—Beautiful in line and proportion, an essentially picturesque feature of our cityscape, our University buildings have the frame but not the picture. The long line of niches on the façade, which seen from across the park promise an interesting and instructive series of statues, proves on closer investigation to be empty. The spandrils of beautifully groined arches terminate for the most part in rough blocks of stone, left to be carved when Providence intervenes. Noble windows, where the light was meant to glorify the pictured pane, are mere holes in the wall blocked with white glass, leaded in a lattice suggestive of a prison. Great sweeping expanses of wall where art should proclaim in voices of fresco and mosaic the history of the Corporation, are meantime disguised in a decoration of distemper conceived in the taste which distinguishes the cheap tenement house. The staircase from the Bute Hall, which could be and should be a crowning beauty of the structure, is an empty well, disfigured by staring iron beams which would be disdained by an office building down town. In the Randolph Hall a commencement has been made, and the Burne-Jones windows there strike the keynote of the harmony which should fill the entire building.

The University wants decoration. Its walls, its windows, its empty niches, its rough, uncarved blocks call out for it. The University is worthy of decoration. Its buildings are

noble in their proportions, beautiful in their design, interesting in their spaces. The University must have decoration if the training of its students is to be complete. Aberdeen has shown the way. It is not many months since the eyes of Scotland were fixed on the University of the North. We cannot yet have forgotten the grand east window of the Mitchell Hall, picturing the history of the University from its foundation; the gallery of paintings leading to that hall; the great staircase facing the principal entrance, with its quaint stone and carved mottoes; nor the decorative heraldic scheme on the façade of the College gateway illustrative of our kings and of the history of the Marischal College. What Aberdeen has done, Glasgow could do on a much greater scale.

We have the men. The decorative artists of Glasgow at present stand as high in general estimation as any in Europe. We have the money. Glasgow is the largest and richest city in Scotland. All that is wanted is a feeling of the need for this work, and a proper organisation to direct it. I understand that the general supervision of the University buildings is at present in the hands of the master of works.

On a recent visit there the writer found that an extra door leading to one of the examination halls had been pierced, the original door, of good and appropriate design, not being found sufficient for the impatience of the students. This door had been cut in a wall where, from the design of the wall as conceived by the architect, a flat wall space was wanted, and it had been constructed of plain flat iron, exactly like the door of an office strong-room. No reason could be assigned why this type of door had been chosen, and one was tempted to the conclusion that pains had been taken to supply the ugliest and least suitable possible. Inquiry of a passing official elicited the information that the door had been put there during the vacation, on an order from the master of works, and no other authority was deemed necessary. This is not as it should be.

A committee of the Senate, or some member of it known as an authority on architecture, should be appointed to authorise and supervise all architectural or decorative work on the buildings. That the buildings as they stand were meant to be completed by a scheme of decoration is patent to the least observant. A scheme should be drawn up, and it should be seen to that all work proposed to be done should fit into it. It is not for an individual and an outsider to propose a complete scheme for the decoration of our University, but I may be allowed to indicate the lines along which it must inevitably run.

Statues are a clamant need. These should represent the founders, benefactors and former students whose fame has glorified their Alma mater. The niches are there for them, and the quadrangles have appropriate sites. A small head of the papal grantor of the original charter is to be found in the Senate-room, singularly enough inserted into the fireplace and preserved from smoke by a glass shade like those which cover funeral wreaths. This, with a couple of memorial tablets and busts, placed where they spoil the staircase, is I think all the sculpture the University at present possesses. Decorative carving is wanted in the corridors, entablatures and finials. A little beautiful foliage carving has already been done, but in most places rough blocks of stone are crying aloud for the chisel. Heraldic shields are wanted of the great families which have figured in the history of the University. The spaces for such arms are left above doorways, and evidently entered into the architect's idea. Fresco paintings are wanted on the large flat spaces in the grand stairway and elsewhere. Stained glass is wanted throughout. In this respect the Randolph Hall requires completion. History proper could well be left to the painter and the sculptor. The large windows should be emblematic of the purpose and teaching of the University, while all the small windows could be memorials to those professors and students who had left their mark on the inner life of the college without rising to the outside fame which would give them their rightful places in the niches of the façade. The wall of the Randolph Hall above the doorway wants a great mosaic of our Saviour, source of all arts and sciences, to render the scheme in that hall complete and comprehensible.

These are mere suggestions to be revised and completed by more competent authority. In a commercial city like Glasgow the question will inevitably be asked—Where is the money to come from for all this? The sum required would, of course, be large in the aggregate, but the subscribers should be many. One of the first statues on the façade should represent that ancestor of the Duke of Hamil-

ton who first gifted a piece of land for the building of the University, which till then was a mere homeless association of teachers and students drawn together under the protection of the cathedral. The present duke might present that statue for the honouring of his house, and his example would doubtless be followed by others whose forebears have shed glory on the family name by their benefactions. The historical and symbolical works might be presented by such of our merchant princes as are the architects of their own fortunes, who could thus leave a lasting memorial of themselves and place their own descendants in the position of the donors of the statues. The smaller carvings and windows could be provided by graduates and undergraduates who wished to commemorate a teacher or friend, and as the cost of these would be small there should be no difficulty in raising the necessary amounts from time to time. The two important points are—To raise public interest in this matter and to have such a scheme organised that all small portions carried out at any time should take a due and orderly place in the entire decoration when finally completed.

I trust that abler pens than mine will take up this question.

MANCHESTER INFIRMARY SITE.

THE special committee of the Manchester Corporation which has under consideration the utilisation of the Royal Infirmary site in Piccadilly, met at the town hall under the chairmanship of Alderman Sir James Hoy. It was decided to present again to the City Council for acceptance the report framed by the committee in August of last year.

It may be recalled, says the *Manchester Guardian*, that when the City Council met on September 5, 1906, and discussed this report they decided to refer it back to the special committee in order that the members of the Council might have time to consider in all their bearings the important recommendations which the committee had made. Sir James Hoy, on behalf of the committee, agreed to the suggestion, and stated that the more the committee's scheme was investigated the more likely was it to advance in public favour. The Infirmary site committee have now, after their further consideration, decided to recommend afresh the acceptance by the Council of their original proposals.

The special committee's report, which contains these proposals, mentions the obligation of the public free libraries committee of the Corporation to give up possession of the free reference library site in King Street (which has been sold for 161,465*l.*) at a date not later than March 1913.

As to the old Infirmary site, for which the Corporation has agreed to pay 400,000*l.*, the earliest time at which the Corporation are likely to be given vacant possession of the site is about two years hence, viz. at the end of 1908.

Nothing, the committee says, has occurred in either the art gallery committee or the public free libraries committee to indicate any change in the firmly expressed opinion of such committees as to the utilisation of the Infirmary site for their purposes. There is now an opportunity afforded of utilising this noble site in Piccadilly by the erection thereon of a building in which the present and prospective needs of the public free libraries committee and the art gallery committee can be adequately met, whilst allowing an addition of open space as compared with that at present existing. The Council will now have to decide whether the special committee shall carry on the work with which they have been charged beyond the present stage.

In concluding their report the special committee say:—"In consequence of the sale of the King Street library it is imperative that the Council shall provide a site for and shall erect a new reference library. A careful perusal and consideration of the valuable report presented by the art gallery committee to the Council in January 1906 (published shortly afterwards) will, it is believed, satisfy the public that the accommodation at the art gallery is wholly inadequate for the needs of that important institution. The question of associating a museum with the art gallery is one which is referred to in that report, and may well receive attention in connection with any scheme of provision for the work of the two committees concerned.

"In view of these important considerations the special committee now recommend the Council to authorise in more definite form than has yet been done the allocation to the public free libraries committee and the art gallery committee of the Infirmary site, subject to the completion of the necessary street improvements and to sanction the preparation

under the direction of the special committee, of plans to be hereafter submitted to the Council."

The report will come before the City Council at its meeting on the first Wednesday in February.

SOCIETY OF ANTIQUARIES OF SCOTLAND.

AT the monthly meeting of the Scottish Society the first paper read was by Mr. James Barbour, architect, Dumfries, giving an account of the excavation, from June to October 1905, of an ancient stone fort near Kirkcandrews, by the proprietor, Mr. James Brown, of Knockbrea. The fort, or castle, is situated on a promontory in a little bay half a mile to the west of Kirkcandrews, and is mentioned in the New Statistical Account as then bearing the name of Castle Hayne. In plan it is oval on the east and straight on the west, and consists of a central area, 60 by 35 feet, begirt by a great dry built wall about 15 feet thick, having a gallery on the east side in the middle of its thickness, 80 feet long and $3\frac{1}{2}$ feet wide, and on the west side a gallery or long chamber, 54 feet in length and $3\frac{1}{2}$ feet in width, and at a little distance a smaller chamber 14 feet long and 4 feet wide. The relics found in the fort consisted of a quern-stone and some stone pounders and whetstones, a spindle-wheel and a rough stone disc with perforation in the centre, a bead of blue vitreous paste ornamented with white wavy lines, a ring-bead of amber, two spiral finger-rings of bronze wire, a bronze penannular brooch and fragments of chain mail. The bones found were those of domestic animals, chiefly ox and swine. Remains of red deer were met with, and fowls and fish were also indicated. Judging from the relics found and from the character of the building, the date of the fort is probably pre-Medieval.

The second paper, by Mr. Alan Reid, F.S.A.Scot., dealt with the churchyard monuments of Lasswade and Pentland, photographs of which, by Mr. James Moffat, were shown on the screen. Only fragments of the walls of the pre-Reformation church of Lasswade remain, its lofty gabled tower having been blown down in a wintry storm in 1866. The most important of the monuments remaining is the effigy of a knight in armour within the railed enclosure belonging to a branch of the Preston family; an incised slab bearing the arms of Somerville, and an inscription round the margin commemorating Elizabeth Bannatine, probably the spouse of one of the Somervilles of Drum. Perhaps the most interesting memorial now visible at Pentland is a massive slab with a floriated cross, unfortunately mutilated. Of the other more recent monuments, one is extremely interesting and uncommon. It has been a tablestone, on the ends of whose supports are four finely cut figures—a sower, a reaper, an eater and a flower-gatherer, the last with roses entwined about his body; while on the fifth and central support is a group showing Death as the King of Terrors, crowned and armed with a long spear, preparing to attack a trio of victims—a youth, a seated female figure, and a baby on her knee, the youth vigorously interposing between Death and his prey.

ST. NICHOLAS CHURCH, BARI.

AT a meeting of the Glasgow Branch of the Scottish Ecclesiological Society a paper on "St. Nicholas of Bari" was read by Mr. J. D. G. Dalrymple, F.S.A., vice-president. He said that almost no part of Italy is so little known to British travellers as Apulia. Bari is a town of great antiquity, and has had a chequered history. Originally a Greek colony, it fell under the sway of Rome, and when the Western Empire came to an end passed into the possession of the Byzantine emperors. For a time it became subject to the Lombard Dukes of Benevento, was then seized by the Saracens, from whom it was recaptured by the Greeks, and they in 1071 were compelled to surrender it to the Normans under Robert Guiscard. The relics of St. Nicholas, Bishop of Myra, the patron saint of sailors and travellers and the friend and protector of children, were brought to Bari in 1084, and the construction of the great church which now contains them was commenced in 1087. It is a plain and rather gloomy edifice of the basilican type. The eastern portion, containing the choir, has gable walls at each side, and forms a species of eastern transept. The apsidal choir contains a fine screen and a very interesting ciborium or baldachino of great antiquity. The most interesting part of the church is the crypt, where the relics of the saint are deposited. From them is supposed to distil

a liquid which, under the name of "the manna of St. Nicholas," is sold and distributed to crowds of pilgrims who come to pay their devotions at the shrine. It is believed to have healing properties of the most valuable description, and is either taken internally or used as a lotion with the most beneficial effects. A sample brought to Scotland was subjected to a chemical analysis, with the result that it was found to be pure water from a deep spring originating in chalk, marble or other limestone strata. A similar liquor, with powers equally miraculous, is supposed to distil from the bones of St. Andrew, in the crypt of the cathedral of Amalfi. In Sir Walter Scott's "Kenilworth," curiously enough, the name "manna of St. Nicholas" is applied to the poison prepared by Alasco and administered to the Earl of Sussex, and also used by Varney in his attempt to prevent Amy Robsart's presence at the revels in honour of Elizabeth.

On the motion of Professor Cooper, seconded by Dr. Honeyman, a vote of thanks was awarded to Mr. Dalrymple for his paper.

LONDON COUNTY HALL.

THE establishment committee in their last report on the proposed competition state:—We have given further consideration to the question of the time to be allowed for the competition for designs for the new county hall, and have considered a letter from the Royal Institute of British Architects, who suggest that nine months should be allowed, six of which should be devoted to the preliminary part of the competition. The time which it was originally proposed should be allowed was eight months, four months to be devoted to each part; but we think the Council will be well advised to allow the additional month suggested, and we have accordingly requested our chairman to ask leave of the Council to make the necessary alterations in the conditions when the same are under consideration by the Council.

We propose that, in accordance with the practice which we understand usually obtains, a fee should be charged for copies of the conditions and particulars, &c., issued to intending competitors in connection with the competition for designs for the new county hall, and we think that a fee of 3*l.* 3*s.* in this instance will be suitable. This fee will be returned on receipt of a bona-fide design or if on receipt of the conditions any architect decides not to compete and returns the conditions, &c., within two weeks. We recommend:—

That a charge of 3*l.* 3*s.* be made for each copy of the conditions, &c., supplied to architects desiring to compete in the preliminary stage of the competition, the fee to be refunded on the receipt of a bona-fide design or if on receipt of the conditions any architect decides not to compete and returns the conditions, &c., within two weeks.

SCOTTISH MODERN ARTS ASSOCIATION.

A CIRCULAR has been addressed to those interested in Scottish art in which the objects of the new Association are indicated generally. The objects of the Association are to insure the preservation of representative examples of Scottish art, more particularly by acquiring works of contemporary Scottish artists, and also to assist in the enriching of Scottish public art collections. These objects are to be attained by (1) the acquisition of works of art by Scottish painters, sculptors, etchers and other craftsmen; (2) the acquisition of works of art by artists other than Scottish; (3) arranging for these works being suitably exhibited; (4) the endeavour to secure adequate representation of Scottish art in British national collections; (5) the furtherance of any scheme which has for its object the promotion of Scottish art. A general meeting of the Association will be held in Edinburgh early next month, when the constitution will be passed and the office-bearers and committees elected. In the meantime, membership of the Association is to be constituted by the payment of a minimum subscription of one guinea per annum. In reference to the eventual housing of the property of the Association, the following extract from the Association's circular is of interest:—"Although nothing definite can be decided upon at present, it may be mentioned that, while taking into strict account the claims of the various provincial art collections of Scotland, the ideal to be kept before the Association will be the formation of a Scottish National Gallery of Modern Art, the possession, not of a city or a corporation, but of a people."



Chartered Surveyors' Golfing Society.

SIR,—In case it may be of interest to your readers, I have been asked to inform you of the formation of the "Chartered Surveyors' Golfing Society," membership of which is restricted to members of the Surveyors' Institution, with a view to arranging matches with societies of the kindred professions, in addition to which it is proposed to hold an annual tournament.—Yours faithfully,

S. JAMES CHESTERTON,

Hon. Sec. Chartered Surveyors' Golfing Society.
116 Kensington High Street, London, W.

GENERAL.

The American Institute of Architects have elected the following Council:—Frank Miles Day, president; William B. Mundie, first vice-president; R. Cipton Sturgis, second vice-president; Glenn Brown, secretary and treasurer; Walter Cook, Edgar V. Seeler and J. L. Mauren, directors for three years; and Robert Stead, auditor.

Sir David Wilkie's House, No. 144 Kensington High Street, has been indicated by one of the County Council's tablets.

Dr. Henry Woodward, F.G.S., will read a paper on Monday evening at the Surveyors' Institution on "The Uses of a Geological Collection," which will particularly refer to the specimens in the Institution.

A Course of Lectures and demonstrations for sanitary officers will be commenced at the Parkes Museum on February 11. In connection will be a series of competitions and demonstrations.

Mr. A. W. S. Cross, M.A., and Mr. G. Hubbard, F.S.A., will read a paper and open a discussion on "The Revision of the Charter of the Royal Institute of British Architects" at the Northern Architectural Association on Wednesday next.

An Exhibition of the works of Mr. Holman Hunt will be held in the Walker Art Gallery, Liverpool, from February 2 to March 2. It is expected a larger number of pictures by the artist will be seen on the walls than in any exhibition of his works hitherto held.

Mr. Robert Bowring, of Wells, Somerset, announces that he will offer for sale by auction, in a marquee in the grounds on June 6, the mansion known as the Abbey House, Glastonbury, in a portion of the grounds of which stand the ruins of Glastonbury Abbey, which are included in the estate offered for sale.

The Competition instituted by the Local Government Board for Ireland for three prizes for designs of labourers' cottages most suitable for rural districts has resulted as follows:—First prize (50*l.*), Sydney Moss, Rockbank, Eccles, Lancashire; second prize (30*l.*), J. Roseman Burns, 17 Serpentine Avenue, Ballsbridge, Dublin; third prize (20*l.*), T. M. Deane, 15 Ely Place, Dublin.

The Glasgow Town Council have remitted to the city engineer and the city librarian to consider and report as to the erection of a tablet or other memorial at the various district libraries recording the fact that the buildings were the gift of Dr. Carnegie.

The Bucks County Education Committee have considered the numerous applications for the appointment of an architect for the new elementary school for 600 children at Slough. It is understood that Mr. Arthur C. Lee, architect, of 134 Oxford Road, Reading, and also of High Street, Slough, has received that appointment.

The Glasgow University Court considered last week a letter from Mr. J. D. G. Dalrymple, in which he said the Glasgow Archaeological Society had recently celebrated its jubilee, and as he had the honour to hold the office of President, it had occurred to him that it would be a fitting way to commemorate the event if he were to establish an archaeological lectureship somewhat on the lines of the Rhind Lectureship in Edinburgh, though on a much smaller scale. The course would consist of five or six lectures as might be arranged by the Council of the Society, with whom would lie the appointment of the lecturer. The honorarium for the course would be the sum of 50*l.*, which he would provide. He was anxious that the lectures should be delivered in the University, and that the project be recognised by the University Court; but in view of the possibility of its not being so, he proposed at first only to establish it for five years. The letter was remitted to a committee for consideration.

The First Commissioner of Works has communicated to Mr. Charles A. Jones (deputy-constable of Carnarvon Castle) the fact that the charge and maintenance of the castle had been transferred to the Board of Works on the 1st inst., but without affecting the personal rights or privileges of the constable (Sir John Puleston) or the deputy-constable.

At the Monthly Meeting of the Bexhill education committee it was stated that the cost of the new school on the Down had been 6,718*l.* 12*s.* 8*d.*, architect's fees amounting to 335*l.* 18*s.* 8*d.* The committee discussed various financial adjustments between them and the architect, and a debate ensued upon a motion that a claim of the architect for 2½ per cent. providing for future extensions be not at present paid. One councillor thought an architect would be entitled to payment of 2½ per cent. for the preparation of plans and specifications for an extension which was projected. The motion was agreed to.

The Camberwell Borough Council discussed at their last meeting the future of the South London Art Gallery. The libraries committee recommended the London County Council be offered the control of the gallery, subject to certain conditions. On a vote being taken thirty-three were in favour of the retention of the gallery in the hands of the borough council and twenty-five against, the recommendation being accordingly rejected.

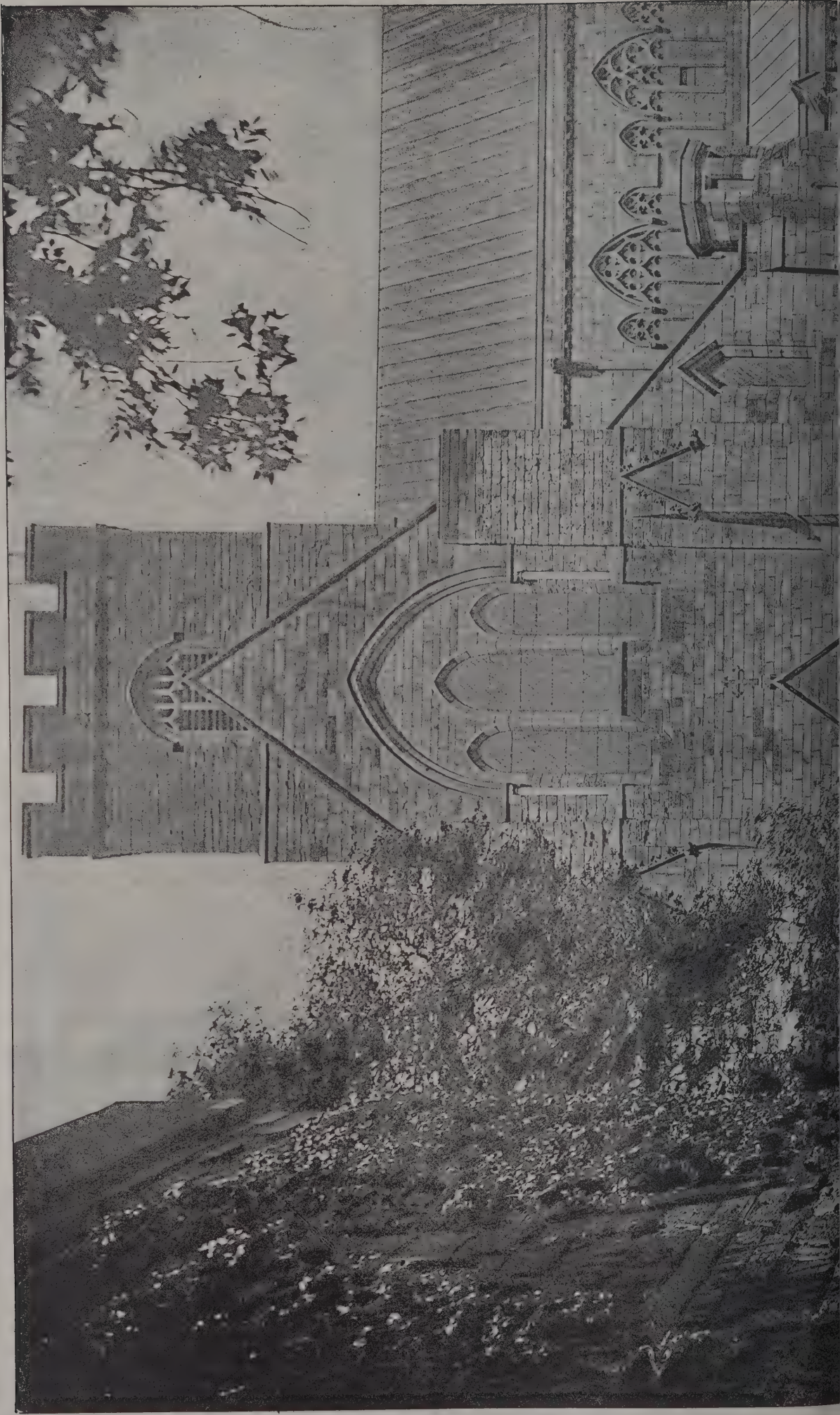
The Royal Female School of Art, Queen Square, Bloomsbury, was summoned recently at Bow Street police court before Mr. Marsham for the nonpayment of local rates amounting to 48*l.* 19*s.* 2*d.* For the defendants it was said the school was established many years ago, and in due course obtained a certificate under the provisions of the Scientific Societies' Act, showing that the school ought to be exempted from the payment of rates as a society carried on exclusively for the promotion of science and fine arts. He asked for an adjournment to enable him to appeal to Quarter Sessions. The town clerk of Holborn said the rating committee of the Council had reviewed all the circumstances, and they were of opinion that the defendants should not be exempted from paying rates. The summons was adjourned for a fortnight, the defendants' solicitor intimating that they would certainly appeal, as under the circumstances they felt they ought not to be called upon to pay rates.

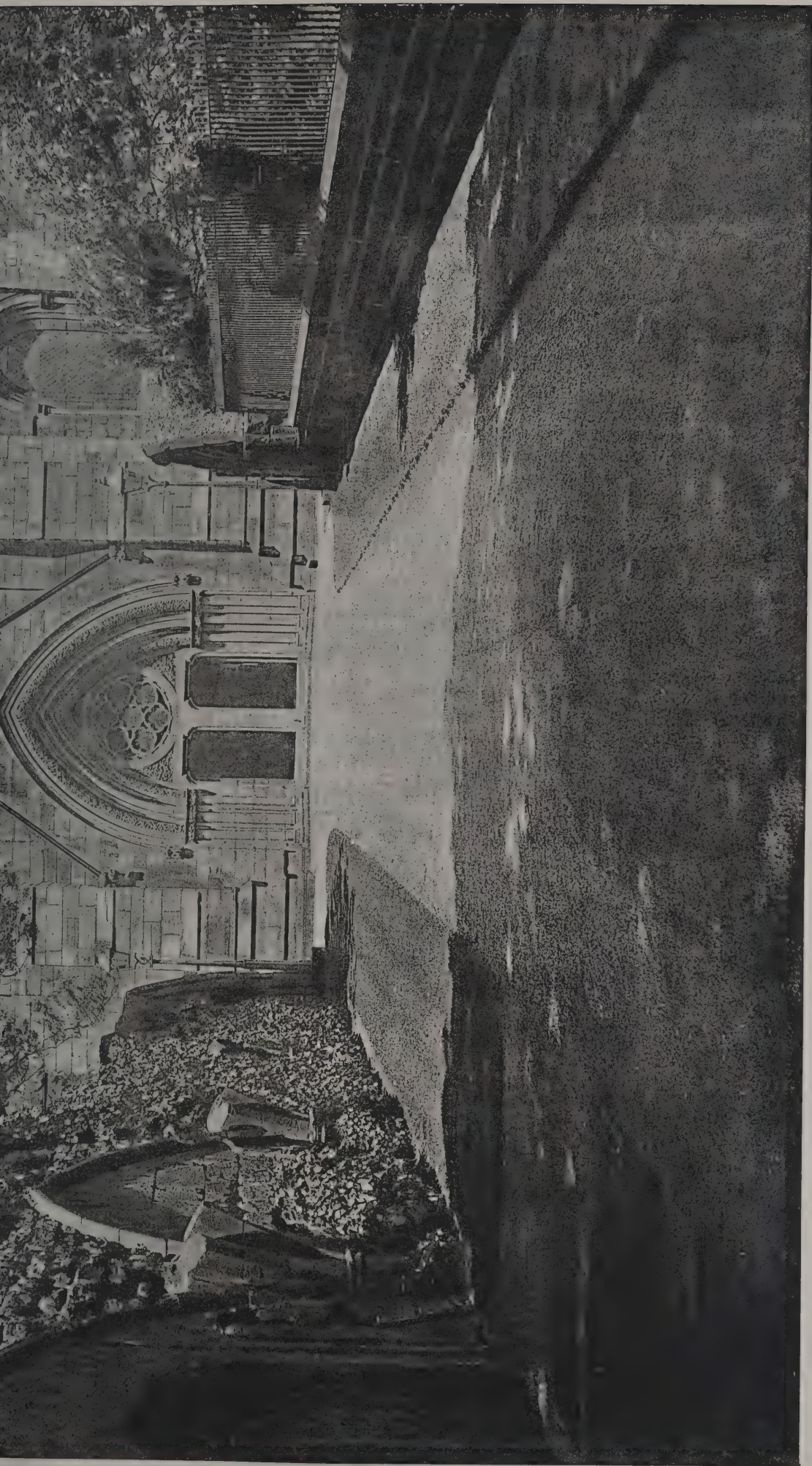
Mr. J. Pentir Williams, coroner for North Carnarvonshire, has written respecting the discovery of over 500 Roman bronze coins found recently during some excavation work on the slope of the Little Ormes Head, Llandudno. Mr. Williams stated that he did not think it was necessary to hold an inquest respecting the find, and his opinion was confirmed by the solicitor to the Treasury. He therefore advised that the coins should be returned to the finders, but that their attention should be called to a communication received by the Treasury solicitor from the British Museum. It was to the effect that the keeper of the coins and medals at the Museum would be pleased to classify the coins and return them if they were submitted to him. It was of no use to examine the hoard unless all the coins were seen. Any deductions otherwise would not be sound. Treasure trove is defined as "gold or silver coins, bullion or plate, concealed in a house or in the earth by an unknown person." Bronze coins do not therefore come within the definition.

Mr. Alfred Creer, York city surveyor and engineer, has placed his resignation in the hands of the street and buildings committee. Mr. Creer, who took up the appointment in October 1889, served his articles under the Improvement Commissioners at Birkenhead. Subsequently he served five years with them as assistant, and was then appointed district surveyor at Halifax, afterwards becoming deputy to the borough engineer. Thence he went to Lancaster as city and water engineer.

Sir J. T. L. Rolleston, of London, the umpire in the matter, has awarded the owners of the projecting block of buildings at the corner of Long Millgate and Fennel Street the sum of 25,957*l.* as compensation from the Manchester Corporation. The owners claimed 35,000*l.* Their witnesses at the recent arbitration valued the premises as under:—Mr. T. T. Wainwright, 31,671*l.*; Mr. Charles H. Heathcote, 31,475*l.*; Mr. W. H. Robinson, 32,722*l.*; and Mr. Emanuel R. Levy, 31,475*l.* For the Corporation the valuations were:—Mr. J. W. Beaumont, 17,599*l.*; Mr. F. H. Oldham, 18,322*l.*; Mr. Joseph Swarbrick, 17,786*l.*; and Mr. G. H. Larmuth, 17,732*l.* The arbitrators for the claimant and the Corporation respectively were Mr. T. Silk Wilson, F.S.I. and Mr. J. D. Wallis, F.S.I., both of Manchester.

The Architect, Jan 25th 1907.

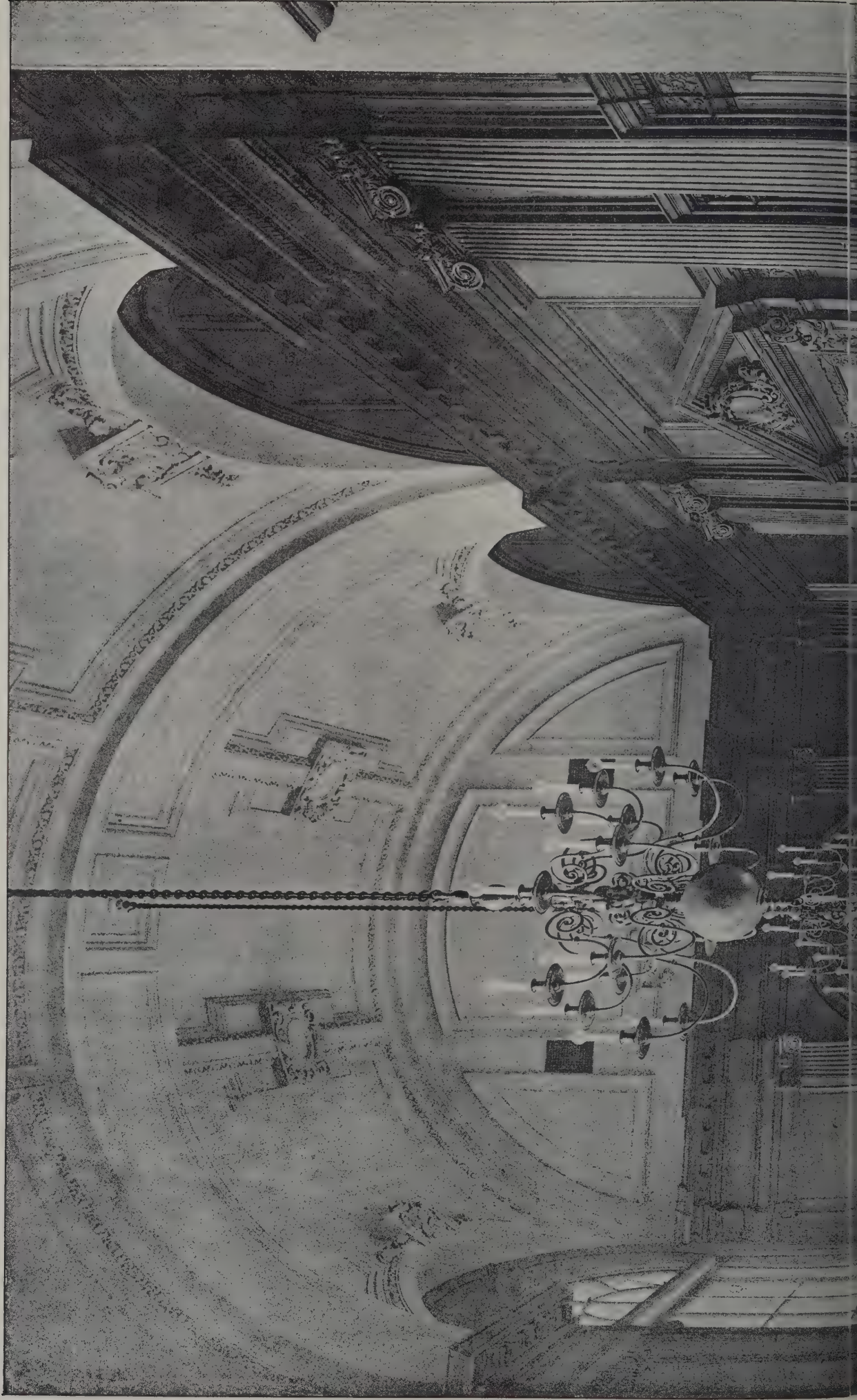


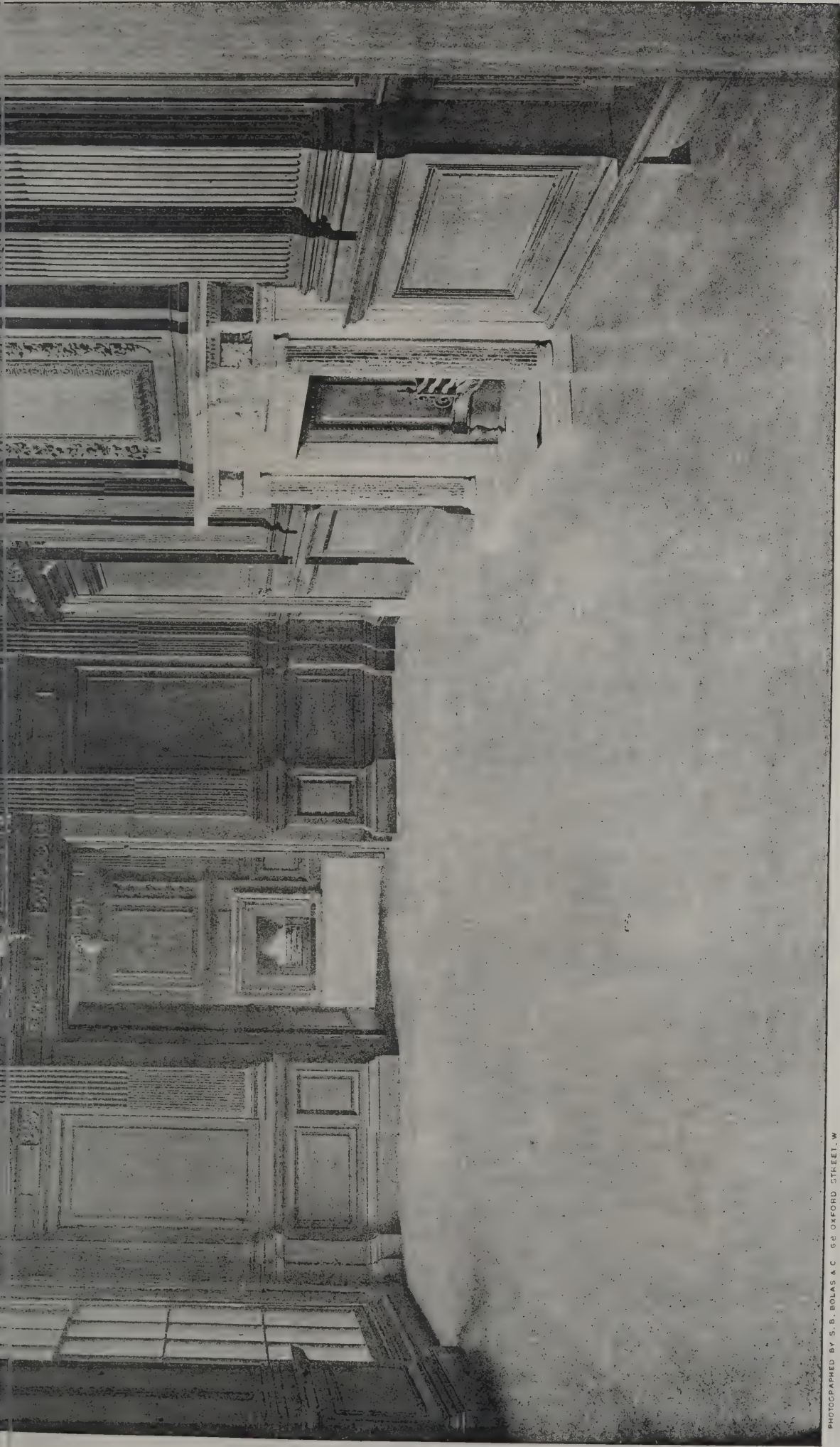


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CATHEDRAL SERIES, No. 592.—CARLSISLE: TOWER AND SOUTH TRANSEPT.

The Architect, Jan. 25th 1907.





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THE NEW WAR OFFICE, WHITEHALL: COUNCIL OF WAR ROOM.

The late WILLIAM YOUNG, Architect.

Carried out by CLYDE YOUNG, with the co-operation of SIR JOHN TAYLOR, K.C.B.





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HOTEL.
architect.

LIBRARY
OF
UNIVERSITY OF ILLINOIS

The Architect.

THE WEEK.

AN important judgment respecting gables when measuring the height of buildings under the London Building Act was given last week by Mr. Justice KEKEWICH. In the definition of the Act "the expression 'height' in relation to any building means the measurement taken from the level of the footway, if any, immediately in front of the centre of the face of the building, or, where there is no such footway, from the level of the ground before excavation to the level of the top of the parapet, or where there is no parapet to the level of the top of the external wall, or, in the case of gabled buildings, to the base of the gable." A block of flats was erected partly in Salem Road, which is 40 feet wide, and partly in Moscow Road, which is 52 feet wide. The buildings were 40 feet high to the gable; but the gable had two storeys and was 20 feet higher. It was contended that the gable was not a gable within the meaning of the Act, and therefore the whole height of the building, which was 62 feet, should be taken into account. In the course of the arguments it was admitted that the gable was a gable within the meaning of the Act. The question, then, was whether the building exceeded by its height the distance to the opposite side of the street. Evidence was given by MESSRS. GRÜNING, WHITE, CHATFEILD CLARKE, MEESON, DOUGLASS MATHEWS and DICKSEE. His Lordship said that part of the building was recessed, and that if the space were added to the width of the street the total width would be 63 feet. His Lordship held that the Act said nothing against starting a building with a low height in front and then working backwards by steps, increasing in height. Architects were entitled to adopt that arrangement when they could do so without offending against the Act. Mr. Justice KEKEWICH declined to consider certain questions of laches or delay, and his judgment accordingly was given for the defendants. The case has been exceedingly complicated, and the building had been commenced without any approval of the plans by the London County Council. But it suggests a more liberal interpretation of the Act, especially in cases of old streets which originally were narrow and subsequently widened.

THE late Empress ELIZABETH of Austria had displayed her love of art and of antiquity in the erection of a villa in Corfu, which was called the Achilleion. In the grounds were a great many statues, some of them being copies of ancient examples. About three years ago a company was formed for converting the villa into an hotel and bathing establishment. The project was not successful. Then it was suggested to make the place a rival of Monaco as a gambling resort. That scheme was also a failure. Now it is proposed to convert the Achilleion into a sanatorium for patients suffering from diseases of the lungs. It remains to be seen whether the scheme will be accomplished; but there is no doubt it would be the worthiest use to which the fallen palace could be turned under existing circumstances. The place is deserted, for the Austrian Government and the Empress's relatives decline to expend any money on its conservation.

THE committee of the Edinburgh Public Library are about to make an experiment likely to have a satisfactory result in promoting technical education. They intend to arrange special sections which will correspond with the various trades practised in Edinburgh. Catalogues will be printed of the books containing information on the different subjects. Copies are to be sent to employers, who will be asked to distribute them among their workmen, and to point out any deficiencies

in the collections which may be apparent. Another innovation will be the adoption in one of the libraries of a children's room, which has proved successful in English public libraries. Should it serve its purpose similar rooms will be made to form part of all the branch libraries. It is also arranged to have a music library, for, although the Scotch are supposed to be lovers of music, they have not as yet any public institution where pieces are to be obtained.

ARCHITECTURAL drawings, and all other works under glass, intended for this year's exhibition of the Royal Academy are to be sent on March 28. The days for reception of oil-paintings will be March 30 and April 2, and for sculpture April 3. The hours for reception are from 7 A.M. to 10 P.M. It is notified that "no artist is allowed to send or exhibit more than three different works." They are to be delivered at the Burlington Gardens entrance. The regulations correspond with those of last year. All works sent from the country or from abroad must be consigned to an agent in London for delivery at the Academy, unpacked, on one of the appointed days. No works in cases will be received, nor will the expenses of carriage be defrayed by the Academy. All the works sent by each artist must be entered on a printed form duly filled in with the name (Christian and surname in full, signed by the artist), and address of the artist, the titles and descriptions of the works as they are to be inserted in the catalogue, and the price if it is desired to place them on sale. These forms must be sent under cover addressed to "The Secretary." No advertisement, unnecessary quotation or narrative can be admitted. At the back of each frame must be written the name and address of the artist, with the title or description of the picture, and the number (if there be more than one) to which it refers in his or her list. This information must also be repeated with great distinctness and accuracy on a label attached by a string to the top of each frame, and made to hang over in front, as also to each piece of sculpture. The forms and labels can be procured (during the month of March only) from the Academy. Applications for them made by letter must be accompanied by a stamped and addressed envelope for their enclosure.

PHOTOGRAPHY has one advantage—in enabling painters and engineers to represent buildings with accuracy, although they may not be visited. One instance of the old method is mentioned in the new part of the "Journal of the Royal Society of Antiquaries of Ireland." At the beginning of the nineteenth century there was a pulpit orator—Dean KIRWAN—who was irresistible in drawing large contributions from congregations in Dublin by his sermons. The Governors of the Female Orphan House considered they were so indebted to him, they paid 204*l.* 15*s.* for a painting of the Dean, from which a mezzotint was prepared. The artist selected was HUGH DOUGLAS HAMILTON, who practised in London and Rome, as well as in Dublin. The likeness of the preacher is believed to be accurate, but it is now impossible to ascertain in what church he was exercising his persuasive powers. According to the "Journal":—"The inside of the church is represented as having a circular colonnade, behind which the congregation sit in tiers. In the centre of the open space is a circular pulpit, on the steps of which are eight children. The 'Round Church' of St. Andrew naturally suggests itself, but its interior was quite unlike the picture, and the annual sermon for the orphans was never preached there. As a matter of fact, such a church as that depicted existed only in the mind of the painter, who had an objection to entering a church, and so had to rely on his imagination for an interior. The children on the pulpit steps are said to be portraits of the LA TOUCHE family." If photography existed in those days, HAMILTON could be accurate in his architecture without any loss of effect.

AMERICAN PRACTICE.

THE Frenchman's maxim which declares that we can always find something which is pleasing to us in all the distresses of our friends is not universally true. Once we realise that a similar fate awaits us we become sincerely sympathetic and realise what it is to have a fellow feeling. In that way the relations between architects and their clients and public authorities in America cannot fail to have interest for Englishmen. The treatment of architects in Germany, Italy or France, has little concern for English clients and probably less for American. But if one of the Government departments of the United States came to the conclusion that work could be carried out in better style if the contractor were made responsible for the plan as well as for its execution, we might expect to discover that a similar revolution was impending in England. On the other hand, the adhesion to one set of rules for practice in England has been advantageous to American architects. For if there were no English precedents for architectural practice the people would be disposed to leave everything to wealthy and influential contractors.

In the last Quarterly Bulletin of the American Institute of Architects we have some indications that all is not sound in American practice. The position acquired by contractors is suggested when we learn that the board of directors discussed "the subject of abuses as they exist among contractors and sub-contractors, who employ architects and exact commissions to the detriment of the architectural profession." It was resolved "that a special committee of five be appointed to consider the relations of architects to the system of general contracting and await further action until their report is received." The meaning of the grievance is not manifest. But we suppose it is found to be not uncommon for great contracting firms who may be able to lend money to speculators in buildings to insist on having plans prepared in any way they deem to be most conducive to their interests. In modern structures the steel skeleton is considered the most important part, and therefore the engineer rather than the architect is recognised as the principal official.

The municipal authorities are also disposed to dispense with the services of architects, even when they are offered for the general good without expectation of reward. In Rhode Island, for instance, it was intended to revise the building regulations. For that purpose a committee was formed consisting of four architects, four insurance officials, three builders and three members of the City Council. It appears the latter have taken an unexpected view of what the insurance and architectural interests had in mind when the City was asked to co-operate, and have held themselves aloof, informing the other members of the joint committee that they will consider any report which may be submitted to them containing provisions for a revised ordinance. As a result there are doubts about the possibility of obtaining a rational building code which would be adapted to modern methods of construction. It was probably a disregard of tact which made the City Council appear to be always in a minority if compared with either the architects or the insurance representatives. The architects likewise failed in the effort to secure the adoption by the City Council of a proposed ordinance requiring the Mayor to approve, under the advice of an architectural expert, all plans for City buildings and all contracts for their construction, and to secure a more equitable and satisfactory selection of architects to design them.

The question of competitions is one about which American architects do not agree. The Illinois Chapter resolved at the annual meeting:—(1) That competitions are undesirable and unnecessary; (2) that in the interests of both clients and architects, whenever possible an architect shall be employed without resort to a competition; (3) that all rules for the conduct of competitions heretofore recommended or adopted by the

American Institute of Architects or its chapters should be repealed; (4) that no rules attempting to regulate the same should be adopted hereafter; (5) but that the Institute should exert its influence for the discouragement of competitions under all circumstances. It was recommended that the American Institute of Architects should discourage competitions (1) by refusing to give them official recognition except in special cases, and (2) by the refusal of its members to take any part in them, except those for public buildings, for the regulation of which its board of directors has been consulted. The argument of the Chapter was, that if members stood aloof competitions would become so disreputable that even the projectors would be compelled to abandon them. The desire to keep down competitors is explained by the circumstance that Illinois has a licensing law for architects.

The Iowa Chapter, on the other hand, are opposed to restrictions on competitions which would be found impracticable in their State. There is so little appreciation of architectural practice and design among people that the attainment of anything better seems to be an impossibility. While in favour of a professional adviser, it is believed that the proposal of the Institute to have "judges" must fail, because so few bodies instigating competitions are willing to delegate their authority to a board composed of a majority of architects who would, of necessity, be considered by them outsiders and more or less interested from the competitors' standpoint.

In the Rhode Island Chapter there was reference to discussions about architects "signing" their buildings. It is supposed to be self-seeking, although sculptors can put their name on their statues and painters on their pictures. The newspapers do not hesitate to extol not alone artists and sculptors, but men of handicraft—engineers and builders—and print *in extenso* the names of a building committee of a fire-engine station, a school house or a town hall, but they cannot, said a speaker, find a place for the name of the architect; he is too insignificant and has not played a sufficiently important part in the making of the structure to have his name appear. The statement is suggestive of the position of architects. American newspapers are only too glad to introduce names, and if they pass over those of architects it must be to please the public in general, who are supposed to be indifferent to designers. It would be well for the Chapters to consider whether there are any grounds for the departure from the ordinary practice of journalists. It should be mentioned that the omissions are not confined to America. In Europe exclusion of architects' names is common. It is not to be supposed that posterity will take the trouble to make researches in order to discover who was the architect of a particular building, and on that account the engraving of the names on buildings would be justified if there were no other reasons.

An effort has been made to have the Institute schedule of charges generally adopted, in which the minimum commission is 5 per cent. upon the cost of the work when over 10,000 dollars. It is laid down that every architect should charge higher rates whenever the demand for his services will justify the increase, rather than accept work to which he cannot give proper personal attention. No member is to compete in amount of commission, or offer to work for less than another. The Washington Chapter announced a scale of minimum charges. For buildings costing less than 10,000 dollars; the percentage was to be from 5 to 10. For two or more buildings erected from the same plans, full charges are to be paid for the first and one-half for the others, provided they are contiguous and erected at the same time. On buildings where the architect takes the place of the contractor an additional charge of from 5 to 10 per cent. is to be made. Drawings, specifications, &c., being instruments of service, are to remain the property of the architect.

From the foregoing remarks it will be evident that

the position of architects in America corresponds in a large measure with that of architects in England. A man who contemplates building can in England have his work done by people who technically are contractors, but who would not be recognised as trained builders. Municipal authorities are also disposed to be sceptical about the disinterestedness of architects in connection with schemes of public improvement. Time is, however, a great teacher, and sooner or later an improvement may arise in both countries, to the advantage alike of the public and of architects.

AN ACADEMY RECORD.*

THE completion of the Dictionary of Exhibitors at the Royal Academy is an event on which Mr. ALGERNON GRAVES deserves to be congratulated. The work is one which has interest not only for artists but for amateurs and those who buy or sell paintings, as well as for all who care about the history of English art. It is dedicated by special permission to the KING, and is worthy of such patronage.

In the eighth volume the dominant painters are TURNER and WATTS. The productiveness of TURNER is suggested when it is found that the list of his works requires seventeen columns and a half. Beginning in 1790, when he was a lad of fifteen, and continuing until 1850, the year before his death, his paintings exemplify not only manners but moods. It is remarkable that he started with representations of buildings, and it must not be supposed that he was at any time indifferent to them. The first work by him which was seen in the Academy was a "View of the Archbishop's Palace, Lambeth." In 1791 and 1792 he restricted himself to the same class of work. His address was then 26 Maiden Lane, but in 1793 he had a studio in Hand Court, Maiden Lane, from whence his works came until 1800, when he was elected an Associate and removed to 64 Harley Street. In 1808 he had also a second studio in West End, Upper Mall, Hammer-smith. TURNER removed to Queen Anne Street in 1811 and in 1815 his riverside address was Sandycombe Lodge, Twickenham. It would take us too long to analyse such a vast number of paintings. TURNER was willing to depict English scenes or Classical subjects, and occasionally he made experiments which were at least curious. For instance, in 1807 one of his paintings was "A Country Blacksmith disputing upon the Price of Iron, and the Price charged to the Butcher for Shoeing his Poney." TURNER purchased this picture from its owner twenty years afterwards. In 1808 he adopted another strange title, "The Unpaid Bill, or the Dentist reproving his Son's Prodigality." An experiment was made by him in 1831, for his "Watteau, studied by Fresnoy's Rules," was an endeavour to demonstrate that "white, when it shines with unstained lustre clear, may bear an object back, or bring it near." In 1843 his "Light and Colour" was supposed to exemplify GOETHE'S theory. Mr. GRAVES is careful to give the extracts introduced in the catalogues from "Fallacies of Hope," the curious lines which TURNER composed to suggest the character of his paintings. The last works he exhibited in 1850 were "Mercury sent to admonish Æneas," "Æneas relating his story to Dido," "The Visit to the Tomb," and "The Departure of the Fleet." Each of them was accompanied by a sentence from "Fallacies of Hope," but this time it appeared as a prose composition.

GEORGE FREDERICK WATTS commenced exhibiting at the Academy in 1837 with two portraits of young ladies and "The Wounded Heron." In 1840 he attempted the subject of "Isabella and Lorenzo;" in 1842 he had a scene from "Cymbeline;"

in 1849 a design for a fresco. His "Good Samaritan" of 1850 must have surprised people, for WATTS announced that it was "painted as an expression of the artist's admiration and respect of the noble philanthropy of THOMAS WRIGHT, of Manchester." But during several years his contributions were mainly portraits.

Few artists were so loyal to historical painting as E. M. WARD. His first contribution in 1834 was a portrait of O. SMITH, the player, as DON QUIXOTE. In 1839 he began the series of historical subjects which were continued until 1877. Mrs. E. M. WARD worked in the same line from 1858. JAMES WARD, the animal-painter, exhibited from 1792 until 1855. His career was therefore equal in length to TURNER'S. Another veteran was THOMAS UWINS, whose works were familiar to visitors from 1803 to 1857. The eighth volume would support the theory that exhibiting is favourable to longevity. BENJAMIN WEST'S "Departure of Regulus from Rome" and "Venus lamenting the Death of Adonis" appeared in the first of the Academy exhibitions, or 1769, and from that time until 1819 there was only one year in which the American painter was an absentee. RICHARD WESTALL'S paintings and drawings were to be seen from 1784 to 1836. WITHERINGTON was an exhibitor during fifty-two years and WILKIE during thirty-six.

It is to be regretted that among those of honest painters one name has to be introduced which would be apposite only in the "Newgate Calendar." THOMAS GRIFFITH WAINWRIGHT, the murderer, who was a friend of CHARLES LAMB and DAVID WILKIE, was an exhibitor in the Royal Academy in 1821, 1822, 1823, 1824 and 1825. He exhibited two scenes from "Undine," one from "Der Freischütz" and one from TASSO'S poem, "Paris in the Chamber of Helen" and "The Milkmaid's Song." DE QUINCEY confessed that he was interested in the man's judgments on the great Italian painters and the chief Italian engravers, and his manner gratified the Opium Eater at a time when he was misanthropical.

The architects whose names appear in the eighth volume are not, with few exceptions, as distinguished as those in the earlier volumes. WILLIAM TYLER, the Academician, was a sculptor as well as an architect. But among his works were the Duchess of GLOUCESTER'S villa near Kensington, a design for the town hall at Bridport, the goal at Dorchester, a belvedere to be built in a shrubbery, and a garden front of a villa. He was a foundation member, but he does not appear to have gained much renown. Another forgotten exhibitor was G. VARDY, who may have been related to JOHN VARDY. He contributed a "Design for a Banqueting House" and "A Public Building." LEWIS VULLIAMY exhibited in 1822 a design for a court of a palace. In 1830 and 1832 there were drawings of his Law Institution, Chancery Lane. In 1837 and 1838 he exhibited the Royal Institution; mansions for Lord PORTARLINGTON and Sir G. T. STAUNTON; Christ's Church, Woburn Square, and a church at Highgate were other contributions. Although living until 1871, Mr. VULLIAMY did not exhibit after 1838. THOMAS LARKINS WALKER contributed buildings from 1837 to 1841. They comprised the Royal Berks Hospital; Camp Hill House, Warwickshire; church in Spicer Street, hospital at Bedworth, church at Attleborough, and church at Friar's Mount, Bethnal Green. He was induced to seek fortune in China, and he died in Hong Kong in 1860. R. WALLACE exhibited in 1819 Cloncaird Castle and a mansion at Achans. In 1830 he sent a design for "Waterloo Gate, being an entrance into St. James's Park from the south termination of Waterloo Place, after the manner of the Propylea at Athens." SAMUEL WARE in 1799 began in the customary way at that time with a "Design for a Temple," to be followed by a "Temple of Fame, a national edifice to commemorate British heroism," and a "Design for a Nelson Memorial." In 1807 his work was more prosaic—a "Mill and Wool Manufactory." His design for Bethlem Hospital was hung in 1811, and in

* The Royal Academy of Arts: a Complete Dictionary of Contributors and their Work, from its Foundation in 1769 to 1904. By Algernon Graves, F.S.A. Vol. VIII., Toft to Zwecker. (London: H. Graves & Co., Ltd.; G. Bell & Sons.)

1814 a view of Lismore Castle, which was rebuilt under his direction for the Duke of DEVONSHIRE.

The late ALFRED WATERHOUSE began modestly in 1857 with a "Cottage erecting in Cumberland." Then in 1861 came a view of the Manchester Assize Courts. After another interval he reappeared with a view of the Manchester Town Hall, and then followed a more varied series of work than had come from one architect during the century of the Academy's existence, Gonville and Caius College, Cambridge; Eaton Hall; the Liverpool Seamen's Orphanage Institution; Owens College; the Court Chambers, Lincoln's Inn; the Natural History Museum; Iwerne Minster; the Prudential Insurance Offices; Pembroke College; shops in Piccadilly; Heythrop Hall; St. Paul's School; the Turner Clock Tower; the City and Guilds Institute; St. Elizabeth's, Reddish; St. Mary's, Twyford; Home of Rest, Liverpool; Cambridge Union Hall; Allerton, Cannes; National Liberal Club; Prudential Offices, Liverpool; Girton College; Infirmary, Liverpool; Liverpool University College; Hôtel Métropole, Brighton; the Weighhouse Chapel; Prudential Offices, Glasgow; Provincial Bank, Manchester; Yorkshire College; Provincial Bank, Piccadilly; Refuge Assurance Offices, Manchester; Prudential Insurance Offices in Nottingham, Edinburgh and Holborn; Christie Library; University College Hospital; Bank in Leeds; Surveyors' Institution; with various landscapes and views of ancient buildings, forming a remarkable collection and display of extraordinary artistic power.

WILLIAM WILKINS gained a travelling Fellowship at Cambridge in 1801, but although he travelled in Greece and Italy, he prepared no views of ancient buildings for exhibition. His attention was drawn to architecture at an earlier time, for in 1799 he sent a view of the entrance of Caius College, Cambridge, and a design for improving a nobleman's seat in Nottinghamshire. On his return from his travels he contributed designs for a college at Cambridge. He was largely engaged in University work, but in 1806 he had a design for the East India College and various other works. His design for the University of London was exhibited in 1827, and for the National Gallery and Royal Academy in 1835. His last works were in the exhibition of 1838. A man of a different class, who also made his first appearance in 1799, was THOMAS WILLSON. He obtained the gold medal in 1801 for one of those national memorials then in favour. In succeeding years he contributed designs for national monuments, royal pavilions, official residences, &c. The climax was reached by his last work in 1831, when he prepared the bold project of a pyramid cemetery for the Metropolis. The following description was given in the catalogue:—"The base of the Pyramid comprehends 18 acres, which being multiplied by the several stages to be erected one above another, will generate nearly 1,000 acres self-created out of the void space overhead as the building progresses above the earth." WILLSON, in this novel project, not only anticipated but surpassed the office builders of the United States. Another colossal scheme was seen in 1814, when JOSEPH WOODS sent a design for a palace extending 2,500 feet from Hungerford Stairs to Westminster Bridge. Some years earlier he proposed to construct a masonry bridge of a single span across the Thames at London.

The lists relating to the WYATT family deserve attention from students of heredity. Works of about twenty bearers of the name are recorded in the volume. JAMES WYATT in 1770 exhibited plans of the Panthéon in Oxford Road, and continued to contribute until 1799. His son, BENJAMIN DEAN, had drawings accepted in 1811-2. But his most important works were produced at a later time. There was also JEFFRY WYATT, who was better known by his assumed name of WYATVILLE. THOMAS HENRY WYATT and his brother, Sir MATTHEW DIGBY WYATT, were among the most distinguished representatives in the nineteenth century. As sculptors and medallists the WYONS have been also remarkable.

Having completed the record of the Academy, Mr. ALGERNON GRAVES at once undertook the preparation of the catalogues of the Society of Artists of Great Britain (1760-91) and the Free Society of Artists (1761-83). Both societies were rivals of the Academy, which, however, derived recruits from them. The catalogues are more rare than those of the Academy. Mr. GRAVES's efforts to preserve the history of the societies from oblivion is in keeping with much else which he has done in the cause of English art.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last, in the premises at Tufon Street, S.W., Mr. Walter Cave, vice-president, in the chair.

The following gentlemen were elected as members:—Messrs. J. Quekett, H. Brewis, E. J. Hatherell, H. F. Chandler, C. E. F. Roe, J. G. Allen, J. S. Huxley, A. F. Bryan and F. Winton Newman.

A paper on the "General Tendencies of Modern Architectural Design in America and American and European School Work," written by Mr. R. Clipston Sturgis, F.A.I.A., of Boston, U.S.A., was read in his absence by Mr. Arthur Keen, who made the following prefatory remarks:—"May I say by way of preface that Mr. Sturgis, the senior partner in the firm of Sturgis & Barton, who has kindly written this paper for us, is an architect with a large practice in Boston, doing Government and municipal work in addition to the domestic work which forms the principal part of his private practice. He is vice-president of the Boston Society of Architects, a fellow of the American Institute and chairman of the Board of Schoolhouse Commissioners of the city of Boston. This Board controls the erection of the State schools, buys the sites, appoints the architects and employs the builders, and in his position as chairman Mr. Sturgis is intimately associated with many leading architects. As a younger man he spent one year in the office of a London architect to get experience of English work, and he has been many times since in England and on the Continent, so that he is well acquainted with English work and well qualified to compare modern American architecture with what is being done here."

Modern Architectural Design in America.

At the time of the break with the Mother Country architecture in that part of the country which was colonised by England was following closely on the lines of English work. At the end of the eighteenth century the magnificent architectural record of the Mediæval builders had become history, and archæology and Classic forms and Classic formula had taken the place of a vital art.

The revived Classic forms with their fundamental principles of proportion and symmetry were, however, by no means unsuited to the new conditions among which they found development. The growth of cities, with the obvious requirements of direct thoroughfares and economical use of ground, encouraged and gave reasonable opportunity for the symmetry of Classic planning. From the practical and economical point of view the regular plan commended itself on all sides, and the fact that it was the prevailing fashion on the Continent was sufficient to fix it firmly as the universally accepted method in America.

In England it had its wise and reasonable expression in innumerable buildings in city and country, and while the rambling and picturesque plan of the Elizabethan and Jacobean work will always remain, to the foreigner at least, the distinctive and altogether perfect expression of English domestic architecture, the houses built under Queen Anne and the Georges have a charming quality of homelike comfort which in its way is unequalled, and which, in its close adaptation to what one might call modern domestic conditions, was more reasonable than a plan based on feudal conditions.

This was the condition architecturally that set its stamp on the English colonies in America, and, inasmuch as we had not the wealth of the Mother Country, we followed the simplest and best expressions, and were under no temptation to imitate the extravagances of the more ambitious English examples. It was that charming house in the Close at Salisbury, and the host of examples that are in line with this work of Wren's, not Houghton or Blenheim, that guided the taste of the colonists. For a while after the establishment of the United States our architecture con-

tinued in a quiet and dignified way to follow the trend of matters architectural in the western world. The acts that made the United States an independent power were not acts of revolution in the ordinarily accepted sense. We had no quarrel with England's Government as a form of Government, but only with certain exceptional applications of it that were invented for our special benefit. When therefore we started to govern ourselves, a republican form of Government was adopted (we could not very well have had any other), but there was no radical change in our civilisation, our outlook, or our environment. The fine arts, architecture and literature have their proper place and their due prominence in such a social condition. With Jefferson, as with Washington, these things were a necessary part of the equipment of a cultivated man, and the cultivated man was the one who naturally belonged at the head of affairs. These conditions, however, did not continue with us. A variety of causes demanded and produced a type of man essential for the development of a country of whose resources Washington had but the faintest perception. A type of man who must combine the indomitable courage and perseverance of the pioneer with the shrewdness of the promoter, who must be able to understand what the resources and possibilities of the country are and to be competent to develop them. Such men had neither the time nor the temperament for that sort of cultivation which every gentleman of the first generation considered essential.

Even in the old world the period from 1830-70 was a dull time architecturally (to put it very mildly), and with us it was the abomination of desolation. Every kind of good precedent was thrown to the winds. Sound Classic precedent slipped into a spurious Greek executed in wood; Gothic, which had long been a terra incognita even to the cultivated, was explored by the ignorant and rendered in wood with the aid of the jig saw. Here and there were sporadic cases of fairly good work, but architecture as a whole was in a most deplorable state at the close of our civil war. In judging work of this period, however, it is only fair to bear in mind the special circumstances that differentiated the United States from the older Western civilisation. In the early days both economy and speed of construction favoured the use of wood and the necessity of clearing the land made it practically imperative. Following on good Georgian precedent, much good and exceedingly clever and interesting work was done. Stone precedents and examples were interpreted in wood with a delicate and charming sense of the difference in the character of the material. Thus wood came to be established as the common building material, and as long as good taste ruled and modest means limited expenditure the result was charming. But when men without cultivation or taste acquired wealth the temptation to extravagance and eccentricity resulted in work wholly bad; and these bad examples were received with popular approval and caused rapid deterioration in the perception of what beauty and truth really meant. Rapid growth of wealth and rapid expansion of the people into new territory made it impossible to build in any but the quickest way and the constant shifting of population encouraged ephemeral work. The contrast in the construction of railways in America and England is an excellent example of the necessities which forced upon America its methods. England, building for a compact and settled community, built with a view to permanency and safety. The United States, forced to build to serve scattered communities in vast unoccupied areas, with a sole eye to setting rails on which a train could run, built in the quickest and cheapest way; and it was years before there was time or money to consider better methods. In architecture it was the same story, and this accounts for, if it does not excuse, the amount of unstudied and vicious work done in the forties and fifties.

After 1865 with the establishment of peace and the rapid growth of prosperity people had once more a chance to pay some attention to the fine arts. There was an enormous demand for buildings, and those who in the seventies were thinking of architecture as a profession had the assurance that the well-equipped and well-trained architect had before him a great career. Our own architectural schools were in their infancy, but one or two had already begun to do good work at that time. The Ecole des Beaux-Arts at Paris offered the best opportunity for sound training. Our people have always felt kindly to France and have admired her position in the world of fine arts. To Paris then our students went to receive sound training on Classic lines. At the same time attention was again directed,

chiefly through English influences, to the value and beauty of Mediæval work. You know what that was in England, and how Ruskin and a host of saner followers of that great enthusiast reawakened in the hearts and understanding of all English-speaking people the marvellous treasures of the centuries that preceded the Italian Renaissance.

With eyes newly opened our people began to see the sound common sense beauty of the simple Classic work of our forefathers.

Queen Anne and Georgian work, and the buildings of the early days of independence, once more received the attention and reverence they deserved. A small but growing body of men began to stem the tide of horrors which had resulted from an ignorant and unreasoning demand for something new, something American, something which was not part and parcel of the effete civilisation they fancied we had left behind.

Added to this new self-respect for our past came a reawakening sense of the treasures of architectural history in Mediæval times. It was like discovering a virgin field, so long had it lain fallow, and it was entered on with the greatest enthusiasm. Students returning from abroad had their sketch-books packed with picturesque and often very cleverly drawn sketches of French manor and farmhouses, Romanesque work from the south of France, early Italian work, the vigour of Tuscan palaces, the subtle beauty and gorgeous colour of the south and of Constantinople, and the Gothic of France and England. It was a surfeit of good things, far more than we were able to digest. The result at first was a host of miserable failures, and to offset this a few brilliant successes.

The few successes were, however, a great stimulus to the students following and to those already at work. Each succeeding year saw the students begin work better equipped, and the men in active practice gained knowledge rapidly through great opportunities, and by failure as well as by success. A nation with so little in the way of architectural inheritance and with so few conservative tendencies must necessarily be open-minded to new impressions. The American student abroad is constantly envying the greater opportunities which Englishmen have. They envy them not alone nor chiefly for the architectural treasures that surround them at home, for the wealth of precedent that guides them aright in English ways, but for the handy Continent, France and Holland across the Channel, Italy but a few hours' journey further on, so that a short holiday may at any time put the English architect in the midst of the best examples of architecture in the western world. But, as a matter of fact, one is inclined to think that the American student, when he does cross the Atlantic, sees with more open eyes, and profits more readily from what he sees, and so is better off than the Englishman; nor need he really envy those who live in the midst of the treasures of the Continent. The Frenchman may go to Italy to study, but does not often trouble himself to seek architectural knowledge in England or Holland. The German may travel in France and Italy, but apparently profits little by such experience. But the American student goes everywhere with the eager eye of one to whom all is new and wonderful. No native bias, no prejudice, no conservative respect for the work of his own people hampers him in his study.

This is a great advantage. Another equally great is that architects in the United States are largely drawn from the class who have the means for a thorough education as a foundation. To limit a gentleman's occupation to the army, the navy and the church would be utterly unintelligible to an American. The church here undoubtedly holds an important place in the community, but that could not be said of the army and navy. Nor is diplomatic service as yet looked upon as an important and interesting field for the well-educated and ambitious man. Those who in England are by birth entitled to the best education are attracted to occupations which seldom tempt us. The result is that professions like architecture, medicine and the law are filled by the best educated men. Architecture as a profession is as highly esteemed as the law, and rather higher than the occupations which until recently were looked upon as the only ones available for an English gentleman's son. The students who go abroad are generally well equipped intellectually to take full advantage of the opportunities offered them.

The result of this with us has been twofold. The lack of established precedent and the wealth of ideas accumulated by study abroad has had the effect of urging our people to new effort, and our confidence in our great and

prosperous future has helped us to believe that we would develop a new style of architecture, something American, something quite our own. On the other hand, the study of the fine old examples has encouraged a sincere and deep-rooted admiration of the masterpieces of the past, and a wholesome modesty as to our ability to equal them by anything that does not follow closely on the precedents of the past.

Both phases have had their development here, and one is inclined to think that the sober sense of the present generation sees good in both points of view, but is far more governed by the former. That is, we may in time develop something especially adapted to modern use—the many storeyed structure on immensely valuable land may bring its logical solution. The modern methods of construction—the steel skeleton—reinforced concrete—may lead us to new expression; but, if we do so develop, it will be along the lines of the sound planning of the schools, the reasonable laws of construction and decoration that have been exemplified and proved in all the work of the past, and that has stood the test of time.

The best architectural work of the past decade in America is not new, is not American, but is conservative. More conservative, one ventures to say, than much of the work of France, with its Exposition style of architecture influencing work that is worthy of more serious treatment; more conservative than Germany, with its often grotesque strivings for an art that is new; more conservative than England, whose civic architecture has neither advanced Mediæval development from the point at which Pugin placed it when the Houses of Parliament were built, nor improved on the Classic sobriety and dignity of St. George's Hall in Liverpool.

American architects have been influenced more or less by all the architectural experiments of the Continent, and have had their own vagaries of experiment. Richardson dug into the treasures of Romanesque work, and conceived and executed one or two noble buildings with the spirit of the past and a certain modern vitality; but the experiments conducted by his numerous followers brought disgrace and obloquy on the style. Only in the backwaters of civilisation is it attempted now. The decorative motives of India and the Far East were taken by some as the proper form in which to clothe a skeleton structure, the ornament being truly superficial rather than structural—a sound enough theory. But the experiments along this line were more interesting than convincing. Modern French has set its rather loud and often vulgar mark on much of our municipal and domestic work in the great cities. The debased examples of this, however, have been such a warning to the leaders in this movement that the work of these leaders is tending to the quietest, simplest and most refined expression of French art; indeed, the best work of this class is almost more closely akin to the precedents of Italy—the Renaissance fountain-head—than to those of France. English Gothic, especially its collegiate phase, has found its expression here, and with the chastened memory of the early American barbarities in this style, and a grateful affection for such sound old-school examples as Trinity Church, New York, the development here has not departed much from sound precedent, but in a general way tends toward what might have been expected if Gothic had continued its natural course. It is, perhaps, needless to add that there has been much ignorant handling of this most difficult style.

The most discouraging tendency in American architecture to-day is its individualistic character. It is the natural outcome of our form of popular government, and it is one of the penalties we pay, along with untrained public service and ill-executed public utilities, for the uplifting effect on the community of popular control, for the self-respect and confidence engendered by the sense that each voter has of being a definite factor in shaping the progress and the destiny of his country.

The effect of the individual tendency is twofold: first, to encourage the expenditure of study, time and money on private projects, unhampered by limiting restraints, even those that are for the general good. The individual may exercise his taste and judgment, or give a free hand to the architect in whom he has confidence. The architect thus has exceptional opportunities.

On the other hand, the individual tendency makes directly against all work that has for its primary element the general good, and, consequently, we lack in America good examples of work which depend more on the execution of a well-considered whole than on the excellence of

detail. That our architects are able to handle well general problems of planning and composition was abundantly shown in the buildings surrounding the Court of Honour in the Chicago Exposition, and it has been repeated with more or less of success at Buffalo, Omaha and St. Louis. Such opportunities do not occur under ordinary conditions governing either Federal or large State and municipal undertakings.

The absolutely autocratic control of Napoleon made possible the reconstruction of Paris. The almost equally autocratic or independent County Council cuts great thoroughfares through London, and lays down conditions for the buildings which are to line them. The control of great properties in the hands of individual owners makes possible the systematic and uniform treatment of a given civic area. You think promptly of Cubitt and Belgravia, but there is something pretty distinguished there which Kensington lacks. There are things in Bath not often rivalled to-day in city streets or squares. No such conditions exist with us.

It may be said that France is now a Republic, and yet Paris has still laws which, by limiting cornices and sky-lines, produce the regularity which is almost the only thing needed to give dignity and distinction to a great thoroughfare. It may equally be said that the South American Republics in their great cities, Buenos Ayres and Rio de Janeiro, show a sense of general civic beauty which is not to be accounted for by autocratic control or large holdings of real estate. This is true, but France grew in Republicanism with a well-defined and established policy, and had sufficient taste to appreciate it. Brazil and the Argentine inherited the Latin outlook, which is primarily one of subservience to law and order; and temperamentally they, too, like the French, were sufficiently imbued with the love of art to appreciate this inherited tradition. England, from whom we inherited our architectural tradition, in common with most of the Anglo-Saxons, laid no great stress on general schemes of civic beauty.

It is, perhaps, not strange, but it is certainly deplorable, that America, with its many brilliant examples of individual or isolated works of architecture, should be so absolutely lacking in distinguished civic architecture. No autocratic power, either of an individual or of a group of men, has as yet been sufficiently interested in large architectural schemes as to insure their execution. Perhaps for us it is as well that there should not be and that we should turn, perforce, for support and encouragement to the people themselves; but I believe it is more than doubtful if this expression of art will ever be popular.

In view of recent developments we may await this issue with more patience and courage, for city after city has awakened to a sense of its lost opportunities in the past only to determine that those that lie in the future shall not be lost. Here, at least, we are reaping the benefit of the big exposition groups, and the lesson they taught of the value of concerted action, of standard dimensions and repeats, of a well-considered whole, in which the parts, while admitting variety, yet conform to the general laws controlling the whole. Most of these are still in the condition of beautiful drawings embodying fine ideas; here and there one, as in Cleveland, is already taking form. While we may not expect the public to imitate or even fully understand these plans, we must for their development depend on the people for support, and unless our ideas are rational and practical, and the average man can see some return for his money—beauty is beginning to have its commercial value—we cannot advance far in the solution of broader problems.

In our individual work, where most progress has been made, our incursions into a variety of styles has resulted in a pretty generally diffused knowledge, a somewhat quick recovery from the strained effort to do something new and different, and a restrained sobriety among our best men which is having its influence in moulding taste throughout the country.

On the whole, then, the general tendency of the best work in America is toward conservative lines, but in following this course one sees that intelligent use of precedent which shows that the stage of student and copyist is past, and that we are entering—slowly, but soberly and carefully—on the more responsible period of imaginative handling of well-understood laws. That we have learned that there are laws under which we work is a most important thing; once accept this and we have gained that perfect freedom which is possible only to those who have learned to obey.

The illustrations which are to be shown are necessarily

very few, and cannot be considered even representative of the vast architectural field in the United States. You have perhaps noted that I have said no word as to the old French influence and its architectural records in Detroit, St. Louis, or New Orleans, or of the Spanish work in California and on the Mexican border. These have had a strong influence, and especially the latter—the charming work of the Spanish monks on the Pacific coast. Some of the slides will show modern interpretations of this.

With the exception of the first few slides the work shown is nearly all quite modern. These few early slides are simply to show the kind of thing we had in Colonial days, a type familiar enough in England, but very cleverly adapted for execution in wood here, and what we were doing in the early days of independence. The gloomy architectural period from then up to modern days might have been shown as a warning, but that no body of English architects needs.

The CHAIRMAN said they must thank Mr. Keen for explaining the slides to them, and also for the admirable way in which he had read the paper.

Mr. LOUIS AMBLER, in proposing the thanks of the meeting to Mr. Sturgis and Mr. Keen, said that the latter and himself were perhaps the only members of the Association present who knew Mr. Sturgis in the year when he was studying in London. They were in the same office, said the speaker, and it was interesting to hear Mr. Sturgis's views on American architecture, though it was a little doubtful whether they would quite agree with their own. He regretted the author had not shown any photographs of his own work. Many of those present he thought would remember having seen the illustrations of some of the American buildings before—certainly those of the firm of McKim, Mead & White, which were brought to their notice when Mr. McKim received the Gold Medal of the Institute. It was interesting to see how some of the buildings had developed from Spanish examples; but in some cases the architects had adopted more the characteristics of the Italian school. Mr. Ambler said it was noticeable that Messrs. McKim, Mead & White had based most of their building on Italian work, and suggested that the nearer their building got to the beauty and proportions of the original the better it was. He was surprised to hear in the reading of the paper that the American architects had not the same opportunities for doing buildings in a grand manner as English architects. Mr. McKim, when he was over here, had led them to believe there were opportunities in America for treating large open spaces and developing important sites. The libraries in America were certainly built on large, square and open sites—much more so than in this country; in fact, said Mr. Ambler, the laying-out of their sites seemed to be more on the lines of continental cities, such as Paris, Munich and Berlin, and yet Mr. Sturgis, in his paper, suggested that it was otherwise, and that the Americans had not such opportunities.

Mr. MATT GARBUTT seconded the vote of thanks and said, from the views of some buildings he had seen exhibited at the recent Architectural Congress, he was under the impression that Americans had great chances for laying-out buildings on a grand scale.

Mr. W. H. LEVERTON supported the vote of thanks.

The CHAIRMAN, expressing the thanks of the meeting to the author of the paper and Mr. Keen, said it had been very interesting to see so much American work, but having heard how hastily it had to be produced he felt glad he did not practice in America. He had been told that as many as one hundred men were employed in some architects' offices and that drawings had often to be prepared and issued within a few days owing to the keenness of competition. In America 75 per cent. of the profits would go to meet office expenses, or, in other words, out of 5 per cent. fee on his commissions the architect only made one-quarter for himself.

Mr. KEEN, briefly replying, said that though the conditions under which American work was produced might seem inconceivable to them, yet he thought they had seen on the screen that evening examples of architecture which were worthy of the Americans.

Mr. George Clausen, A.R.A., will deliver the annual address to the students of the Birmingham Municipal School of Art and distribute the prizes on the evening of Thursday, February 14, in the large lecture theatre of the Midland Institute.

THE DESERT TOMBS OF BAHREIN.

EXCAVATIONS are in progress by Captain Prideaux, C.I.E., the British Agent at Bahrein, under the instructions of the Government of India, on the fringe of the remarkable desert tombs which stretch for miles and miles in the interior of the island. A special correspondent of the *Times of India*, who has been touring in the Persian Gulf, visited the scene of excavation and describes these mounds, stretching away as far as the eye can reach, as constituting the most gigantic cemetery in the world, and as probably also the oldest and the earliest burying-ground of the human race still in visible existence on such a scale. Yet comparatively few people know of its existence; the literature dealing with it consists solely of a few allusions in the works of classical geographers, a report or two in the records of learned societies, and a chapter in a book by the late Mr. Theodore Bent. Mr. Bent thought the mounds were of Phœnician origin, but the correspondent gives reasons for holding them to be of still more ancient origin. Primitive civilisation first began in this region in all probability, and possibly this desert sepulchre is the oldest piece of man's handiwork now existing in the world. The mounds nearest to the village from which the necropolis is approached are 50 feet high, but the vast sea of mounds beyond is made up of tombs from 20 feet to 30 feet in height. The few excavations so far made, confined to the higher mounds, show that each tomb consists of two large chambers, one above the other, built of vast blocks of stone. There are side chambers and passages, and the interior is neatly covered with layers of cement. First, the chambers must have been constructed, and then the tomb was covered over with compact layers of earth and small stones, very many feet thick, thus forming a mound capable of withstanding the flight of many ages and not giving the slightest hint of what lies within. The masonry is cyclopean in character and perfect of its kind, but no marks of mason's tools are discernible. Not a vestige of an inscription has been discovered anywhere. The work of excavation is very difficult, but, despite the obstacles met with, good progress has been made by Captain Prideaux, who has already accumulated a large collection of fragmentary relics. A scientific report will, no doubt, be issued by the Government of India in due course.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THIS Association, desiring to commemorate its Jubilee year, has arranged to hold an exhibition in the rooms of the Royal Scottish Academy, Edinburgh, during July and August 1907. The exhibition will be limited to work executed in the course of the past fifty years by Scottish architects, with the addition of such old or special work as the committee may consider of sufficient interest. An interesting incident in connection with the exhibition is the forthcoming visit of the Royal Institute of British Architects during the period of the exhibition.

It is desired to include in the exhibition photographs and drawings of work that has been completed, and the committee will have discretionary powers to admit exhibits of the applied arts, as designed and controlled by the architect, if available floor space permits.

Architects and others who have photographs and drawings which they consider of sufficient interest to be included in the exhibition will please communicate with the exhibition secretary, Mr. John McIntyre, architect, 28 North Bridge Street, who will furnish further particulars.

It is proposed that a guarantee fund be raised in connection therewith. The total sum desired is 300*l.*, and it is intended to limit the guarantee of any member of the Association to one guinea. If the exhibition is well patronised there may be no deficit, but should such occur and only part of the guarantee fund be required, the guarantors will be called upon to meet same proportionately. The guarantee of a guinea or any smaller sum may be intimated to the exhibition treasurer, Mr. W. G. Walker, C.A., 39 George Street, Edinburgh, and it will be esteemed a favour if this is done on or before Monday, February 4.

Mr. John Burnet, A.R.S.A., has been appointed assessor in the competition for the buildings to be erected for the Scottish Exhibition, which will be held in Edinburgh next year.

NOTES AND COMMENTS.

ANOTHER move has been made in the action respecting the claim of the late Mr. MACKISON for fees connected with extraordinary duties performed by him as burgh engineer. Although the claim was reduced from 49,000*l.* to 15,000*l.*, the Town Council endeavoured, in the first place, to obtain a decision that there was no case. They were not successful. Another effort was made this week to bring the action to a premature end by advising the Town Council to offer a sum of from 3,500*l.* to 4,000*l.* in settlement of the claim. When it is remembered that the Council when they first heard of the claim, treated it with contempt and dismissed an old and faithful official on account of it, the readiness with which, by a voting of 19 to 3, the proposal to offer the money was adopted is enough to suggest that the Council have no fixed basis on which to stand. The claimants should therefore hesitate before they accept the offer. Apart from their interests, which no doubt are important, it is desirable that the Courts should formally decide whether municipal engineers and other officials are to be paid for services which were not supposed to be comprised among the duties they were engaged to perform.

ALTHOUGH the circumstances of modern life in France do not appear to be favourable to long life, yet many of the artists attain an age which is considered as venerable. It would be difficult to decide who is the NESTOR among them. FÉLIX JOSEPH BARRIAS, the painter, who died on Saturday last, won the Grand Prix de Rome in 1844. In those distant days young men were able to conquer, and BARRIAS was only twenty-two when he succeeded. Three years afterwards he exhibited in the Salon and obtained the usual third-class medal, to be followed in 1851 by one of the first class. NAPOLEON III. patronised him by purchasing his *Exilés de Tibère*. It was as a history painter he went to Rome, and he continued faithful to that class throughout his long career. Governments and theories of art might change, but BARRIAS was an ultra-conservative, and there was little difference between the student and the professor. He was one of the very numerous pupils of LÉON COGNIET.

A GREAT many people in England have long believed that the difference between theory and practice is not to be overcome. We may consider it as no more than a prejudice which originated in the peculiarities of English education. A man might stand high in a college for his knowledge of mechanics, and in course of time he might become a professor of the science without being able to realise the connection between his problems and machinery. Men of that kind were not to be blamed. They were simply upholding the tradition which had come down to us from the Greek and Roman philosophers. It is not the office of philosophy, said SENECA, to teach men the use of their hands. Her business is to form the soul, and he considered that the making of transparent windows or the heating of a building was only fitted for slaves of the lowest class. Happily all such nonsense has ceased to be respected unless in some very wealthy institutions intended for men who need not trouble themselves about foreign competition. The grand intellectuals of a past age would be horrified to find that a faculty of commerce has been introduced in some of the new English universities. Birmingham has not only one, but the Council have departed from all precedent by forming an advisory board, which consists solely of gentlemen who have the closest connection with business affairs. The members of the board are Mr. NEVILLE CHAMBERLAIN, a director of a metal company, &c.; Mr. CLAUGHTON, a director of railways, banks, canals, waterworks, gas companies, ironworks; Mr. DUDLEY DOCKER, director of a carriage company and a small arms company; Mr. A. H. GIBSON,

a director of W. & T. AVERY, LTD., and other companies; Mr. W. E. HIPKINS, the managing director of W. & T. AVERY, LTD., and other companies; Mr. J. S. TAYLOR, the chairman of the Birmingham Chamber of Commerce; and Mr. T. SIDNEY WALKER, director of the Metal and Munitions Company, &c. All are connected with local industries, and their experience will be utilised in aiding in the training of students in order that they may become efficient leaders of industry.

As Ravenna is comprised in the circuit of cheap tours, the buildings are known to more Englishmen than in BYRON's days. The old buildings are interesting to architects as examples of the Byzantine style. The theory of a Syrian origin for them was lately maintained by Professor DÜTSCHKE before one of the German societies. Romanesque art, according to him, should be considered as Christian-Oriental art. He cited MARTIAL as evidence that prior to the Christian era Roman culture was being orientalised, or rather, Syrianised. Both Egypt and Asia Minor were among the influences. In Ravenna a part of the city was called "Armenia," owing to the numbers of merchants who inhabited it. Professor DÜTSCHKE compares the cultural movement to the ebbing of the tide which carried ALEXANDER THE GREAT to India. He finds resemblances between the Syrian churches and those of Ravenna, and the Mausoleum of GALLA PLACIDIA may have been derived from an example of the third century still existing in Asia Minor. In the symbols and sculpture he also traced a Syrian influence which passed from Ravenna to other parts of Europe.

THE leases of the old houses forming St. George's Terrace, Gloucester Road, W., having nearly all fallen in, the site, which has a frontage of about 400 feet and a return frontage of about 170 feet to St. George's Place, and covering an area of nearly 1½ acres, is being cleared. By arrangement with the London County Council and the Kensington Borough Council an important street improvement will be carried out. The new frontage of the site will be utilised for the erection of a number of blocks of shops and flats, the plans of which have been prepared by Mr. PAUL HOFFMANN, Palmerston House, E.C. A new feature will be introduced in the shape of roof gardens on the first-floor level, the upper part of the premises setting back considerably behind the line of shops.

THE *Discobolus*, or quoit-player, by MYRON, was always recognised as one of the great works of sculpture. Several copies were made of it, and one is in the TOWNLEY collection of the British Museum. But they do not all agree with the description which LUCIAN professed to give of the original. According to him, the figure was "bending forward in the attitude of throwing, with the head turned back towards the hand that holds the discus, one knee gently bent. The figure appears ready to rise as soon as it has discharged the discus." According to Professor Rizzo, the world has now been enriched by another ancient copy, discovered at Castell Borziano, in a small garden belonging to one of the old villas. Unfortunately, the statue was broken; but the fragments have been collected, and the important parts of the head, the right arm and the feet can be completed. The Professor has compared the parts obtained with the figures in the Vatican and other galleries, and has come to the conclusion that it was one of the best versions of the famous figure.

ILLUSTRATIONS.

THE NEW WAR OFFICE, WHITEHALL.—DETAIL OF EXTERIOR.

MARINERS' CHURCH, ST. IVES.—FROM SOUTH-EAST—INTERIOR.

THE COTTAGE, HIGHLANDS ESTATE, ST. LEONARDS-ON-SEA.—THE DINING-ROOM—THE HALL.

BOROUGH OF GLOSSOP PROPOSED CONVALESCENT AND NURSES' HOME.

WANDERINGS IN CENTRAL EUROPE.*

SOME of you know the excitement the lover of art in any branch has when his dream of years is about to become a reality, and he is to see a great work at last; if so, you have tasted one of the greatest pleasures of the traveller.

Illustrations and photographs are now to be had so cheaply, and every corner of Europe has been sketched and photographed so often, that there are few spots that really surprise us; but an impression is gained by the actual seeing that no plate can give. I should like to inspire everyone (particularly students in art) with a longing to wander through Europe, for I think that in most men a real desire to do anything is a distance along the road to its accomplishment. I myself, at eighteen, without a pound to call my own, made up my mind to go abroad on my first trip, in four years' time, and I estimated what I should require, and, strange to say, in time and expenditure I had correctly foreseen. Travel is better than the money it may cost, and no one can take the memory from one so long as he lives.

After hard work in England and France, we retired for a month to Switzerland, and there, nearly a mile and a quarter above sea-level, enjoyed a most delightful rest before descending into Germany.

On my previous visit I had crossed the Alps in the depth of winter, up to my neck in the snow, and nearly died in the process. The lakes were voyaged sitting on the engine boilers, and Switzerland was quiet, lonesome and dreary, but now the sun had shone and transformed everything; the whole country was full of life and clothed in summer, with rich growth about us, trees laden with brilliant red, purple and white berries; the stately pines, grand and beautiful, had shaken themselves free from their burden of snow, and in perfection gave their dark green as a contrast to the lighter shades of the other trees. Here and there a simple square tower, capped with a graceful octagonal spire, with heavy bell-casting eaves projecting far, gave a little architectural interest.

The eternal mountains we soon left behind us, and we were steaming across Lake Constance with the freight cars towed astern, and a little later we were on a German train leaving Switzerland, but not her chalets, for far from the border the houses are of the same type. My run up the Rhine never seemed to me like Germany half as much as this approach to the fine city of Munich. The chalets gradually became plainer—in fact, often like a great box with a roof over, doll's-house fashion; the graceful spires were gone, for on the German towers stand cupolas, more like inverted onions than anything else I can call to mind. The Greek church tower seemed to be in its infancy.

The country was a good one, but beyond these features and a well-laid railway track, there was little of interest until we arrived at Munich, and though it has one of the finest collections of art treasures and a population of 200,000, to us Australians it is almost unknown, or, to say the least, unrealised.

Naturally our first steps took us to the great Pinacothek, treasure houses of paintings of new and old masters, and they are enough to satisfy any hungry soul. Here was a feast indeed worth the study of weeks, nay, months and years. The buildings themselves are an example of what picture galleries should be, not vast chambers, but a series of rooms suitable to the size of the works exhibited.

Here, as throughout most German cities, the secessionists have founded their own special gallery. While these galleries do not possess, when compared with the old ones, much of a very high standard, yet the work done is admirable. It has taken centuries to gather the older collections, and can it be expected that a new set of artists, striking out on new lines, could in a few years gather pictures to compare with collections the choice of all the best for hundreds of years? True it is that many of their works are decidedly bad, and often deserve the extravagant criticisms that they receive. It is sometimes hard to understand how such art absurdities, both of composition and execution, are allowed to be hung; but, with the mass of mediocrity, there stands out an occasional jewel that is worth the whole secessionist movement's efforts. I was much charmed with the excellent taste displayed in small pieces of furniture and ornament, and as the galleries are not intended for their reception so much as for the pictures, only good examples are exhibited, sometimes not more than one or two in a room of thirty pictures.

* A paper read by Beverley Ussher at a meeting of the Royal Victorian Institute of Architects.

The whole secessionist movement is a striving to get away from the bonds of tradition, and many patrons are willing to sanction modern notions in place of mere copying of old and famous styles of painting and architecture. This new art is no longer on its trial, but, in my opinion, it has come to stay, and perhaps to lay the foundation of a new and living style.

The great German exhibits at the World's Fair in this style were never extravagant or devoid of reason, but proportion and utility were hand in hand, producing a harmonious whole, a delight to the eyes, full of luxury, and having the very essence of beauty.

It may be that the life of this movement depends upon a few great men; but it is sincerely to be hoped that what happened in America, after H. H. Richardson's death, will not be repeated in German-speaking cities.

Had America followed up the great Richardson's lead there would doubtless have developed a style well worthy of the nineteenth century; but, alas! they lacked the ability or the inclination to follow, and the States only possess a few beautiful American Romanesque buildings, and the style is looked upon as out of date, and Renaissance methods are generally adopted. The hope is that the German movement, being general, may prove its saving.

We are now in the empire of William II., whose personality is extraordinary, and whose untiring energy and genius are pushing a once second-rate Power into the forefront of the nations. As a boy his motto was, "If I rest I rust," and now new inventions and discoveries in medicine, in telegraphy, in electrotechnics, in postal service and in naval architecture all receive his appreciation, and he spares neither time, pains nor influence to use them for this nation whose head he is. In art, and particularly in this secessionist movement, the Emperor has shown the same vigour and used his influence. It is strange that for the exterior of buildings he has done his utmost to crush it, yet for internal work he has been a patron. The forty furnished rooms at the St. Louis Fair were said to have been personally supervised by him. The great feature of these was a thorough blending of colour with neutral or half-tints predominating, sinuous, graceful lines in ornament and hangings; the lines following the fancy of the craftsman, with no attempt to copy nature or even suggest objects from nature. Every piece of furniture was fully suited and shaped entirely for its place. It was craftsmanship at its best, and the whole seemed the result of a master mind. Thus Germany is slowly but surely creating a distinctive art of her own. The scum is still on the surface, but soon the world will awake to see an art new, vigorous and full of beauty and delight. The taste of the people themselves is on a high standard, at any rate, judging by the paperhangings exhibited in the shop-windows, which are, by-the-by, a very fair indication of the common taste. In England and America the majority of wall-papers are not well designed. In Germany even papers of 3d. and 4d. a roll are fit for first-class work as to style, drawing and colour.

Fergusson praised German Classic homes, but predicted a great downfall in their architecture, which prophecy became only too true; for those who neither followed the Classic lines nor the secessionist breaking away have developed (particularly in the capital) a base, fantastic, distasteful style, without sign of education or original genius, filling street after street with otherwise grand and costly mansions.

Munich perhaps of all cities needed a breaking away the most, for seldom do you find such examples of copyism as here. Almost, one might say, it is a museum of examples of buildings of note, reproduced copies of the Pitti Palace at Florence, the well-known Loggia in the same place, and even the Parthenon at Athens are here, and some of them in stucco. No wonder that there has been a recoil of thought. The Germans have copied everything, no matter how unsuitable to their uses. The secessionists aim at copying nothing. I do not wish to be misunderstood. If you travel this country through you will see few good examples of this new work without searching, and it must not be forgotten that the secessionists' work has been carried out best in interiors, and there are few exteriors worth looking at, and many examples are full of extravagant absurdities, and without other merit than originality.

The great beer gardens and cellars are among the first sights of the place, and even the works of art in her fine galleries are not enough for you to see if you would do Munich properly.

This fine capital of Bavaria is well worthy of the usual

German pride, for no people are so capable of conducting the growth and upkeep of their cities.

Again we are speeding towards Nuremberg, and more into the heart of Germany. The absence of the country seat or nobleman's château was noticeable; in fact, from the Adriatic to the Baltic there are practically no fine mansions nor comfortable houses like the middle-class home-steads that cover England.

Women are everywhere to be seen working hard in the fields, and it is no strange sight to see them with their high tapering baskets filled to the brim with some weighty merchandise, and in the cities with their shovels mixing mortar, and doing many other things that we consider only fit for men.

Nuremberg is perhaps the quaintest and most interesting Mediæval city of Europe; yet when one arrives at the railway station there is nothing about it to suggest that you are at its gates. Within a few yards the old tiled roofs of every conceivable pitch and angle, broken by innumerable little turrets and slit dormers, can be seen stretching from wall to wall, and all through this ancient town are found fine specimens of ironwork, sculpture and carving, to say nothing of famous pictures and drawings. Wherever a town in any country, ancient or modern, has been blessed with good examples, whether handed down by antiquity or inspired by a great architect, the result is, as a general rule, a higher standard of excellence. Nuremberg for centuries has guarded her beauty. Her citizens even in these days of commercial utility have with pride tried to retain something of its character in new works.

It had always been a dream of my life to walk her lanes, with all their twistings and turnings, and to become familiar with this town of roofs. We often forget that in picturesque architecture the roof plays the most important part. One of the first buildings one sees after passing through the gates is the huge corn market, sometimes called the "Giant's House," with its many storeys, a great gable at each end and one at each side, being otherwise devoid of breaks. Half of the storeys are in the roof, and though this building is severe yet it is an example of what size and simplicity can do.

These grain houses are noble structures. Little in ornamentation is allowed excepting to gables and entrances. The whole speaks its purpose so well that it is easy to guess its use. Though a mere unadorned storehouse, it stands forth and asserts its claim upon public admiration. You can see such simplicity particularly in the glorious old houses of Hildesheim, Rothenburg and Brunswick. Ernest George and Norman Shaw in many of their works have charmed us in the following of methods inspired by their travels in the old cities of Northern Europe.

To illustrate this grand simplicity let us examine the Weinstadel with the older Wasser Turm water tower, sometimes called the hangman's tower, because the town executioner used to live in a house (the Henkersteg) on the graceful covered bridge which spans the river Pegnitz.

The strength of this defending tower, combined with the picturesqueness of the venerable looking inn, with the quaint single storey connecting them, make a composition indeed worthy of the imagination of any artist. This is the very heart of Nuremberg, and with the undulations of the city as she rises from the river banks, we can catch perhaps some of the most wonderful roof scenery to be seen anywhere. Here also we note the simplicity of the chimney-stacks and the multitude of attics.

The little Pegnitz and her many bridges allow glimpses of uncommon beauty. The picturesque houses are on the water's edge; the stream is full of fish, but none of them are allowed to be drawn; nevertheless the children cannot resist the sport, and the culprits, detected, go off to the watchhouse and are punished. Wherever you wander there can be seen evidence of a high standard of craftsmanship. Her workers in metals, cutlers, casters in bronze, and her goldsmiths were considered the most cunning and skilful in Europe. To-day Nuremberg may be called the world's toy shop, but not that she has altogether lost her art for more serious manufacture.

The modern, well-designed Jewish synagogue, on the bank of the river, while incongruous with the general surroundings, brings home to us the history of these much persecuted people. Their treatment was so terrible that only their vitality could have withstood it, or have dared or have afforded to erect so good a building. They were subjected to all kinds of insult, were restricted in every way, were obliged to don a peculiar costume, to shave clean and to keep to their own quarter. But even this was not

enough; they were blamed for deeds never theirs, and in 1349 were cruelly massacred. The Nurembergers, becoming jealous of their usual prosperity, and a rumour having gained a hearing that they had poisoned the town wells, they were driven out to the site of the Maxfield Park and there burnt to death. Their whole quarter was destroyed, their synagogue and cemetery not even being respected, and for hundreds of years they were not allowed in the town.

Owing to this clearance the fine market-place was made way for. There you can see numbers of large umbrellas shading the stalls. These have been handed down from generation to generation.

A few years later the Frauen Kirche was built on the site with a history most unchristian. A feature of this church is the procession of mannikins placed on top of St. Michael's Chapel, and worked by the clock.

The fountain, 60 feet high, deserving its name, "Beautiful Fountain," is one of Nuremberg's treasures, though just at present it is suffering from over much colour decoration. Crossing one of the bridges I came upon one of the beauty spots, and, placing my camera on the parapet, I photographed the strangely-built hospital carried upon a bridge, and legend lends enchantment to this view. Its founder was wealthy, but suffered from a painful disease for which he could find no remedy. In a garden outside the city he dreamed that he saw the gleam of some jewels on the ground. He felt to pick them up, but, as they faded away, he heaped some leaves to mark the spot. Feeling convinced that this was a sign from heaven, he vowed that he would build a hospital if he ever found them. The day following, in his own garden he saw a heap of leaves, and very soon he had dug deeply and unearthed a chest of jewels and gold hidden in war time. The first patient cured him of his skin trouble. Konrad's recumbent effigy beneath a massive slab, borne by eight kneeling patients, is a fitting testimony of this good man's gift to Nuremberg.

To ramble around the walls of this once well-fortified city is a great pleasure, and no matter how callous the sightseer may be, he must be impressed with the ever-changing loveliness of its gardened ditch, with its roofed-over walls crowned with numerous towers of all shapes, which dominated the surrounding country.

In this ditch every citizen had a finger, for every man, woman and child was obliged to work one day in the year, find a substitute, or pay ten pfennings.

The castle should have been mentioned first, for the name Nuremberg may be made up of the words Nur ein Burg, only a castle, and perhaps when the Burg was built, with its five-cornered tower, the castle was all that there was of the now ancient town. It was occupied by aristocrats, overawing the townsfolk, who were so subjected to the raids of the young burgers that they erected the four-pinnacled tower (Lugisland) to keep an eye on the aristocrats' movements.

The churches of Nuremberg are treasure houses of art, the finest being St. Sebald's and St. Lorenzo.

The Lutheran church of St. Sebald I saw crowded with scaffolding inside; but, notwithstanding this, there was enough free to show how well it had been carried out.

Legend says that the saint was laid in this spot, where then stood a church dedicated to St. Peter. When St. Sebald died his body was put into a cart drawn by unbroken oxen, which were allowed to wander in search of a resting-place. Whether through the sniff of the marketplace near by St. Peter's or guidance from above, we cannot tell; but at any rate, here this saint's bones were deposited. Three times the townsfolk removed the body, only to miss it and find it again where the oxen had chosen.

St. Sebald's is in several styles of Nuremberg Gothic, early and late. In 1361 the original chancel was pulled down and replaced by the present beautiful eastern apse, which follows the French plan. The nave is the oldest portion, and the towers of the fifteenth century. There is no harmony of east with west, no gradual leading up from simple to late Gothic, no history of every generation, as so often seen in our English cathedrals.

One is apt to forget the purpose of the church, and is likely to think only of Peter Vischer's masterpiece, in the most elaborate tomb of St. Sebald. It is not only one of the treasures of the church but of Germany itself, and some go so far as to say that it is the most perfect piece of metal work in existence. For twelve years the famous iron-worker, aided by his five sons, toiled to produce this shrine, and without other than voluntary payment, which did not

amount to much. It is borne on twelve large snails and four dolphins, and is enriched by figures—apostles and others—about seventy in all, including the grave and the gay, and even children at play. The base is enriched with bas-reliefs, and the whole is a canopy of imperishable metal, sacred to the memory of the saint so revered.

One of the later-date features of the church is the bridal door, with a decided German Gothic cusped and traceried canopy, all most suitably designed, with figures of the wise and foolish virgins on either side.

The oriel of St. Sebald's parsonage is very beautiful, but time will only allow of mention.

The position of the fine church of St. Lorenzo, being more open, has the advantage over that of St. Sebald's. It is not to be expected that (whatever may be said in favour of German Gothic) it compares with the purity, loveliness and beauty of detail to be seen west of the Rhine; but St. Lorenzo recalls French methods, especially in its fine doorway, 40 feet high. As a whole, the conception is grand, and a look at its details adds greatly to its charm, and for a doorway, even in the west, it has seldom been surpassed.

The whole illustrates Bible history. We see the Virgin, the childhood of Christ, the Passion, the Crucifixion, while Our Lord, with the sun and the moon at His feet, judges the dead who rise from their graves, and are also depicted in heaven and hell. The two-thirds proportion of the whole doorway taken up by the carved tympanum is extraordinary.

The masterpiece of Adam Kraft is here to be seen in the famous florid Gothic tabernacle. Kraft, kneeling between two of his assistants, supports, with their aid, this tall pyramid of stone, 65 feet high, which, when reaching the vaulting, heads over like a plant checked in its growth towards the light. While this work to us is extravagant, its detail foreign to our way of working, and its parts not constructional, yet it is a most graceful and pleasing piece of stone carving of rare minuteness of detail. Adam and his apprentices worked for five years on it.

One of the most famous and perhaps the most world-wide-known relic in Nuremberg is the little inn, the "Bratwurst-glocklein"—in English, the little bell of the Fried Sausage. The bell used to be rung when the sausages were ready, and its history goes back 600 years. It clings like secular buildings often do in Europe to a chapel, and that a mortuary chapel. Contrast the jolly life with the mourning of the bereaved. Here Dürer, Vischer, Veit, Stoss and Hans Sach we may imagine eating their daily sausage, while they talked over the doings of Martin Luther. Folk have flocked from all parts to sit in the very seats occupied by great artists long since gone.

The Rathaus, with its dreadful dungeons, can tell many a story. It and the castle, and even the outside of the town in several directions, are connected by underground passages. The courtyards of Nuremberg are good, particularly this one at the Rathaus.

On a fountain near the Spitalplatz is a figure of a bagpiper, and the story of how he got there is amusing. Nuremberg in those days needed a sanitary system, and, for want of it, the plague used to run riot. The bagpiper, greatly beloved, started on his way homewards, no better for his good time than a brother piper from Scotland. Falling asleep in the track of the plague cart, which came heavily loaded with the dead, the ox and horse drawing this awful hearse hesitated to go over him. Promptly the driver lifted the piper on to the top of the cart. The roughness of the cobbled streets made the fellow sit up. All his screams did not impress the driver, used as he was to dreadful sounds, so he kept on his way. Remembering his bagpipe, he played, and he received the notice of the undertaker and, full of fright, he was allowed to get down and go home a changed man.

The Nuremberg stations of the cross are also by Adam Kraft, though most of them have been restored. One Kilzel discovered that the distance from his home on Thiergarten Platz to the entrance to St. Johannes Cemetery was the same exactly as the road from Pilate's Judgment Hall to Golgotha. Kraft was employed to carry out seven bas-reliefs in stone to mark this way that our Saviour carried His Cross, and a large Calvary with full-sized figures was placed inside the cemetery. These bas-reliefs were set up on great pillars two hundred paces apart. Kilzel's home now retains the name Pilatus House; but, alas! little is left of these works of Kraft's. Albert Dürer's life and name seem to be bound up with the town. The artist of Germany and the delineator of the world, painter, sculptor,

engraver, engineer, mathematician, and ardent Protestant reformer, why he seems more the patron saint than St. Sebald in the hearts of the Nurembergers. He was a noble character, his walk was upright, and he was early to accept the teachings of Luther. He was a man in a million. Alas! the town has lost many of the best of his works, but they are to be seen scattered throughout the great galleries of Europe. His home is preserved as nearly as possible as it was in the days when the master occupied it.

Opposite St. Lorenzo stands the sixteenth-century Nassau House. A fine specimen, with its plain walls, its beautiful oriel and carved balcony, and its graceful turrets and roof. The group of buildings here, St. Lorenzo, the Nassau House, the picturesque houses adjoining, while far away down the hill turret after turret grows out of the vast cloud of red roofs, make one of the most interesting spots of this splendid old town.

This Nassau House, which is almost uninjured by time, is one of the noteworthy monuments of German secular architecture of the Middle Ages, probably finished in the fourteenth century. The oriel and the angel are fifteenth century, placed there to mark a visit of Sigismund in 1424.

A fountain here is an interesting specimen of German Renaissance at its best. A better known one is the goose fountain of the market-place, with a figure of a man holding a goose under each arm, and from each mouth squirts the water.

It is hard to leave Nuremberg without even speaking of more notable spots and buildings, and a few words must be said of the Germanic Museum and its treasures of art. This old monastery, transformed by the Reformation into a museum, contains many most interesting exhibits, and, arranged in a picturesque Gothic cloistered building, they are enhanced. Some of the old German heavily-timbered rooms were particularly good. The courtyard, with its well, makes an interesting picture.

On Saturday afternoon we left Nuremberg for Rothenburg, another once strongly fortified town. The railway ran through a part of the country which gradually grew more interesting; sights of beautiful forests, rich undulating lands and quaint villages passed away the journey quickly. At about sunset we were outside one of the quaintest places I have visited, with practically no sign of anything modern, and completely walled around, with all the gates especially strengthened; some of these entrances are so well guarded that no fewer than four gates must be passed before one is actually within the town. One of these, the Marcus Thurm, is said to be 1,000 years old, and it is still in a state of almost perfect preservation.

Rothenburg reminds me very much of some of the Mediæval towns of Italy. Like Orvieto and Siena, it is built on the crown of a hill, or group of hills, and one always has an extensive view of the beautiful surrounding country from the walls. The church, or cathedral, and the Palazzo Publico, or Rathaus, are in the centre, and from the market-place the streets wriggle outwards, and to follow these in any direction in a few minutes the sightseer is on the walls or through the gates.

The Rothenburg Rathaus is a very interesting structure with Gothic lines; it was erected in 1240, and the portion facing the market-place (a Renaissance front) was added to it in 1522, after a destructive fire which destroyed half of the old building. Tradition says that the fire was caused through the spite of a pair of storks that had built a nest in the old belfry. Incensed by their litter the janitor's wife one day flung the fledglings into the street while the parent birds were away. The old birds' distress was very great on their return. That night a fire broke out near by, and one of the birds was seen to pick up a brand and carry it to the nest in the belfry, for the tower was soon ablaze and the janitor and his wife perished.

From the tower three times a week a chorale is played with a verse for each quarter of the compass. When a wedding occurs there is often an extra performance, and in case of death at sundown the sad tidings are conveyed in the solemn notes of a hymn.

The Franciscan church, eleventh century, is the abbey of Rothenburg, for there rest the great leaders and patricians of the town, which fairly bristles with legends and memories of noble deeds.

That Sunday was one never to be forgotten, for devoid of excitement of any kind the whole place breathed peace. The kirk bells rang out loudly, calling the folk for miles around to their abbey and echoing through the hills. From the window of our homely little inn, which had likely been there for centuries, we looked out upon the Gothic

side of the Rathaus. A few yards away at the end of the street there is a strange garden, the walls of which are built on the edge of the rocky declivity that ends the tableland upon which the town stands, and here after church the town band played, as German bands can play, and the townfolk walked about for an hour. In the afternoon we went beyond the walls, where the slopes are covered with gardens, with seated winding paths, and often the trees are laden with ripening fruit, the property of the municipality, untouched by the pilfering schoolboy.

Walk where you will in and about Rothenburg there is inspiration for an artist. Old gabled houses, sometimes dangerously toppling, and beautiful nature, combined with the life of these gentle folk, are here to relieve the monotony of the up-to-date modern cities.

But, however great our pleasure to stay, we could not linger too long if our programme were to be carried out, so the following Monday found us in the train going towards Austria.

The German agricultural country seemed poor, and as if every nerve had to be strained to get the full value out of it. Before we reached Passau we had skirted the Danube for many miles, but when we crossed the mighty river into Austria the change was wonderful and almost immediate, for instead of passing through fields poor-looking, we were for hours in what might have been a lovely park, with all kinds of beautiful trees and the lawn carefully mown. We should do well to copy Austrian tree-planting laws; some obligation on the part of every owner of a block would transform our suburbs into parks. Here and there were women and children with sickles cutting the grass and gathering it to make hay, but all in such a neat, tidy fashion as not to detract from the garden-like appearance. Shall I say that at last I had found a country which for beauty and spick-and-span upkeep surpassed dear old England? At any rate, as we approached the Austrian Tyrol the scenery became the most beautiful of any I have seen in temperate climates.

We reached Salzburg at dusk, and now, while we are at comparisons, we might say that if any town compares with Edinburgh it is Salzburg, with its castled hill dominating the pass 700 feet below, where rushes the fine river Salzach.

The climate was delightful, and all our meals were served under the elm trees of our hotel garden.

Leaving Salzburg, the railway took us through scenery growing more beautiful—the gurgling, dashing, quarrelling river, now alongside us, now beneath us; the mighty hills, bare, rugged, snow-capped, either richly wooded or rearing sheer up to the heavens from the very banks of the stream. For a ride or a walk to Zell am See you cannot equal this road anywhere that I know of—beauty mixed with grandeur, and then the lovely lake, where we took train for Innsbruck. Walking down her main streets we were struck by the contrast between the several-storeyed buildings and the bold-fissured limestone mountains towering above the town and dwindling everything into insignificance. Here one Frederick of Tyrol, better known as “Empty Pockets,” wishing to refute the impeachment of poverty, erected a gilded roofed Late Gothic balcony in 1425, costing him 14,000*l*.

Another thing of note is the tomb of Maximilian, in the Franciscan Church, which almost fills the nave, and one again wonders if the building has lost its original purpose in the worship of an emperor. On each side are lined up large bronze-armoured knights—Maximilian's contemporaries and ancestors, two of them by the great Peter Vischer, of Nuremberg. The bas-reliefs surrounding the tomb, representative of the life of the Emperor, are wonderful. He can be easily recognised in the different periods of his life. This is said to be the most perfect work of its kind.

Adjectives are useless in describing the track from Innsbruck through Botzen to Italy. Rising 4,490 feet to Brenner and we were on the watershed from which the two rivers flow away—one east, the Danube, to the Black Sea; the other south, the Po, to the Adriatic.

As we descended into Italy the scenery underwent a great change, and so did the people—neither for the better. The Germans, clean and respectable, were replaced by dirty, rowdy Italians, and to be yarded into a Customs shed on a hot day with them was most unpleasant.

The beautiful Tyrolean Alps have gone, and the plainer, barren Italian hills are around us. The vineyards have begun, and many of their beautiful arbours, with their fruit hanging ripe and purple beneath, cover acres. Again there is a change, and the vines are festooned to fruit trees, a

chain apart, with fields between. The hilly country is left behind, and we are heading east, round the grand old towers of Verona, and passing Vicenza and Padua we approach the Queen of the Adriatic.

THE ART OF F. WALKER, A.R.A.

THE art of Fred Walker was the principal theme of Professor von Herkomer's address on the 24th ult. at the Royal Academy, and the England on whose rustic charms the lecturer dwelt so lovingly was the peaceful rural England of the painter of the “Harbour of Refuge,” “The Bathers,” and the “Marlow Ferry.” The Professor said that twenty-five years ago he should have smiled at an attempt to speak of the loveliness of England, because in those days it was expressed by the art of the time. English painters then still saw it with English eyes, and there was still existing a connection between them and such artists as Gainsborough and Morland, who led the way to David Cox, to William Hunt, to Walker and to Mason. There were many ways of expressing in art the charms of rustic England—the village life, the lanes, the blue distances, the flowered hedges and the cottages that commercialism had not yet destroyed, but the misfortune was that the young modern painter tried to avoid it. It was said that it was hackneyed as a subject, and hackneyed perhaps it had been by second-rate painters. The pinafore-girl had been, for example; but then see what Mason made of her. After a poetic description of the delightfulness of an English village and the character of the faces of the English peasants, the lecturer, according to the *Morning Post*, said that in his opinion their variety of dress was for the artist a good feature. With the French peasant the cap was too marked a note; instead of painting a face you paint a cap with a face in it. In England we saw the individual, not the costume. Turning to the peasant of Millet, Professor von Herkomer caused some amusement by trying various pronunciations of the French painter's name, and saying finally, “We'll English him, and call him Millet.” So of Millet—pronounced as spelt—the lecturer proceeded to say that he expressed the peasant because he reduced to a minimum the peculiarities of the costume. But Millet produced only the peasant that appealed to him, a downtrodden peasant without a face, without a hope.

Walker and Mason saw in the English peasant both a face and a hope, and to both would have been impossible the realism of some pictures painted since the change of type from an essentially English art to one evolved by foreign painters. It was only the modern painter who filled his eyes and nails with clodded earth, and got no further, and the change was not a gain for England. Walker may be said to have been the creator of a revolution in English art by his combination of the antique with rural English life. He was a man nervous and sensitive to the last degree, and perhaps would never have completed a picture if need for money had not compelled him to work. Rarely—and then only to a few trusted friends—would he show anything unfinished. When he was in the country and his pictures had to be packed to go to London even the carpenter never saw them. He would tell the man to leave the case in the passage or in the studio, and then send him away, while Walker himself put the picture in with the back outwards, leaving nothing for the carpenter to do but to screw down the lid. Walker worked with Whympere the engraver, and helped to cut some of Thackeray's drawings on wood until he tired of this and wanted to do work for himself. The engraver took him to Thackeray and explained matters, and the novelist, taking out pencil and paper and giving them to Walker, turned his back on him and said, “Draw me.” Walker drew the back of Thackeray, who was so pleased with the sketch that he gave the young engraver a chance, and the illustrations to “Philip,” in which the influence of John Gilbert on Walker can be traced, were the result.

Walker in his illustrations reproduced his mental type again and again, and this might be called mannerism. But all originally tended to mannerism, and the painter of strong personality does not fall into the error of copying his model, who is only a means to an end. And Professor von Herkomer told the story of an art student known to Diderot, who before commencing to paint from the life knelt down and prayed, “The Lord deliver me from this model.” Walker's “Bathers,” though badly hung at the Academy, had a great effect and showed that he could produce something new in a field that had been much traversed. He

brought into all his work the freshness that made illustration interesting in those days. His technique in oil showed the influence of his early work in illustration and water-colour, and with the troubles that faced an oil-painter, educated as he was, the lecturer said he himself had had experience. The man who only worked in one of these mediums found his range limited, as a subject might be suitable for one and not for the other. He compared them with music—water-colour the strings, oil the full orchestra. Mason's range was wider than that of Walker, and their period was epoch-making. It was a fine point, however, whether Walker would have done more had he lived, and whether his curiously sensitive nature would have been prepared to face the new conditions of things that had since come about. The picturesque—"comedy in art," as it was defined—and beauty next were touched upon, and the lecturer speculated upon the reasons why the tumbled-down, the damaged, the unsymmetrical should lend themselves as they do to the painter's art. Who was to say what beauty was and whose ideas on the subject should be accepted? Show Rossetti's maidens—his idea of beauty—to the Philistine and he would say the girls had niggers' lips, looked crazy and were obviously in need of a holiday. After a passing reference to the value of expression, without which mere physical beauty soon palled, and a flattering comment on the work of Du Maurier, the Professor concluded an interesting address with an appeal to the students. "See England," he said, "with English eyes, and proclaim with your art that England is one of the most beautiful and paintable countries in the world."

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the rooms of the above Society on Thursday, the 24th ult., Mr. E. Nichols read a paper on "Gothic Sculpture as applied by the late William Burges, A.R.A." Mr. H. S. Chorley, president, was in the chair. The lecturer said:—I have great pleasure in coming to Leeds to talk about William Burges, because were I to give this lecture to a London audience they might ask what had he done that we can see? I should tell them to go to Cork or Cardiff, whereas here in Leeds, Studley Royal Chapel and Skelton Church are within easy reach. The memorial chapel at Studley Royal suffers, I think, from being too near to Fountains Abbey; what is left of the Abbey is so grand and reposeful, while Studley Royal Chapel seems too small for the amount of over-decorated detail. Skelton Church stands alone; there nothing is forgotten, even to the holy well in the churchyard. Burges loved these things, detail, animals and colour. He said in a paper on the mural paintings of Chalgrove Church, Oxford:—"The interior of every old building invariably glowed with richest gold and colour and every village church was a Sainte-Chapelle or a St. Stephen's, Westminster, according to the general run of antiquaries." Thus he wrote to the Society of Antiquaries in 1861. I have never been able to make up my mind on the subject of painted sculpture; the South Kensington authorities have recently added some carved and painted Gothic spandrels, which are splendid and most effective, but time, I feel, has much to do with it. My slides are mostly animals. Mr. Burges gave to the British Museum an ivory dagger handle in the form of a lion's head, and which is now in the Assyrian Gallery. I have a cast of it with me; this small lion's head and the Assyrian winged bulls appear to have inspired him in his treatment of animals. He never perpetrated a Gothic lion. He designed many lions, but always of an Assyrian character. The four Evangelistic emblems on a ground of gold mosaic surrounding the great rose window of Cork Cathedral are distinctly Assyrian or, rather, Babylonian in style.

Cork Cathedral was his *magnum opus*, and it was barely completed when he died twenty-five years ago. The central doorway with a figure of the Bridegroom between the five wise virgins and the five foolish virgins is a most original and daring treatment. Of all the Gothic revivalists Burges was the only man who got humour into his sculpture, and surely there was a strong sense of humour in Gothic. I do not mean the comic or merely grotesque. Take, for instance, the large gargoyles on Cork Cathedral, "Chastity subduing Lust," "Faith piercing the eyes of Idolatry," "Pride and Humility," "Avarice." In Burges's own house in Melbury Road, Kensington, he had a grammar chimneypiece, where all the parts of speech were

carved, noun, verb, adverb and all the rest. The slides I am showing to-night are taken from the original models made by my father, the late Thomas Nichols, with the exception of those made from the drawings, &c. I have a few of the architect's original sketches, and you can see in the actual working out by the sculptor how wonderfully the two men worked together in perfect sympathy and accord. My original intention was to exhibit models, but I do not think that all Pickford's staff could have got them here, therefore I must depend upon the lantern.

A vote of thanks to the lecturer was carried.

COMPETITIONS IN GERMANY.

IN a letter to the *American Architect* Mr. Gustavus Staehlin writes:—Thinking it might interest your readers, I have translated some of the "principles" governing competitions in Germany as formulated by the United German Architects' and Engineers' Societies in 1897, and revised by the Thirty-third Convention of their delegates in Düsseldorf in 1904.

They have, first, competitions open to all the world; second, for Germans only; and third, limited to architects residing in certain districts, where probably home pride exists, or where a thorough knowledge of the "terrain" is absolutely necessary to solve the problem properly. Then they have "limited competitions" in the sense of our "big five," where each competitor receives remuneration and the names of the competing firms are made public. (That the standard of professional ethics would be raised by the selection of these "big five" by the aldermen of most of our cities I can only imagine.) The German code recommends a "sketch competition," first, *i.e.* for all larger buildings, a competition of ideas, at a scale of 1:400 and 1:200, and then a limited competition between the competitors successful in the first struggle, at a scale 1:200 up to 1:100.

The code insists that the number of judges in competitions must be uneven and that the majority of them must be architects, and that the programme must be agreed upon by all the judges and their substitutes before its publication. The architects selected as judges are men of reputation who have gained their position by winning just such competitions and by erecting buildings of importance themselves. They are judges to-day, competitors to-morrow.

The judges must follow this procedure. The entire board examines and decides which sets of drawings are entitled to consideration; whether the requirements, as to time of arrival, cost, &c., have been fulfilled, and also weed out the palpably inferior designs. The remaining drawings are then thoroughly examined by the technical members—the architects—of the board, never less than two passing on each set of drawings, and judgment thereon is reported to the entire board. The eliminating and sifting of designs by the entire board proceeds, and is continued until the number of remaining designs equals the number of prizes given. Usually a majority decides the elimination of a design. The judges must publish the reasons governing them in making the awards, and must furnish each competitor with a copy of them. All drawings, together with the verdict of the judges, must be exhibited publicly for at least eight days. The most prominent architects in Germany have no hesitancy in entering open competitions thus safeguarded, and it frequently occurs that unknown men carry off the prizes. No one man would consider himself competent there to decide anything more than a school competition among students. No less than *tres faciunt collegium*, and they must be architects.

THE LLANDUDNO TREASURE TROVE.

A COLLECTION of Roman bronze coins was lately found near the Little Ormes Head. Mr. Willoughby Gardner, of Deganwy, the president of the Llandudno and District Field Club, having been asked for his opinion upon them, said that he had not yet had an opportunity of carefully examining them. I have seen, he said, nearly 500 of them for a few moments in a rather dark room at the police station, but that would not of course suffice to justify a definite opinion. It will be necessary to have the coins cleaned and to classify them carefully. In addition to the 500 which I saw, there may be 150 knocking about which have been picked up or acquired by different persons. Accounts are conflicting as to how many were actually found, and as to the box in which they were enclosed, or the

remains of which were found at the same spot. I have seen portions of a bronze case which seems to have belonged in some way or other to the "find." The men who have these fragments are holding on to them as though they were gold. I should like to get them all together so that we may photograph them, and this we may do later on.

It may be well (Mr. Gardner continued) to correct one or two misconceptions which have got about in reference to the discovery. There are the remains of buildings near the spot, but they are the ruins of a Mediæval farm, and can have nothing to do with the hoard, which consists almost entirely of coins minted by Carausius, who usurped the throne of Britain in 294. The Christian inscribed stone at Bodafon has been referred to as indicating a Roman occupation of the locality. The idea may have arisen from what was said by me in a recent lecture, when I showed photographs of the stone and indicated that it was a sixth-century Christian tombstone. The inscription upon it is in Latin, but it has no other connection with Roman times in Britain. Nevertheless, there can be no doubt that the Romans worked the copper mines of the Great Orme, and the coins may have been brought here as wages for the men employed or pay for the soldiery. In fact, hoards of Roman coins have been very frequently found in the last fifty years all along the Welsh coast, and also in the valleys, such as those of the Clwyd and the Conway. Not very far from Llandudno, some years ago, there was a remarkable hoard of not less than 5,000 Roman coins found, of which I have some. News of this piece of good fortune did not reach the general ear, but collectors are well aware of it. I consider that the law which the police very properly felt it their duty to act upon in regard to the present "find" is a very unfortunate one for the archæologist, for it leads to the destruction of many gold and silver coins and other ancient things which would be of priceless value to the student, but which are of comparatively little value when melted down and sold to the jewellers. Finds of coins and other treasures are constantly made in Ireland, and it is said that the practice of the finders is immediately to melt the metal down and dispose of it to the goldsmith or silversmith in the neighbouring town. This destruction of archæological material of which so great scientific use might be made is deplorable.

As to how the recent hoard came to be where it was hit upon so unexpectedly, the explanation is probably very simple. There were no banks in those days, and men who saved either money or bullion were obliged to hide it. Very often they would choose some spot, such as that where this store was placed, where there would be some stone or other object that would enable them to find the hiding-place readily. Often the hidiers would die before they recovered their property, and there it would lie all through the centuries until chance revealed it. I have indicated how very numerous Roman coins are, and you will see that they are of no great value in the market as curiosities. It would be a pity to give the men who found the Llandudno collection an exaggerated idea of their value. The only curious feature of this hoard is that the coins are all, as I have said, with one or two exceptions, those minted by Carausius. As a rule, hoards are composed of a wide variety of coins. When I come to work out the Llandudno coins I may be able to explain how it is that they all belong to Carausius, who, by the way, issued an extraordinary number—some 300 altogether—of different coins during his seven years' reign.

TESSERÆ.

Samuel Cooper.

THIS miniaturist, who was born in 1609, owed great part of his merit to the works of Vandyke, and yet may be called an original genius, as he was the first who gave the strength and freedom of oil to miniature. Oliver's works are touched and retouched with such careful fidelity that you cannot help perceiving they are nature in the abstract; Cooper's are so bold that they seem perfect nature only of a less standard. Magnify the former they are still diminutively conceived; if a glass could expand Cooper's pictures to the size of Vandyke's, they would appear to have been painted for that proportion. If his portrait of Cromwell could be so enlarged, I do not know but Vandyke would appear less great by the comparison. To make it fairly one must not measure the Fleming by his most admired piece, Cardinal Bentivoglio; the quick finesse of eye in a florid Italian writer was not a subject equal to the Protector, but it would be an amusing trial to balance Cooper's

"Oliver Cromwell" and Vandyke's "Lord Strafford." To trace the lineaments of equal ambition, equal intrepidity, equal art, equal presumption, and to compare the skill of the masters in representing the one exalted to the height of his hopes, yet perplexed with a command he could scarce hold, did not dare to relinquish, and yet dared to exert; the other, dashed in his career, willing to avoid the precipice, searching all the recesses of so great a soul to break his fall, and yet ready to mount the scaffold with more dignity than the other ascended the throne. This parallel is not a picture drawn by fancy; if the artists had worked in competition they could not have approached nigher to the characters of their heroes. Cooper with so much merit had two defects. His skill was confined to a mere head; his drawing even of the neck and shoulders so incorrect and untoward that it seems to account for the number of his works unfinished. It looks as if he was sensible how small a way his talent extended. This very poverty accounts for the other, his want of grace, a signal deficiency in a painter of portraits, yet how seldom possessed. Bounded as their province is to a few tame attitudes, how grace atones for want of action. Cooper, content, like his countrymen, with the good sense of truth, neglected to make truth engaging. Grace in painting seems peculiar to Italy. The Flemings and the French run into opposite extremes. The first never approach the line, the latter exceed it, and catch at most but a lesser species of it, the genteel, which is familiar grace, as grace seems an amiable degree of majesty. Cooper's women, like his model Vandyke's, are seldom very handsome. It is Lely alone that excuses the gallantries of Charles II. He painted an apology for that Asiatic court. The anecdotes of Cooper's life are few, nor does it signify. His works are his history. He was instructed, with his brother Alexander, by their uncle Hoskins, who, says Graham, was jealous of him, and whom he soon surpassed. The variety of tints that he introduced, the clearness of his carnations and loose management of hair, exceed his uncle, though in the last Hoskins had great merit too. Another capital work of Cooper, the portrait of one Swingfield, recommended the artist to the court of France, where he painted several pieces larger than his usual size, and for which his widow received a pension during her life. He lived long in France and Holland, and, dying in London, was buried in Pancras Church. Graham adds that he had great skill in music and played well on the lute.

Italian Terra-Cotta.

Clay during a long period was not only used for the purpose of solid construction in Italy, but also moulded into forms so exquisite as to take its place as a material of high value and dignity in art. So rich is Lombardy in early works of terra-cotta as to be fitly called by Hope the "great country of brick." Among the most ancient remains of the kind are the crypts of the church of Lenno, on the lake of Como. There sundry relics are still extant of colossal statues in terra-cotta of a close-grained and tough consistency, all of which are considered to belong to the constructions of Christianity. The use of terra-cotta followed the fortunes of successive schools of art in Italy. Both in sacred and secular architecture it enables us to trace the development of taste. The golden period of the art was marked by a wise sobriety and simple severity of ornament, with a scrupulous care to confine the material within its appropriate limits of style. In the hands of the gifted architects who flourished along with Lucca della Robbia, that pre-eminent modeller in terra-cotta, ceramic ornament entered into all that was purest and most noble in the arts of design. Crema, Chiaravalle and, above all, Pavia, were the headquarters of the graceful school. At Milan, in the Ospitale Maggiore and the Castiglione palace, were exhibited the arabesques and medallions of the cinque-cento period. In the subsequent age, in the hands of the so-called imitators of Michel Angelo, art overpassing the boundary line of truth lapsed into exaggeration. The severe, modest and delicate beauty of terra-cotta refusing to lend itself to the contortions and imitative tricks of the barocco or rococo style, the entire art soon fell into decay and eventual oblivion.

Iona Cathedral.

The earliest work at Iona has some manifest peculiarities; is it not likely that some light might be thrown upon them by a comparison either with Kirkwall or with Trondhjem? The later work is Scottish, as might be expected. The history of Scottish architecture is an excellent comment on the political history of the country. Up to the time of Edward I., Scottish architecture is essentially English. It

differs from other English work only as a dialect, as the Early Gothic of Ely differs from the Early Gothic of Wells. From the fourteenth century onward Scottish architecture becomes a distinct language; it has a character of its own, but a character coming much nearer to French than to English. Nothing can be more un-English than some of the fourteenth-century details, as the sedilia and the east window of the south aisle. The work of the twelfth and thirteenth centuries differs far less widely from English patterns. The church is small, the whole length being not much above 150 feet. It ranks then with the class of churches of which Brecon Priory is perhaps the finest, such as Chelsey, Ewenny, Leonard Stanley, the cathedrals of Killaloe and St. Asaph. Like all these, it is a cross church with a massive central tower, and like several of them, including Killaloe, it has no aisles to the nave. But small as the church is, it has been greatly enlarged since its first beginnings in the twelfth century. The eastern limb is now larger than the western; it has an aisle to the south and seemingly a contemplated aisle to the north. It was doubtless rebuilt, as was done in so many greater churches on a larger scale, in order that the ritual choir might be placed east of the central tower. No doubt, in the original Romanesque church it was under the tower. The belfry windows are very peculiar square openings filled with tracery. They may be compared to the windows in the middle stage of the East Anglian towers, and to the well-known domestic window at Clevedon Court. The monastic buildings lie on the north side, and present nothing remarkable in their arrangement. The refectory has a good range of lancet windows.

Scottish Gothic.

The first Pointed style is found in Scotland with many combinations of Romanesque features, and the stage of transition appeared for a much longer period than in English or French work. The style produced some of the most beautiful works that Scotland possessed. Arbroath and Kilwinning abbeys, St. Andrews and Elgin cathedrals and Holyrood Chapel afford perfect specimens of purity of design and beauty of execution that have never been surpassed in any other country, even in structures of larger size. These works have been said sometimes to resemble English, sometimes to resemble French churches. They do neither. They were designed in a more compact manner than in England; they are taller in proportion to their widths, the parts are smaller, they are united more to the adjoining ones, and have been studied more in relation to the parts that came next to them. While it is true that the plain flat soffits of the porches of Laon Cathedral are found also at Arbroath, yet, speaking generally, while there are certain resemblances, there are many features in French work that never appeared in Scotland, and many Scottish features not to be found in France. One of the most remarkable features of Scottish architecture, and one in which it greatly differed from either English or French, is that there were but two Pointed styles and not three. What is known as the Perpendicular style in England did not appear in Scotland. In its place there was a continuance of second Pointed forms, with certain variations in the design of the window tracery, at first not a little perplexing to the student. The beginning of the style had all the features of our own geometrical work, and the same stiffness in the design. Of this Glasgow Cathedral in its choir and also in the nave affords the largest and one of the best examples, and the progress of the designs to the first incipient example of open tracery—three lancets contained within a single window, a design not only graceful but very common—can be traced. The church of St. Monance, erected about 1369, has, with far more solidity of form so far as regards the structure, all the features of our own flowing Decorated style as regarded the patterns of the windows. The apse of Linlithgow, some few of the windows of Dunblane chancel, and the east window of Melrose have certainly upright lines in the tracery not unlike our Perpendicular style, and so far, but no more, there might be a certain resemblance. Yet the college chapel at Aberdeen, erected about 1494, had flowing Decorated tracery enclosed within a semicircular arch. Dunblane itself had flowing Decorated windows besides, and of the same date, and at Melrose the same thing might be observed to a far greater degree. Iona Cathedral is of early form, but its ornamentation is late. Corstorphine Church, founded in 1429, is also very early in appearance, but very late and curious in all its features. It is stone-roofed, showing an elaboration, but a continuance of the form of roofing of the earliest

oratories. Crichton Church is another early-looking church with a low tower, having the peculiar Scottish feature of a parapet-walk around it and a saddle-backed roof. Its windows have flowing tracery, but it was only founded in 1449. The design of the window tracery is infinite in its forms, and all of very great beauty—in some examples similar to English patterns, in some few to French ones. Statements have been made to the effect that these windows are Flamboyant in design, pure and simple. There is nothing but what any school of artists could work out for themselves, and a single man of genius would have individuality enough to introduce the use of such a feature as that to any style. Scotch work is full of such signs of personal design, and Roslin Chapel might be cited as the design of one mind following upon contemporary work. It is neither foreign nor English. Its lacework patterns here and there might find a counterpart in some Belgian work. Its heavy-pointed band vault might find a better one in many a Scottish castle, but the 'Prentice pillar and the general conception is nothing if it was not an individual design. The same might be said of the adaptation of the beautiful and peculiar crown on the steeple of St. Giles's, Edinburgh.

Imitation of Nature.

The rage for making everything assume a supposed appearance of nature was almost universal in England till lately. Artificial gardens were exchanged for others with serpentine walks; avenues were cut down or disregarded; the formal beds, balustrades and terraces of our old gardens were looked upon with horror, and every part of the ground about a house was required to assume the varied aspect of nature. At the same time, gravel walks, themselves artificial, were admitted; and if the rage was not carried quite so far as to allow weeds to grow instead of cultivated flowers, it was equally inconsistent to have the (supposed) wildness of nature about a house, which is a work of art, with its angularity and formal lines. It was a vain endeavour to make two opposite conditions coincide. To be in keeping with the aspect of a house the garden in its immediate vicinity should agree with its artificial character, and nothing can be more in accordance with the style of that work of art than an ornamental dressed garden, from which the gradation to the wild country should be maintained by a decreasing formality in the grounds as they leave the one and approach the other. "Nothing, indeed," as Sir Walter Scott has well observed, "is more the child of art than a garden," "and flights of steps, balustrades, vases and architectural ornaments," says Price, "are not more unnatural, *i.e.* not more artificial, than the house they are intended to accompany." The change from the old dressed garden was the consequence of the fantastic caprices of the Dutch (by whom it was caricatured) having been brought into England. A reaction then took place in favour of nature, and the opposite extreme of irregularity succeeded. But it was equally studied and unnatural, and as it was done without regard to adaptability and without a reason, the result was the anomalous juxtaposition of two incompatible ideas. The same is attempted in the colouring of works of art, and as it is equally inconsistent, it must equally lead to error.

The Certosa, Pavia.

The Certosa in Pavia is considered as one of the most beautiful buildings in the world, and may be cited to show how much more effect the appearance of riches and splendour had on the judgment of the multitude than fine taste and elegant proportion. It was begun in 1396, a period at which several splendid ecclesiastical structures were raised in Italy. The cathedral of Milan, the church of San Petronio at Bologna and the church of San Francesco at Assisi are all nearly of this date. The architect is said to be the same Henry of Zamodia or Gamodia who designed the Duomo at Milan. Malaspina supposes it rather to have been built under the direction of a certain Marco di Campilione, who disputes also the honour of the cathedral at Milan, but this appears to be a mere guess. There is a bust of the architect within the building, but without name or date. The style of the two edifices is so different as almost to preclude the possibility of their being the productions of one man, and the Certosa offers no indication of the taste of northern artists, while the cathedral abounds with them. The nave has four square divisions, each subdivided on the vault and with oblique groins. The groining of the side aisles is singular, each space being in fact covered with five unequal pointed vaults,

meeting in a common centre. Beyond the side aisles on each side two chapels open towards each square division of the nave. The choir and arms of the cross have each two square divisions, so that there are seven on the whole length of the church and five on that of the transept. The whole is in the highest degree rich with painting and gilding, and the orders of the altars of the chapels of the side aisles are of the richest marbles, while the altars themselves are of inlaid work in precious stones. Nothing is neglected. Even the washing place of the monks is a magnificent marble monument. The tomb of the founder, John Galeazzo Visconti, is said to have been designed in 1490, and completed in 1562, which is the date mentioned in the inscription. Circumstances might induce us to expect here one of the finest productions of the cinquecento, but this is not the case. The ivy represented on a door jamb just by is far more beautiful than anything in the tomb. The outside of the flanks and transept of the building is full of pinnacles and ornaments which do not rise naturally out of the construction of the building. The visitor becomes tired out with the interminable splendour of the edifice: every little part seems to say, "Come and admire me." There are two cloisters, one of which is of immense size, with marble columns and a profusion of ornamental brickwork, and there is a spacious palace of later date for the reception of visitors. The front was erected after the rest of the church, and is itself a distinct object. It was begun in 1473, from the designs of Ambrogio Fossano, and, as might be supposed from the place and date, is not Gothic, but an immense heap of little parts, in the taste of the cinquecento, often beautiful in themselves, but leaving no impression as a whole, except an undefined sentiment of its immense prodigality of riches. There are acres of bas-reliefs in figures and ornaments, often beautifully executed and never ill done. The material is marble throughout, but words cannot express the richness of the building, or the feeling of fatigue with which the visitor takes leave of it.

III—Effect of Science on Gothic Architecture.

As the stability of a Gothic church rested on a nice poise of mutually counteracting forces, so the maintenance of the style itself at its perfect point depended on a due balance of the intellectual forces which had generated it. This balance was soon to be disturbed. The fascination of the statical *tour de force*, the craving to bring down to an irreducible minimum the amount of material that would suffice to the stability of a building extravagantly lofty, was irresistible. Mathematical calculation played a daily more absorbing part, and resulted in the rearing of such a structure as the choir of Beauvais, which, presuming too much on abstract calculation, was so lacking in solidity that it gave way within a few years of its erection, was rendered relatively stable only by doubling the number of its supports, and is held together to this day only by a network of iron ties—a building which distresses by its stilted and meagre aspect, and lifts its vault to such a height that the eye cannot be directed to its summit without considerable physical discomfort. Another church, no doubt in its way beautiful, which exemplifies the training down of constructive forms to the last extreme of attenuation is St. Urbain of Troyes, in which the flying buttresses have the skeleton meagreness of iron girders, and the principle of external props is carried so far that two tiny vaulted porches at the north and south entrances think it necessary to provide themselves with flying buttresses standing out at either angle on the pavement. This building has the further peculiarity that it seems by some fissiparous effort to have split its substance into two layers, as though the outer church had been shed, so to speak, leaving another inner one intact and complete. Again, by the elimination of all idle portions in a structure of which the active portion is a skeleton, line becomes dominant through the omission of planes; lines were soon needlessly multiplied; narrow ridges first ran up the faces of the shafts, and then, as if convexity of surface was in itself a culpable waste, what had been a shaft was hollowed into furrows divided by an arris; concavity and rigidity invaded everything with an exasperating angularity of effect. An illustration of this is in the cathedral of Auxerre, where the choir retains the fuller forms and those of the nave shrivel into concavity.

Mr. Chatfield Clarke has been appointed a Land Tax Commissioner for the City of London.

The Durham County Council intend to apply for authority to borrow 127,548*l.* for the erection and alteration of schools.

GENERAL.

Mr. George Henry, the painter, was on Wednesday elected an Associate of the Royal Academy. By birth he is a Scotsman, and is a member of the Royal Scottish Academy, but from his parentage he was allowed to exhibit in the exhibition of Irish art at the Guildhall.

The Late Mr. William Whiteley, it was announced on Wednesday, has bequeathed about a million of money for providing almshouses.

The Top Stone of the Stockport town hall was laid on Wednesday in the presence of the architect, Sir Brumwell Thomas, and others.

The Archaeological Department of the Indian Government have taken in hand three old pagodas at Pagan, viz. the Nagayon, built in 1064; the Sulamani, built in 1183, and the Kyaukku, built in 1188, which have been secured against further damage from the weather at a cost of about 16,000 rupees. An outlay of 41,592 rupees for the repair and restoration of the Mandalay Palace spire has also been made.

The Next International Congress of Archaeology will be held about Easter at Cairo. A committee, presided over by Professor Maspero, is at present settling the details of the coming assembly, which will be attended by a large concourse from the world of light and learning representing both Europe and America. Alexandria and Thebes will also be visited, and possibly some excursions undertaken into the regions of Upper Egypt. The last congress, which met in 1905, had its assembly at Athens.

The Exhibition of the works of Mr. Holman Hunt at the Manchester City Art Gallery closed on Sunday. The exhibition has been uninterruptedly open for eight weeks—since December 4 last, with the exception of Christmas Day. On Sundays, however, the exhibition was open only from half-past two to five o'clock in the afternoon. The average week-day attendance has been about 2,300. The total number of visitors to the exhibition was estimated at 116,000.

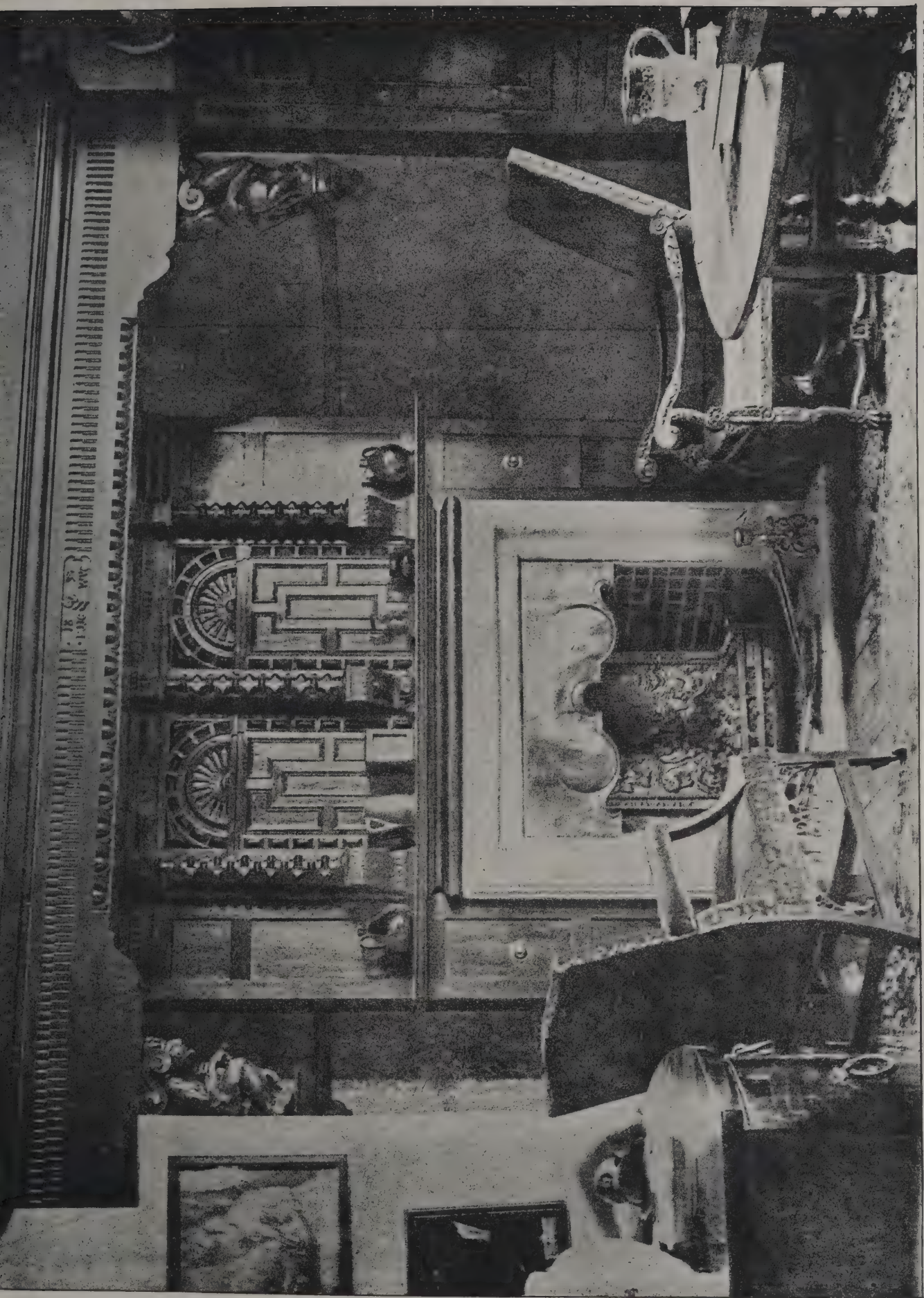
The Avebury Estate, forming part of the Wiltshire estates of Lady Meux, has just been disposed of. It is situate 6½ miles west of Marlborough, and includes the manor-house, dating from the fifteenth or sixteenth century, and formerly a Benedictine priory. On the property are the remains of the Druidical temple of Avebury; it originally consisted of an outer and two inner circles of huge stones, some of which are still in position.

At Ardingly (Sussex) Parish Church a memorial has been erected to the memory of the Rev. J. H. Lee Booker, archaeologist. It is a brass tablet containing a list of thirty-nine rectors of Ardingly, dating from 1200 to 1875, when the present rector, the Rev. James Bowden, was appointed. The inscription runs:—"This list of rectors, prepared by the late Rev. J. H. Lee Booker, M.A., curate of Ardingly, 1883-8, is placed here in grateful recognition of the labour and research which he devoted to the history of Ardingly Church and parish. He died vicar of Elmbridge, Worcestershire, August 19, 1905."

The "Dublin Gazette" states that the Lords Justices-General have appointed the following gentlemen to inquire into the memorial of the Corporation of Waterford, praying for liberty to build a bridge across the Suir within the county borough, and alleging that the present wooden toll bridge is inadequate for modern traffic:—Denis B. Sullivan, K.C.; John Purser Griffith, Alexander M. Burden, county surveyor of Kilkenny; William E. L'Estrange Duffin, county surveyor of Waterford; and Edward H. Hackett, county surveyor of South Riding of Tipperary.

Holy Trinity Church, Exmouth, has been reopened after restoration. The scheme of restoration when complete will cost 15,000*l.*, the nave and lower portion of the tower, the first portion undertaken, having cost 6,100*l.* The work was begun in August 1905. One of the features of the new building is a triplet of arches in the west end, with highly ornamental arches nearer the base. The whole of the old windows have been replaced by new ones.

A Public Meeting was held last week in Birmingham to consider how the eminent services rendered to the city by the late Sir Richard Tangye and Mr. George Tangye can be permanently commemorated. It was then agreed:—"That the memorial take, firstly, the form of a mural tablet to be erected in the Art Gallery, the surplus, if any, to be applied to such purposes as may be found desirable to perpetuate the memory of the brothers Tangye."



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THE COTTAGE, HIGHLANDS ESTATE, ST. LEONARDS-ON-SEA: THE DINING ROOM.

PHILIP TRÉE, F.R.I.B.A., Architect.



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THE COTTAGE, HIGHLANDS ESTATE, ST. LEONARDS-ON-SEA: THE HALL.

PHILIP TREE, F.R.I.B.A., Architect.



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MARINERS' CHURCH, ST. IVES: INTERIOR.

EDMUND SEDDING, F.R.I.B.A., Architect.



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EDMUND SEDDING, F.R.I.B.A., Architect.



PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

THE NEW WAR OFFICE, W

The late WILL

Carried out by CLYDE YOUNG, with



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L: DETAIL OF EXTERIOR.

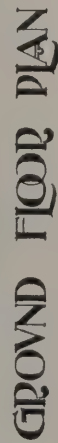
G, Architect.

ration of Sir JOHN TAYLOR, K.C.B.

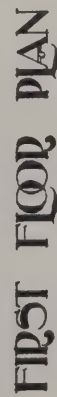
The Architect, Feb'y 1st 1907.

BOROUGH OF GLOSSOP. PROPOSED CONVALESCENT NURSES' HOME. CT ARMSTRONG ARCHITECT.

NOTE: - FLOOR -
 ONE COLOUR (KITCHEN)
 TWO COLOURS (BATH)
 YELLOW -
 GREEN -
 RED -
 BLUE -
 WHITE -
 TERRAZZO -
 4-5-9 SQUARES
 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1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 VENTILATION IN PIPE.



SCALE

OF FLEET

L. Bidwell Turner - ARCHTCT.
32 EVERSOLEY ROAD.
DENHILL - on - SEA.

The Architect.

THE WEEK.

WHEN the recommendation of the establishment committee concerning the competition for the London County Hall was brought before the meeting of the London County Council on Tuesday, objection was raised to the proposal by which one-tenth of the 5 per cent. commission was payable to the Council's architect. One of the members declared that a most dangerous precedent would be created, for henceforth the Council's officers might expect to be paid by commission on outlay. Another member said the business of the Council's architect should be confined to advising the establishment committee. The amendment was lost and the recommendation adopted. It is to be hoped no further obstacles will be created and that competitors may enter on their onerous task without any misgiving that only one section of the Council are eager to have the hall erected. A doubt of the kind would be embarrassing and unfavourable to creative power.

THE church of Steyning, in Sussex, dates from a very early age, and is connected with the legend of St. CUTHMAN. He erected a timber church, in which he was buried, and it is believed that the pilgrims who came to visit his grave were the cause of the creation of the village. By EDWARD THE CONFESSOR Steyning was attached to the diocese of Fécamp, in Normandy. There are Norman remains which must have belonged to the church which the monks founded. It was said that the original plan of the building was never fully carried out. According to EDMUND SHARPE, the series of pier arches is one of the most remarkable to be met with anywhere. The church does not appear as beautiful as it is owing to the galleries, which were erected about seventy years ago. It is now proposed to improve the church, under the direction of Mr. CLAYTON, architect, of Brighton. He proposes to remove the galleries which conceal the whole of the side windows of the aisles, and have their fronts carried across between and into the piers of the magnificent Norman arcades. The sloping ceiling of the gallery also obstructs and destroys the view into the church from the south doorway. This entrance, a beautiful Early Norman doorway, now has its stone moulding partly covered and surrounded by modern Portland cement, and the tympanum filled in with plaster. Mr. CLAYTON also objects to the bricked-up doorway on the north side of the fane which is to be opened. A simple oak door will be hung and a seat in the side aisle removed to make a gangway. Other improvements are the rearrangement of the seats in the tower and also the chancel, the latter of which works will bring the sanctuary into full view in addition to improving the accommodation.

THE establishment committee of the London County Council recommend that five additional assistants in the first-class and a similar number in the second should be appointed in the architect's department. At present there is a large unestablished staff, and it is considered desirable that a greater proportion of the assistants should belong to the established class. There has been considerable increase of work owing to the amendment of the Building Act. The committee have come to the conclusion that this work is of a nature requiring great skill and tact, and it is very necessary that it should be in the hands of experienced officials rather than that new officials should be appointed for it. They have accordingly selected for permanent appointment six assistants who have been in the service for periods varying from three to five years, and in two cases for nine and eleven years respectively; of these assistants,

five are employed in the Building Act and escape sections, two in the general constructional section, and one each in the fire-brigade, housing and highways sections. The assistants recommended are highly qualified for the technical work on which they are engaged, six of them possessing the qualification of A.R.I.B.A. The pay received by the assistants in question varies from 3*l.* 7*s.* 6*d.* weekly to 4*l.* 14*s.* 6*d.* The salaries would vary from 175*l.* a year to 245*l.*, being the nearest yearly equivalent in the scale to the weekly rates of pay.

ABERDEEN possesses a Master Masons' Incorporation, which is registered as a limited company. One of the rules is that no member can be admitted whose age exceeds fifty years, and besides he must furnish a certificate from a duly qualified medical man that he possesses a good average insurable life. In July 1904 Mr. LESLIE SMITH, master mason, was admitted a member of the body, but in March 1906 he resigned. Every member is expected to contribute to the funds, and the Corporation therefore asked for payment of 100*l.* or such other sum as might be found owing. Mr. SMITH claimed that the Corporation was only a trade union, and under the Acts of 1871 and 1876 they could not sue. He also maintained that the articles of association had not been complied with, as he was sixty-eight and had never been medically certified. The Judge, however, held that the agreement to become a member was a contract entered into between himself and the Corporation. His Lordship accordingly ordered Mr. SMITH, within fourteen days, to lodge a schedule of the work performed by him inside the boundary line round the city and suburban area of Aberdeen, in order that the subscription at the rate of 1 per cent. on the prices of the contracts payable by the defender as a member of the pursuers' Incorporation might be ascertained.

A THEATRE is about to be erected in Stockholm which, if successful, is likely to be imitated in other cities. It is intended for representation of native and foreign dramatic art, like the Shakespeare Theatre of Vienna. As the audience will be select there will be accommodation for only 500 spectators, of whom 300 will be in the stalls, 100 in the parterre or pit, and 100 in the boxes. The promoters do not believe that distance lends enchantment to the view, for the small stage will be as near as possible to the spectators. Colour is to be avoided in the interior; the woodwork as well as walls and drapery will be white. It is contemplated to allow painters to exhibit their works on the walls, and in that way to form an exhibition. The style of architecture is to be Grecian, and white stone will alone be used for the masonry. It is expected that the cost of the building will be about 14,000*l.*

AN exhibition of works by the late GUSTAVE ADOLPHE CRAUK was opened at the Ecole des Beaux-Arts, Paris, on Monday. One of his works, the fine statue of Admiral COLIGNY, the Huguenot leader, is well known to English visitors to the French capital, as it stands behind the railings of the Oratoire in the Rue de Rivoli. The position which CRAUK is to hold in the art of France has been much debated. He was a native of Valenciennes, and there is to be seen the large *Victory* which he produced by order of NAPOLEON III. a short time before the commencement of the war with Germany. He studied under RAMEY, DUMONT and PRADIER. He won the Prix de Rome in 1861. CRAUK was an exhibitor at the Salon in 1857, when he obtained a third-class medal, which was followed in succeeding years by others of higher grade. Among his works was a large *Combat of Centaurs*, the *Graces carrying Love*, and several busts.

THE HOUSES OF PARLIAMENT.

THE House of Lords is an important element of the British Constitution. Although that truth is admitted, the business of the Legislature has been conducted in such a manner during late years that very little is left for the peers to perform. It is therefore allowable that they should sometimes endeavour to assert their power. One opportunity was devised during the last session by the appointment of a select committee to inquire into the unfinished condition of that part of the Palace of Westminster assigned to the House of Lords, as well as the approaches thereto. No doubt the investigation which followed might be said to be merely academic. Although the noble lords may desire to possess a completed and decorated part of the building, yet they are without the power to raise funds to meet the expenditure. At the same time the evidence obtained by the select committee will bear comparison with that of the Fine Arts Commission of 1847. Sixty years ago the principles of mural decoration were almost unknown in this country, and the public were enlightened for the first time about the differences between wall-paintings and ordinary easel pictures. The actual results were not as satisfactory as people expected. But in the course of the years which followed the subject was not altogether set aside, and the advance in knowledge is shown by the evidence of the artists and other witnesses before the latest committee.

The decoration of the Houses of Parliament as found at the present time can be taken as a symbol of the way in which all Government business in this country is transacted. To foreigners we are a mystery, for they cannot realise how a people who seem to be doomed to commit serious blunders in all great undertakings somehow contrive to hold the foremost place among nations. There is not one room, gallery or corridor in the Houses of Parliament which can be considered as finished. There are panels without paintings; there are niches without statues. Sir E. J. POYNTER designed two of the legendary patron saints of the country to be executed in mosaic in the central hall. The work on one cost 924*l.*, and the House of Commons was so scared at such an expenditure that the remaining patrons were never represented. J. R. HERBERT obtained a commission for decorating one of the most important rooms, and he was allowed to execute one fresco. MACLISE was entrusted with one of the longest of the galleries; it has two battle scenes in it, Waterloo and Trafalgar, but the greater part of the wall space is blank. All over the big building areas which were arranged for paintings or sculpture are vacant.

It is very easy for a critical public to blame the architect in the first place, and then the various authorities and commissions who were supposed to have the fullest freedom for carrying out decoration. The architect was blameless. The commissions were rather weak in accepting responsibility, for the members of them who were acquainted with the business of the House must have known that it was absurd to think of making the walls, as was proposed, serve the purposes of a school of British history. When members of either House attend it is not for the purpose of studying paintings or statues, or deriving inspiration for their speeches from them. They have far more important business to transact. During a session a number of outsiders, lawyers, agents, engineers, witnesses connected with private Bills are seen in committee-rooms. But even if a painting by WATTS, or CROSS, or PICKERSGILL happens to be hung on one of the walls the people are too engrossed with the evidence to pay any attention to art. For some years past the police have been very strict in preventing loitering, and a man who would stand before a statue by FOLEY or GIBSON would soon be advised to walk on. When Parliament is not sitting the public are allowed admittance during a few hours on one day in the week, and, as is usual in such places, their progress is quickened by the officials.

The inquiry before the Lords Committee suggests how little is known about the Houses of Parliament by artists. Mr. HOLMAN HUNT's knowledge is confined to the room with DYCE's pictures and MACLISE's gallery. He wanted to see HERBERT's pictures, but the room was shut up. Mr. ABBEY admitted that he was not particularly well acquainted with the building. Mr. DRAPER's intimacy was derived from one visit. Mr. T. G. JACKSON apparently also visited the buildings on one occasion. Professor LETHABY said he knew them "historically" very well. Mr. SARGENT professed to have gained his acquaintance through one visit. Mr. FRAMPTON went over it twice. It will be said that the Houses of Parliament were properly decorated, that artists as well as the general public would more often visit them. That assertion may be doubted. The buildings and exhibitions of all kinds the great public excludes the less. What the ordinary visitor is eager to see is the House of Commons, the House of Lords, and the throne of the Sovereign. He may observe the contrast between the colours of the benches in the two Houses, but we doubt whether one in a thousand would be able to describe the difference in the decoration of the House of Commons and the House of Lords.

Instead of expressing surprise at the incompleteness of the decoration the wonder is that any work of that kind was executed. It was not originally contemplated. The queer old building in which it was said to have governed the world while standing before the fire was nearly all destroyed in 1834. The Government wished to have a new building in the official style of the time, and Sir ROBERT SMIRKE received instructions to prepare the plans. But pressure was brought to bear upon Sir ROBERT PEEL, and a committee of the House of Lords decided that the style was to be Gothic Elizabethan, and that a competition for designs should be opened. CHARLES BARRY was declared the winner in February, 1836. One of the reasons given for the selection of his designs was that "from the unbroken character and general uniformity of the different front and external decorations being wholly unnecessary any of the courts, no design worthy of the country, of equal magnitude, can offer greater facilities for economy in the execution."

Then, as now, economy was supposed to excel other qualities. The building was expected to cost about 800,000*l.* and to be completed in about six years. The spirit in which the business was conducted by the Government is suggested by the circumstance that the usual ceremony was not considered necessary for starting the works, and the first stone was laid in 1840 by Mrs. BARRY.

We need not again relate the difficulties which CHARLES BARRY had to encounter in dealing with officials of various kinds who were supposed to possess greater competence than the architect. Apparently the first to suggest that the buildings could be made to subserve the arts of painting and sculpture was the PRINCE CONSORT. Under his presidency the Fine Arts Commission was appointed. Sir CHARLES EASTLAKE, the only artist connected with it, was the secretary. CHARLES BARRY was excluded. He had, however, to his own satisfaction visited Munich, where there was great enthusiasm about wall-painting, and he prepared a report which suggests that he was not incompetent to give advice about the decoration of the building. He recommended that the walls of the galleries, halls and corridors, as well as the public apartments, should be decorated with historical paintings placed in compartments of a kind which would promote an effective union between the painting and the sculpture and architecture. The paintings were to be wholly free from gloss. The plain surfaces of the walls were to be covered with suitable architectural decoration or diapered enrichment in colour, and blended with armorial bearings and heraldic insignia in the proper colours. The groined vaults were to be decorated in a similar manner, or with the occasional

addition of subjects which would not disturb the harmony or the effect of the architectonic decorations generally. The ceilings were to be ornamented in colour. He also proposed that the door jambs and fireplaces should be constructed of British marbles highly polished and relieved by gilding in the mouldings, that coloured marbles should be used in the staircases, the walls panelled in oak for eight or ten feet high, that on the panels armorial bearings should be emblazoned, that the windows should be doubly glazed to prevent the direct rays of the sun from interfering with internal decorations, that the outer glazing should be of ground glass and the inner of stained glass. That statues should be employed for dividing the paintings on the walls, that they should stand on lofty pedestals, under niches with rich canopies, and painted in such colours as would enhance the effect of the adjoining paintings. Westminster Hall was included in his scheme, and was proposed as a depository of all the trophies obtained in wars with foreign nations. Statues of British statesmen were to be introduced with others of naval and military commanders. It was also proposed to have twenty-eight paintings, each 16 feet by 10 feet, representing warlike achievements by sea and land on the walls of the ancient hall. A select committee of the Fine Arts Commission prepared a scheme which was attempted to be carried out, with the result which now can be seen by every visitor. By BARRY'S plan the Palace of Westminster would suggest the history of the country, and he hoped at the same time to raise up a school of decorative art.

There can be no doubt that the failure of the frescoes disheartened the authorities and made the public imagine that English artists were unfitted for work of that kind. Yet the endurance of the panel by Sir JOHN TENNIEL, which has remained perfect amidst seven wrecks by other artists, was enough to suggest that there is a method of employing fresco which is adapted to withstand the peculiarities of the English atmosphere. HERBERT'S *Moses bringing down the Tables of the Law* has also retained much of its original character. But as an Eastern scene bright colours, including a large amount of white in the draperies, were used, while in the other paintings the sombreness was a prelude to decay.

It is, of course, impossible to affirm that if experiments were again undertaken they would be more successful than those of which the results are visible in the Houses of Parliament. The chemistry of colours is better understood. Manufacturers are more careful than formerly. Moreover, it is practicable to produce pictures in an ordinary atelier on canvas which can be attached so firmly to walls as to appear irremovable. But there are other aids to decoration which might well be utilised at Westminster. Mosaic could be introduced for subjects which would be too highly placed for scrutiny; architectural ornament also deserves recognition, and there are places where tapestry would serve. In the old Houses of Parliament several pieces were used, but most of them had no relation to Parliamentary business. The world is now too prosaic to approve of such subjects as the Siege of Troy, Battles of Amazons, and other legendary subjects.

The committee of the House of Lords have not yet arrived at a decision concerning the methods which should be adopted for the completion of their rooms and approaches. Probably they will recommend the adoption of several varieties of decoration. But there is no use in making confusion more confounded by continuing the official practice in having two patron saints and blank spaces to suggest their companions. Those parts where a start has been made should be completed.

At the same time it would be wise to recognise that here is no necessity to give an utilitarian character to the decoration. The Fine Arts Commission wished to make the Houses expressive of great epochs in constitutional, social and ecclesiastical history. The Peers' Robing Room was to express the idea of Justice

on Earth and its development in Law and Judgment. The Painted Chamber was to suggest the acquisition of the Colonies. All that would be competition with the work of the schoolmaster. If buildings are supposed to be incomplete unless the walls are concealed with paintings, then it is right to expend money on the completion of them. But if paintings are expected to express constitutional, social and ecclesiastical history, they will require attention and therefore standing or sitting for a long time before them. There is no building in England where students of the kind would be more of an obstruction than in the rooms or corridors of the Houses of Parliament, and it deserves to be considered whether the money could not be more wisely expended in the embellishment of buildings where art would become a true teacher without any interruption of the business of the State.

TWO ENGINEERING MANUALS.*

IT is one advantage of Mr. FIDLER'S "Notes" that he has a definite idea of the class of student to whom they are addressed. There would be no difficulty in preparing a treatise on construction in steel which would require several large volumes. But when the title-page informs us that the work is intended for the use of junior draughtsmen in the architectural and engineering professions, a practitioner at once understands what is to be expected. Mr. FIDLER assumes that his junior draughtsman is grounded in the theory of construction, and can determine stresses in the structures he has to represent. But in the majority of offices the theoretical work would be performed either by the principal or a senior assistant, and the junior draughtsman's duty would consist in preparing drawings and sections to correspond with the conclusions arrived at with or without his assistance.

The preparation of drawings of steel structures must be restricted by the possibilities of constructive practice. A mason or a carpenter can cut stone or wood into a variety of forms. But in using steel we have to depend upon the sections which are found in the market or others which differ slightly from them. Much depends on custom. When Mr. FIDLER advises the junior draughtsman "that a 6-inch by 3-inch tee is by no means the same as a 3-inch by 6-inch tee," he suggests one of the numerous oversights of which contractors for steelwork complain. In fact, in many yards there is a rooted scepticism about the practical character of drawings coming from the offices of architects and engineers. Architects are also likely to fall into another error by endeavouring to obtain artistic appearance. Mr. FIDLER admits that economy of cost and painstaking in design are often obtained at the expense of appearances, and he says:—"It is to be feared, however, that any regard for appearances in structural steelwork, if it implies any increase in cost, real or imaginary, will in these competitive days be regarded by many as an economic heresy." In the pages information is given which will enable the tyro to produce drawings which will satisfy the demands of girder makers. Methods of determining the sizes of the different parts of a structure are not given. But the 400 diagrams might all have been reproduced from genuine working drawings. Although they may not have the finish of examples prepared by an engraver or lithographer they present a standard of style which could be attained by junior draughtsmen.

The examples represent lattice and plate girders, roofs, columns, struts, &c. There are also separate chapters on the structures connected with marine engineering, such as piers and jetties, piling, caissons,

* (1) *Notes on Construction in Mild Steel*. By Henry Fidler, M.I.C.E. (2) *Sanitary Engineering with respect to Water Supply and Sewage Disposal*. By Leveson Francis Vernon-Harcourt, M.A., M.I.C.E. (London: Longmans, Green & Co.)

Titan cranes, &c. Finally there is a chapter on the protection of steel surfaces. One of the early sections relates to the construction of water tanks and the girders required to support them. It is a subject which could be managed without difficulty by beginners. The following remark is worth quoting:—

In buildings of any considerable architectural importance it may be desirable to conceal the tank behind the parapet or upper portion of the walls of the main buildings. This leads to a diminution, other things being equal, of the capacity of the tank, as it is desirable to leave sufficient space between the sides of the tank and the enclosing walls for the purpose of examination, painting, or repairs. On the other hand, the tank is frequently open to view, and may be treated, as far as possible, as an architectural member of the design, although it must be confessed that the ordinary methods of embellishment are not usually remarkable for their artistic success.

A young architectural draughtsman who could devise an embellishment that would be satisfactory would earn an enviable reputation for himself. Unfortunately what is true of the tank is applicable to still larger structures in steel.

It is remarkable that in modern work evidence of the strength of steel, as of other materials, has to be derived from American rather than English experiments. Our engineers, no doubt, have tests applied, but they are generally intended for a special purpose and the results are not published. The Americans, on the contrary, appear disposed to rival the German professors in endless experiments. Mr. FIDLER's results in his chapter on columns are mainly taken from American experience, although the lessons derived from them are his own. The following piece of advice is worth the notice of beginners, especially as the virtue of proportion is supposed to be of small account in engineering offices:—

A temptation, often present to the mind of the designer when preparing his working drawings for a column or strut, prompts him to save time and trouble by only detailing, say, the cap and base to some convenient scale, and breaking off the remainder so as not to show to a true scale the entire height and length of the column or strut. This is a practice not to be commended, and one which the junior draughtsman is cautioned against, inasmuch as the opportunity is lost of viewing the true proportions of diameter or least dimension to height, a factor which is always of great importance. The complete elevation in true scale enables the trained eye of an experienced engineer to verify the theoretical conclusions he may have arrived at as to the proportions of his column, and may save him the embarrassment of the after contemplation of a work which may either look dangerously slender or unnecessarily stout.

It will be seen from the few extracts we have given that Mr. FIDLER's "Notes on Construction" is especially a book for students. It is complete within the limits adopted by the author, and should be also considered as an indispensable supplement to the more theoretical treatises on framed structures.

The scope of Professor VERNON-HARCOURT's volume is wide. Water supply including ancient examples, wells, lakes, masonry and other dams for reservoirs, purification, distribution and the no less important subject of sewage disposal require skill in condensation in order to be described in about 400 pages. It is also remarkable that from beginning to end there are no formulæ or other mathematical applications, although those relating to the problems involved in water supply are among the most interesting expressions of the science. The book is therefore adapted for others besides students of engineering, and an ordinary member of a municipal council could read every page without any chance of having a headache. It is satisfactory that so much has been accomplished in England during the past sixty years to have supplies of water in villages as well as in towns. It was a monopoly of joint-stock companies and people found difficulty in interfering with them. That they

were able to derive immense profits is suggested by the money it was necessary to pay in London in order to obtain possession of the scanty supplies and defective means of distribution. When the municipal authorities took the place of the private owners they also proved they were inspired by the desire of monopoly. Liverpool and Birmingham have offered to supply other towns at a profit because they possess sources far beyond the requirements of either city. The result is that practically London will be compelled to depend for many a year upon the Thames basin, for the remaining supplies in Wales or the Lake District are likely to be seized by more active rivals.

Some cases have occurred in recent years which have compelled many people to doubt the principles upon which masonry dams for reservoirs have been erected. The Bouzey Dam was one remarkable example, and the yielding caused an immense amount of damage. The Gros-Bois was another French case. But the number of disasters bears only a small proportion to the masonry dams which continue to work with safety. There is no more remarkable instance of that kind of construction than the dam at Assouan. It had to be not only sufficiently stable, but to allow of a discharge of 495,000 cubic feet per second through the 180 sluice-ways. It cannot, therefore, be described as continuous or solid throughout. The length of the dam is 6,400 feet, and the sluice-ways have a length of 1,181 feet, with an area of opening of 24,145 square feet. In one place excavations to the depth of 45 feet had to be undertaken. The dam is constructed of "rubble granite faced with coarse rubble masonry, laid in mortar composed of four parts of granitic sand to one part of Portland cement, except for the bottom 2½ feet and the upstream face, which were laid in two to one mortar." The cost of the work was 2,450,000*l.* But "if at any time in the future it should be determined to increase the capacity of the Assouan reservoir, in consideration of the very minor importance to Egypt of the retention of the Temple of Philæ in its present position, as compared with a great increase in the assured supply of water for the perennial irrigation of Egypt, the dam could be raised, without in the least endangering its stability sufficiently to impound the Nile waters to an increased height of 19½ feet, and thereby increase the storage to twice its present volume, at a cost of only about 250,000*l.*"

In the second part are chapters on house drainage and disposal of refuse, sewerage, outfalls and clarification of sewage, utilisation and purification of sewage on land, and chemical, electrolytic and bacterial purification of sewage. The volume is abundantly illustrated and will be of general utility in explaining principles which are essential to the public health.

ROMAN MANCHESTER.

THE date of the occupation of the Roman station of Mancunium has been treated by Professor Conway before the local branch of the Classical Association. He said that in preparing a table of the coins found on the site of Mancunium they had arrived already at a result of considerable historical importance. In the course of their inquiries a private collection of some hundred Roman coins found in Mancunium was placed in their hands. Thirty-eight of these were identified, and there were one of the Emperor Claudius, two of Emperor Nero, and there was a continuous series down until Antoninus Pius. It was the fact that the coins found formed a continuous chronological series that made the importance of the discovery. It suggested the theory that the Roman occupation of Manchester began in 60 A.D., and not 80 A.D., and thus ranked Manchester rather with Chester than with York. Why did these coins stop at the time of Antoninus Pius? It raised the question how much longer than the end of the second century did the fort of Manchester continue to be occupied as a Roman military station? If it were found that it ceased to be so after that date, then the presumption would be that the district had already become so civilised that it had ceased to be necessary to have a military fort here.

HOLYROOD CHAPEL.

THE following important letter from Lord Rosebery appears in the *Scotsman* :—

Dalmeny Park, Edinburgh :
February 2, 1907.

Sir,—I have been watching the correspondence with regard to the restoration of Holyrood Chapel, and I must confess that it has left me profoundly dissatisfied. A hope of restoration is held out to us, and then we are abruptly and curtly told that one expert has been consulted and the matter is at an end.

Now, it seems to me that this is not the way in which so important a transaction should be conducted, as there are two parties to it of supreme importance.

I do not in this connection mention the King. His consent is, of course, necessary, but I cannot believe that it would be withheld were His Majesty convinced that the restoration was practicable.

No, the two parties are these—firstly, the late Earl of Leven and his enthusiastic desire for the restoration, as expressed (among many others) to myself.

Secondly, the people of Scotland, to whom practically this money has been bequeathed for the preservation of one of her most cherished monuments. They have a right, due also to the wishes and memory of Lord Leven, to the most exhaustive inquiry into the possibilities of the matter.

Now, the trustees are honourable and competent men. But I doubt if they have entirely realised their immense responsibility to the solemn injunctions of Lord Leven and to the just rights of the people of Scotland. I will note only one instance. Lord Leven seems to have had the most absolute trust in Mr. Ross. Mr. Ross was evidently his confidant. Mr. Ross was to carry out the work. It does not seem possible that Mr. Ross, an architect of repute, should have undertaken the task of restoration, being at the same time convinced that restoration was impossible. What part, then, has Mr. Ross, Lord Leven's right-hand man, played in the recent inquiry?

Again, the people of Scotland are parties, the chief parties, to the case. I should have thought, then, that they had a right to the most public and exhaustive inquiry before their rights were set aside and their historical ruin condemned. But the people of Scotland, what do they amount to in these days? They scarcely dare whisper a wish, and they receive the inevitable refusal on their knees.

I say advisedly "their historical ruin condemned." For there are only two alternatives, restoration or destruction. And it is safe to say, at the present rate of detriment, that there are children, perhaps adults, now alive, who will be able to say—whether with pride or not I cannot predict—that they have survived the structure of Holyrood Chapel.

LIVERPOOL AND PRE-RAPHAELITISM.

ON Saturday an exhibition of paintings by Mr. Holman Hunt was opened in the Walker Art Gallery, Liverpool. The following statement addressed to the "Frequenters of the Walker Art Gallery, Liverpool," was received from the artist :—

Perhaps what I have already said elsewhere of the service which the Liverpool Academy, representing your city, in the year 1852 rendered to the pre-Raphaelite Brotherhood might seem sufficient, but I must not be deterred by fear of appearing egotistical from acknowledging the great service Liverpool rendered our body by awarding me the annual prize. After a lapse of over half a century I gratefully bear witness to the conscientious courage of the Council, which incurred contemporary odium by its championship of our efforts at art reform. Its action was represented at the time as gross and blind favouritism, but, now that the generation to which it was a vexed question has passed away, it is worth while to recall that several of the committee were local artists who gradually won deserved distinction by their own work, which in some cases had an independence of style quite distinct from that which stamped our own. Oakes is a name familiar to you all as that of a Liverpool landscape-painter of excellent character. W. L. Windus, also of Liverpool, won for himself great and continually advancing distinction throughout England by his figure-pictures. William Davis, battling with straitened circumstances, painted pictures of most poetic strain, often illustrating the lives of those vagrant actors who, in carrying their own burdens, lighten the yoke of others. I call to

mind the picture of "Punch and Judy," men and acrobats plodding with their paraphernalia and finery along rough country roads from one Midland city to another, patiently preparing to awaken mirth with sound of pan-pipe and drum. In 1852 our school was again encouraged by the award of the prize to Millais for the "Huguenots," and in the following exhibition I again received it for "Claudio and Isabella." Travel abroad delayed my making the acquaintance of our Liverpool champions, but in 1856 I visited the city, when Ford Madox Brown had been awarded the prize for his painting of "Christ washing Peter's feet."

Some of these works are now either in your Walker Art Gallery or are within the reach of the knowledge of most of you, and you can now decide whether the pictures which represented our movement and won the Liverpool Council's favour were, as our opponents represented, ignorant affections or honest endeavours to open out a fresh field for art. Millais's "Huguenots" is to be seen in the Tate Gallery, Ford Madox Brown's "Last of England" is in the Birmingham Art Gallery.

The Council of the Liverpool Academy of 1856 was a homely company presided over by Mr. John Miller—I believe they were sometimes called the "Miller and his Men." He was a merchant with an ingrained love of paintings, with which even his business office was plentifully furnished. They were stacked, face against the wall, several deep. Some of them were Academy exhibition stars of earlier days; one was a large painting by Maclise representing some Irish moonlighters of the day enrolled by a notorious "Captain Rock" of wild memory. One of the outlaws appeared pulling the trigger of a gun, whose muzzle was so directly foreshortened that each spectator wherever he stood saw himself to be the mark of the weapon. Like many other paintings of the early part of the last century, it was going to destruction in great fissures caused by contraction and expansion of asphaltum, which the artist had used in his first painting. Mr. Miller appeared to store away his pictures mainly for the pleasure of possession. On my first visit to Liverpool this kindly art patron took me to his house to meet the committee; he was a hearty septuagenarian of fresh complexion and boyish temperament, with a cheery word for everybody on the way. His home was superintended by his daughters, who seated themselves to preside over high tea. His son, Mr. Peter Miller, and the members of the Council were there to receive us. I spoke of Ford Madox Brown being present in the city, and a messenger was at once sent to invite him. They all declared themselves resigned to the storm which their predilection for the works of our school had raised up, and they complimented us upon our staunch attitude against the London phalanx of attack. Thus at once we became warm friends, and when the ladies had retired joined in smoking Mr. Miller's pungent "cavendish."

The Walker Art Gallery, representing Liverpool, has in more recent times shown its sympathy with our school by the purchase of our pictures. Millais is represented by his wonderfully precocious work of genius, "Lorenzo and Isabella;" Rossetti (who of all modern painters was best qualified by his native feeling and study fitly to interpret the poetic visions of the great trecento Florentine) is represented by "Dante's Dream;" and, lastly, my own picture of "The Triumph of the Innocents" was acquired partly by a sum voted by the Council, and partly by the contributions of the citizens, collected by the energy of Mr. Harold Rathbone. Thus the work of our school has long been familiar to you.

It might be a pertinent question to ask whether the original promise of our programme was justified by what our body has yet produced, and I must confess that the hostility of our enemies was so powerful and continuous as to become a never-ceasing obstruction to our course. I must remind you, however, that several of my paintings which would add to my toll of work are at the Taylor Buildings and at Keble College, Oxford, and are unavailable, while the life-size "Light of the World" is now at the Antipodes. Yet it is with me, as I doubt not it has been with other pre-Raphaelite painters, that many of the most cherished ideas have never been interpreted to the world, having remained but as dreams of the imagination. "The end is not yet," however; our principle was not alone for any one manner of work, nor was it in the imitation of any art, past or present. It was the opening of a door to the wide region of nature, which is without boundary either to eye or imagination; we forced the rusty hinges for the interpretation of new delights. Mulready, singled-minded enthusiast as he was, once said to me :—"One can never

stand still in art; one must go forward or one will inevitably go back." This principle is recognised not only by experienced and thoughtful artists, but by practical men of all kinds. A science investigator, physician, the religionist, the politician and the merchant will testify that this is a universal law. They will at the same time tell you that change is not necessarily advanced—it may be retrogression, degradation and corruption. Yet fresh delights are ever offering themselves to the world, crying, "Catch me who can, and make the catcher crowned."

The number of professional teachers in the present day would naturally appear to be a gain to art, but I, feeling somewhat as an aide-de-camp charged from his general to a battalion with a message on which the fortunes of a hard-fought battle depend, must not (when so many of my compeers have already fallen) shirk my responsibility by leaving unsaid the truth; and it is this, that the increase of camp-followers has its great danger from the fact that now many come into the field who are not chosen by nature herself for the struggle.

Michel Angelo used the chisel when he was a mere child. Many now as adults enter the lists, and finding much hard study and practice are required of them, having no heart for such service, take a short and royal road to eminence by proclaiming themselves impressionists, adopting reckless handling and purpose as signs of masterliness, and, together with others in the same straits, they deafen the world with cries of "We will have no more study, no more design in art, no more high thought, no care for noble selection of form, no harmonious chords of colour, no worry over perspective and foreshortening, for now the happy reign of uninstructed genius has come to be worshipped in the light of modernity." Whether or not the affectation of reckless execution and indifference to selection will, in the end, destroy English art (quite a possible prospect) it is certain that true art, on whatever soil, will have none of such paradoxes. The common sense of mankind will do without art if it is to be rude and ugly. There is no doubt that some work appearing in fellowship with that of the wildest impressionism displays honesty of effort and desire which should save it from classification with the work I have already described, but such merit arises from the recognition by its authors, that the quality characterised as impressionist is but one of the many which art demands, and this makes him understand that one quality alone cannot be so paramount as to overwhelm all others.

But beyond the question of mere manipulative skill we must consider the spirit by which pure English imagination has ever been guided since first our countrymen wooed poetic fancy to their service, leaving example to formative artists which they in turn have faithfully followed:—

Muse of my native land! loftiest Muse!

Oh Thou hast won

A full accomplishment! The thing is done,
Which undone, these our latter days had risen
On barren souls.

When not diverted by foreign influence the British notion of the purpose of art has ever been to consolidate principles of honour and purity and whatever tends to the innocent peace and stability of character of the people. It has done this by dwelling upon the rich bounty of creation, the glory of heroism, the sweetness of unaffected goodness and the misery attending betrayal of trust.

Whether England, built up as she has been by a succession of heroes, poets and teachers to a position of power, benevolence and justice, shall survive the rude shocks of party rancour and strife to which she is exposed in our days, or whether, like Spain, she shall be again reduced to the limits of a mere province, she will leave behind her a noble record of national aspiration. Whether our empire shall continue or decay, among the testimonies that will survive will be the works of our English artists, who in architecture, sculpture, painting and decoration have proved that they have been moved by the same original genius which had made England so noble in other domains.

The Manchester Art Gallery Committee have resolved to hold an exhibition in the Queen's Park Art Museum in the spring, to consist of oil-paintings, water-colour drawings and casts belonging to the committee, and, if possible, the works contained in the "Childhood" Exhibition now being held at the Baillie Gallery in London.

GUSTAVO GIOVANNONI AND CURVES IN PLAN IN THE TEMPLE AT CORI.*

By WILLIAM A. GOODYEAR.

THE object of this paper is to call attention to the recent remarkable observations of curvilinear refinements in the temple at Cori. Professor Gustavo Giovannoni, who has made these observations, is assistant professor in the Royal School of Engineering Architects at Rome, and at present holds the office of vice-president in the Roman Society of Architects (Associazione Artistica fra i Cultori di Architettura, Roma). Aside from other publications, he is the author of an important monograph on the building popularly known as the Temple of Minerva Medica at Rome, designated by Professor Giovannoni as the "Sala Termale della Villa Liciniana."

The attainments as an architectural surveyor and as an engineering expert and expert in construction which are implied in Professor Giovannoni's position as instructor in the Royal School of Engineers at Rome are additionally guaranteed by the technical precision of his monograph on the "Sala Termale della Villa Liciniana." The revolutionary importance of the observation to be described makes it more than usually necessary to mention the attainments, standing and expert character which are thus guaranteed in the observer. For in giving credence to the observations at Cori we are entering on unexplored territory, we are necessarily abandoning frequently-quoted and widely credited explanations of the ancient curvilinear refinements in favour of other explanations which have been widely ignored. More than that, we are facing phenomena which must appear almost incredible to the every-day current knowledge of ancient art.

Hence an unusually circumspect and careful consideration of all the facts is to be desired. To this end we shall, first, briefly describe the observation of Professor Giovannoni. Second, we shall explain in what sense it is novel and remarkable. Third, we shall rehearse the previously more or less well-known facts about the ancient curves, and consider what special theories relating to them must be abandoned and thrown out of court in face of the newly-discovered curves at Cori.

The announcement regarding these curves was originally made by Professor Giovannoni before a meeting of the Roman Society of Architects which was held on February 6, 1905. It was first published in the "Annuario" of the Society for that year. The additional facts to be related were then obtained through personal correspondence with Professor Giovannoni, who has also allowed me to describe and publish them.

I am advised by his letter of December 8, 1906, that the isolation of the temple at Cori from adjacent buildings will be shortly undertaken by the Italian Government, and that this opportunity will be used for the construction of scaffolds which will enable him to take measurements in detail of the upper portions of the façade. Meantime I quote from an earlier letter of July 2, 1906, the following information:—

"The Temple of Hercules at Cori belongs to the late epoch of the Roman Republic, and is one of the finest specimens of this period of transition from the Greco-Etruscan style to the Roman. The pronaos and the great door are still in almost perfect preservation, and show splendid execution, both from the artistic and from the constructive point of view. The suspicion of accident (in regard to the curves) cannot be entertained. No one, however, as far as I am aware, has previously observed or measured the curve of the façade. This curve exists notwithstanding, and is very clearly defined. The concavity (in plan), which is small at the columnar bases, where it measures 10 or 12 cm. deflection, increases to nearly 35 cm. in a length of m. 7.50 at the cornice. The gable follows the same line, and the regularity of the joints give assurance that neither (original) accident nor subsequent movements have produced this remarkable deflection. There are no curves on the flanks."

As regards the measurements just quoted, it is to be observed that the curve of 10-12 cm. quoted for the base is one of unusually large deflection for the given length of m. 7.50, as compared with other Classic curves, and that the curve at the cornice of 14 inches, or 35 cm., is far greater than any curve previously recorded for the ancient monuments, both as regards the actual measurement and sti-

* A paper read before the Archaeological Institute of America at Washington, January 2.

more as regards the relation of other smaller deflections to the greater widths or greater lengths of buildings.

Aside from the remarkable account of the curve, its still more remarkable feature is the concavity in plan, and I need hardly remark that this feature constitutes its most astounding and novel characteristic. It is further to be noticed that no other Roman temple has been so far announced as showing any curves whatever, with the exception of the Maison Carrée at Nîmes, which has curves in the cornices of the flanks which are convex to the exterior.*

Aside from the assurances given by Professor Giovannoni as to constructive intention, there are two evidences of such intention which speak for themselves, even to those who have not examined the temple, viz. that the curve is found in the bases of the columns, and that a concave curved deflection in plan of the cornice and gable, to the extent of 14 inches, could not have been the result of accidental movements without the appearance of very visible and palpable dislocations in the connected structure, which must also have visibly affected the supporting columns either at the angles or near the centre, one or both.

As regards the theories which have been advanced to explain the ancient curves, the discovery of curves at Cori, concave in plan to the exterior, has a revolutionary and far-reaching significance. The optical effect above the level of the eye of a curve concave in plan is that of a curve in elevation (that is, of a curve in a vertical plane) which descends towards the centre. Consequently the explanation, which has been so widely quoted and credited, that the ancient curves were intended to correct optical effects of sagging downward, is immediately and decisively thrown out of court in the case of the temple at Cori as far as that temple is concerned, for it is exactly an effect of sagging downward which is actually produced by this curve, as far as the upper horizontal lines are concerned.

So conclusive an argument leads us to examine the previous standing of the widely-spread impression that the Greek curvilinear refinements were intended universally to correct optical effects of sagging and thus cause the lines to appear straight. This explanation is frequently quoted for the rising curves in elevation, such as are found in the Parthenon and some other Greek temples; and these are the curves which have so far generally absorbed the attention of the majority of experts. It is true that different curves may have been employed in different ancient buildings for different reasons. It would be establishing a very important fact if this fact alone were established by the instance at Cori, but the opportunity is a convenient one to point out that the widely quoted explanation is essentially a popular misapprehension of an entirely different proposition, and that this widely quoted explanation has never been mentioned by any of the optical experts who have written special publications on the Greek curves.

It is a popular modern prejudice that architectural lines ought to be straight. It is consequently a proposition which instantly appeals to the popular mind that the Greeks curved their architectural lines in order that they might appear straight. Hence probably the widely-quoted but really mistaken proposition that all horizontal architectural lines tend to sag optically at the centre. This impression among architects may be due to the occasional practice of cambering interior flat ceilings or tie beams under a gabled roof, but the problem of optical effects in such interiors has no relation to the general, but mistaken, proposition.

It is an elementary proposition in perspective that horizontal lines above the level of the eye, on near approach, curve downward toward the extremities. This elementary proposition is most easily realised by assuming the position of the spectator to be opposite the centre of a building, of such dimensions that the head has to be turned first in one direction and then in the other in order to take in the entire upper line. As the really horizontal upper line to the left of the spectator will descend optically in perspective towards the left, and as the really horizontal upper line to the right of the spectator will descend optically towards the right, it is manifest that the eye in passing from left to right, or from right to left, must see the whole horizontal line optically as a curve descending towards the extremities and highest in the middle. It is equally true that all lines

which descend in perspective in a single direction must descend in a curve, optically speaking, because the line, which is really straight and horizontal, descends in gradually increasing amount according to the distance from the eye. Consequently, an actually horizontal straight line which, optically speaking, changes direction from point to point, must necessarily change direction, optically speaking, in a curve. It is only the mental knowledge that the line is really straight and horizontal which interferes with the perception that the line is really seen as a curve.

The interference of a mental conviction, based on general positive knowledge, with an actual optical appearance is a well-established fact. This interference of the brain with the true facts of vision has been ably described by Professor Guido Hauck in a publication to be presently quoted. Professor Hauck found that the ability to see the rising curves which optically exist in all horizontal lines above the level of the eye (unless interfered with by other lines) was strongest in women and in the persons whom he calls "Naturmenschen," among whom he includes artists; whereas persons with mathematical and scientific training were frequently unable to see the curves at all. He also found in his own experience a progressive improvement in his ability to distinguish the curves as actually seen by the eye. He also found that optical curves in lines really straight and horizontal could be seen in a line of separated lights illuminating an architectural line at night, when they could not be seen in the same architectural line by daylight. The mental conviction had an effect on the continuous line which did not occur with separated points of artificial light not visibly connected by the architectural line.

(To be continued.)

LIVERPOOL ARCHITECTURAL SOCIETY.

ON Monday last the President, Mr. Edmund Kirby, presided at the fifth sessional meeting of the Liverpool Architectural Society, when a paper, illustrated with plans and elevations from many sources, was read by Mr. Geoffrey Lucas on "Inexpensive Cottages." The lecturer rejoiced at the modern practice of retaining an architect to erect cottages, rather than to leave the work wholly to the builder, and remarked that a cottage surrounded by a garden and out of the dust of motor-cars should make a pleasant residence. Good models might be found among the old cottages in rural districts. The question of inexpensive cottages obtained additional force because of the national movement represented by the cry of "Back to the land," which improvements in transit, telegraphs, telephones and garden-city schemes were rendering practicable. Indeed, the first experiment in garden-city building promised to be successful. The most important feature in a cottage was a living room of good size, with the entrance shielded from draughts, a comfortable fireside, and a wide window, having a sunny aspect and a high sill. He pointed out that single or semi-detached cottages meant a sacrifice of dignity in the building scheme, and gave a village or town a straggling look, as at Letchworth in its present stage. The public were taking a rapidly increasing interest in architecture, and he need not impress on such an audience the importance of good architecture on the solution of the housing problem. Discussion and thanks followed, the lecturer accepting an invitation to visit Port Sunlight.

The Town Clerk of Coventry has issued a notice that the City Council intend on February 26 to apply to the Local Government Board for their approval to the appropriation of lands in Earl Street for municipal buildings, and to the borrowing of 30,000*l.* for that purpose. The memorial which is to be sent to the Local Government Board points out that the Council do not at present possess municipal buildings other than an ancient guildhall, and it is proposed to erect municipal buildings for the purpose of providing the necessary accommodation for their officers and servants. Following other details the memorial sets forth that, as such accommodation could be provided on the upper floors of the said municipal buildings, it is proposed to appropriate so much of the ground floor of the proposed new building as fronts to Earl Street for the purposes of shops to be let to tenants. When the Local Government Board inquiry is held into the City Council's application for borrowing powers of 30,000*l.*, it is understood very strong opposition will be forthcoming to the application.

* The constructive existence of these curves has been verified by the official architect of the city of Nîmes, and also by his predecessor in the same position. See Smithsonian Reports for 1894 (published in 1896), "A Discovery of Horizontal Curves in Plan in the Maison Carrée at Nîmes." Under the same title see also the *American Journal of Archaeology*, vol. x. No. 1 (1895), and the *Architectural Record*, vol. iv. No. 4 (1895).

NOTES AND COMMENTS.

THE Stockport waterworks litigation has taken so long to investigate there are some grounds for the rumour that the costs will amount to over 20,000*l.* The claim was made by Mr. HENRY KELLETT, the contractor. There was so much detail that the case was left to Mr. MUIR MACKENZIE, the Official Referee. In May 1903 Mr. KELLETT entered into a contract with the Corporation, amounting to 248,724*l.* 15*s.* 3*d.*, for the construction of a dam in the Kinder Valley. There was some difficulty in making the dam watertight, and it was necessary to cut a deep central tongued trench and to widen the foundations. There were stoppages, but ultimately the works were suspended. Mr. MANSERGH, the engineer, informed the Corporation that the contractor had not sufficient plant to carry out the work as rapidly and efficiently as was required. Evidence was given that the foundations as specified were inadequate to bear the weight of a masonry dam. The case for the Corporation was that there was no warranty on their part that the work could be carried out, and that it was for the contractor to satisfy himself about its feasibility. If the scheme had been carried out and the dam given way, there would have been fearful destruction of life and property in the Kinder Valley. The resident engineer admitted that he thought the contractor was only bluffing when he proposed to have the foundations deepened, although he was aware of the compressibility of the strata. The contractor claimed the balance of the retention money and interest; secondly, the price of the work done since the last certificate was given, but for which no certificate had been given because the contract had been terminated; thirdly, damages for delays in the work in 1904-5-6; and finally, compensation for profits which he had been prevented from earning. The Official Referee decided on the first point that the money should be paid. He valued the tongue trench at 8,610*l.*; he valued the uncertified balance at 5,475*l.* 4*s.* 11*d.* For delays due to the Corporation the sum of 3,696*l.* 4*s.* 6*d.* was awarded. The Referee considered that the value of the work which was not executed under the contract amounted to 328,100*l.*, and, allowing for contingencies, he valued the profit on that amount at 29,400*l.*; altogether the total amount came to 52,546*l.* 19*s.* 1*d.*, and the plaintiff was also awarded costs on the hearings at Manchester and in London. Although Mr. KELLETT has not obtained the total amount claimed, he has received compensation, and his action in declining responsibility for the safety of the dam as specified has been fully justified.

A FEW months ago we called attention to the efforts of the masons in Birmingham to have stone dressed in the city instead of at the quarries. Another attempt was made in the Council of that city to have all the stone required in the extension of the municipal buildings dressed in Birmingham or in an adjoining district. The tenders for that work are yet to be sought, and it is more fair to contractors to inform them beforehand about requirements than to have demands sprung upon them at a later time when other arrangements have been entered into. It is, no doubt, very hard that Birmingham masons should be deprived of a class of work which at one time they could claim as a right. But everywhere and in all kinds of business there is a search for cheapness, and by the use of machinery at the quarries stone can be delivered in Birmingham much cheaper than if all the work had to be performed within the city. If the people of Birmingham prefer to employ local labour all that is necessary is to resolve on paying a higher price for their buildings. If a contractor agreed to perform the work at a low rate and in consequence became a bankrupt, he would find little sympathy from his creditors. There was some truth in Mr. TONKS's remarks at the Council meeting when he said that stone worked under the supervision of a clerk

of works was likely to wear better than stone worked by machinery at quarries. But it is the Council who should act in accordance with that opinion and not the contractor. As there were thirty-five members in favour of the quarry system and thirty in favour of hand working, economy won the day.

ILLUSTRATIONS.

THE MANCHESTER WHITWORTH INSTITUTE, WHITWORTH PARK.

THE illustration shows the façade of the Whitworth Art Gallery as it will appear. The new façade will be built of thin red bricks and terra-cotta to correspond with the present galleries. The entrance hall will be only one storey in height, with a flat roof, so as to admit the light freely to the sculpture hall, which will be behind it. The two bays (over the staircases) will be carried up as square towers, breaking the long line of the façade.

Inside the porch there will be a large vestibule leading into an entrance hall 33 feet 4 inches by 33 feet 4 inches, the ceiling of which will be divided into panels by beams carried on polished grey granite columns, and in the large square central panel will be a glass dome to light the hall. On each side of the hall will be cloak-rooms. A wide doorway from the entrance hall will give access to a sculpture-hall 102 feet 6 inches by 33 feet by 20 feet, high-lighted from high windows along each side of the whole length; the two end walls are arcaded with three arches carried on polished granite columns, giving access to the present north and south galleries and to two staircases leading to the upper floors; beyond the staircase hall at each end is a square pavilion 33 feet by 33 feet, the one to the south on the ground floor to be used for official rooms and the one to the north for exhibition purposes. From the sculpture-hall in a line central with the front entrance a wide doorway will lead into a corridor, giving access to the present central gallery, and on each side of this corridor will be a top-lighted gallery for exhibition of textiles, &c. The galleries are so planned that a clear view will be obtained from the front entrance, through the entrance hall, sculpture gallery, corridor and central gallery, to the extreme end of the new western galleries, a total length of 244 feet. The upper floor will contain library, council chamber and exhibition rooms. Each of the two staircases gives access to the basement, which will contain, in addition to the present galleries, rooms for the staff, a large strong-room and storage for chairs, &c., and a connecting corridor between the north and south basement galleries. The architects are Messrs. J. W. BEAUMONT & Son, of Manchester.

MEMORIAL CHAPEL, CONVENT OF ST. MARY OF NAZARETH, EDGWARE.

THIS chapel has been built as an addition to the cloister, with which it is in communication through the arch of the centre bay of the east walk. It is intended as a memorial to the late Rev. Mother MONNICA, whose grave is seen in the foreground of the photograph, and who is commemorated in a short Latin inscription cut in a panel on the east side of the retable. The convent buildings, of which the cloister forms a part, were designed by the late Mr. JAMES BROOKS, and the present work has been carried out by his successor, Mr. J. STANDEN ADKINS (JAS. BROOKS, SON & ADKINS). The contractor for the work was Mr. PARMENTER, of Braintree. The carving has been executed by Mr. F. A. WYNNE, of Balham, and the copper roof and cross by Messrs. EWART & SON. The photograph is by Mr. CYRIL ELLIS.

REREDOS AND ORNAMENTAL PANELLING, WYCLIFF HALL CHAPEL.

THE NEW WAR OFFICE, WHITEHALL.—SECRETARY OF STATE'S ROOM.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—TOP OF STAIRCASE.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. T. E. Colcutt, president, in the chair.

Royal Gold Medallist.

The PRESIDENT said it was his pleasure to announce the name of the architect the Council proposed to submit to His Majesty as a fit recipient of the Royal Gold Medal. The President was sure that the meeting, and indeed the whole profession, would feel with the Council that the architect they had chosen was the one most worthy of receiving the high honour; he was Mr. John Belcher, A.R.A. The President said he felt that Mr. Belcher was an architect who had revived and continued in his work the best traditions of the English Renaissance. The President did not propose to say much on that occasion concerning Mr. Belcher, but he believed the entire profession would receive with acclamation the choice of the Council.

Address to Students.

The PRESIDENT said:

We are assembled here to-night for one of the most pleasant functions of the session, that is, the presentation of prizes to those students who have been fortunate in their endeavours, and whose work has obtained deserved recognition. In their success we are all deeply interested, and in offering them our congratulations I feel sure we shall have the hearty support of those students who, for the moment, have failed to reach the goal, but who, nevertheless, we are confident have not lost heart.

It has been well said, "In the vocabulary of youth there should be no such word as fail." This is the spirit which should inspire the student, which should bear him up against temporary defeat, and should brace his energies to re-enter the lists with courage. And after all, those who are unsuccessful may console themselves by the reflection that "the race is not always to the swift, nor the battle to the strong."

We shall presently have the pleasure of listening to some critical remarks by Mr. A. W. S. Cross on the work that has been exhibited in competition for prizes. In the meantime I propose to adhere to the time-honoured custom in taking this opportunity of addressing a few words to you in the way of advice and encouragement. In following the excellent example of my predecessors, I must of necessity travel over ground with which some of you are already familiar; but having had a long experience I hope I may be able to offer you some serviceable advice.

In the first place, I wish to impress upon you the importance of fully considering whether the career you have chosen is your proper vocation. It is essential to be sure that you have not a mere inclination for your art, but that you feel for it such a love and reverence as will enable you to overcome serious difficulties. If after a period of work in the schools you find that your interest is not sustained, and that your labour becomes irksome, then I would advise you to consider seriously whether some other career would not offer more attraction and interest to you. Nevertheless, do not be easily discouraged. Remember that in all callings, even in the highest, there is a certain amount of drudgery and uninteresting work to be faced before one is qualified for the more pleasant studies which follow.

But perhaps these words of warning are not necessary. Let us hope that all whom we see here to-night are entering upon their career with enthusiasm, and with the feeling that they are serious students of the oldest of the arts—an art in which one always remains a student, and in the practice of which a lasting joy is to be found. Most of you are familiar with the educational work carried on at Grafton Street and with the advantages derived from attending the classes held there. The school is still in its infancy, and we have every reason to hope it will continue to develop in the right direction. My private experience of the high qualifications of those students and assistants with whose work I am familiar fully corroborates this encouraging view.

It is not within the province of such an address as this to dictate the course of study you should pursue. This has already been efficiently done by the Architectural School and by the Board of Architectural Education. However, I may remark that naturally among your first attempts will

be geometrical drawing, freehand, drawing from the round and perspective drawing. A student cannot pay too much attention to the acquirement of draughtsmanship so necessary to our art. In particular I would advise that perspective be very thoroughly learnt, and that in practising it at first only rigid lines should be employed, all picturesque, broken and shaky lines and "dodgy" lights and shadows must be regarded as pitfalls and must be avoided. I would urge you to do all in your power to become perfect in this branch of your studies. To design well is to think in perspective; to be able to think in perspective one must have a sound knowledge of its principles. Again, I would advise constant practice in sketching from still life; a quarter of an hour each day will be of immense benefit.

Always remember this: all your skill and accomplishment as draughtsmen, whether merely in geometrical or perspective work, or in the artistic representation of sculpture and carving, are only a means to an end. Do not forget that much of the great work of the world has been achieved without the aid of drawing; that is to say, without that quality of drawing which in the present day we are obliged to consider an essential to the complete education of the architect; for example, the drawings that we suppose to have been executed by Wren, will not bear comparison with the work that we ordinarily expect from an advanced student. The geometrical work of Wren was no doubt correct, but, according to the standards of the present time, it was certainly ill-drawn. Although there is evidence that he could very clearly indicate the carving he thought desirable, yet these indications would scarcely pass muster as really good drawings. I do not lay stress on this point as an excuse for slovenly and bad drawing. Good draughtsmanship is, as I say, necessary nowadays; but I wish to warn you emphatically against the temptation of thinking that pretty drawings are essential to good architecture.

I recently saw some modern buildings in Spain designed in a rococo manner, with a touch of L'Art Nouveau. Well, we have some pretty bad art even in England; but I think that this surpassed the utmost I have seen in the way of banality, feebleness, vulgarity and originality—save the word. I learned that this was the work of a man who had gained a Government diploma as a qualified architect; that he was a most accomplished draughtsman, and that the drawings of the elevations of these very buildings almost amounted to a work of art. I think this may be regarded as a lesson in considering drawing only as means to an end.

There is an old saying that "you cannot make a silken purse of a sow's ear," and you cannot make a fine building merely by means of fine drawing; you may embroider the sow's ear with the finest silk, but it remains a sow's ear.

In studying the ancient, the Mediæval and the later styles of architecture, I would advise separate study of each period as far as possible. Make a thorough study of the Greek, the Byzantine and following styles, taking as examples some well-recognised buildings, but bearing in mind that no buildings can be fully appreciated from mere illustrations, however well executed these may be. To gain even an approximate idea of what inspired the ancients and our more immediate forefathers, you must see for yourselves the monuments they have left for our wonder and admiration.

I may mention here my own experience in this direction. Although I was fairly familiar with the Doric Order as exemplified in the Parthenon, yet it was not until I had actually seen the building that I was able fully to appreciate and understand the wonder of this work, to my mind the simplest as it is the most beautiful of all the Greek masterpieces.

Although from books and drawings one may be perfectly familiar with the general lines and proportions of the Parthenon, yet one does not fully appreciate or understand the wonder of the work unless one has seen the actual building. When one contemplates it, even in its present condition, dominating the Acropolis, under the southern blue of Greece, it needs but little imagination to conceive something of its magnificence as it shone in all its glory twenty-four centuries ago. The more one sees of the Parthenon the more one is impressed with its marvellous purity of line, workmanship and material. It expresses in a wonderful measure the thought, religion and learning of the period during which it was built, and it reaches the highest ideal and the perfection of architecture and sculpture. I am not advocating the Doric as a style suitable for to-day, neither do I maintain that it would adequately

express the mind, religion and history of the periods succeeding the Greek. It does not appeal to modern requirements, ethics and social life in the same sympathetic manner as the Byzantine and the succeeding styles.

The Parthenon seems to me to embody perfection of line. The entasis of its component parts, the columns and the steps are perfect, and one feels that even such details as the curve and width of the flutings could not be altered by the fraction of an inch without damaging the proportions. The very dimensions of the building could not be altered without detriment. Perfection having been attained in the dimensions, the building would not have been so perfect had it been smaller or larger.

A lady of the inquiring type of mind once asked (not as a riddle, but as a serious question), "Why cannot architects improve on the design of a building erected so many centuries ago?" "Madam," was the reply, "has the Almighty improved on Adam and Eve?"

I am not advising you to study Greek work so that you may erect Greek buildings in England, but so that you may attain some notion of the motives and ethics that influenced Greek architects and sculptors—to fully comprehend these it would be necessary to have considerable knowledge of Greek literature, religion and daily life. It is very questionable whether Greek architecture is suitable to our climate and to the conditions of modern life and thought. In our country it tends to become "faultily faultless, icily regular, splendidly null." Think of the Parthenon with its colour, its workmanship and its setting of blue sky and clear atmosphere, and then look at the Doric portico to Euston Square station. Neither its material, its colour, nor its size is satisfactory. With regard to material the stone employed is not sufficiently delicate in colour or in texture to obtain the true proportion of light and shade, especially to the flutings. The diameter of the columns, and therefore the whole structure, is greatly in excess of any known ancient examples; and one cannot but believe the Greeks had determined the limit of magnitude for work in this Order.

I am afraid I am enlarging my discourse into a lecture, but I wish to impress upon you the necessity of acquiring a sense of proportion, and the only way to do this is to approach in a spirit of reverence the great works that have appealed to successive generations, and that are universally acknowledged to be masterpieces. Do not, at any rate to begin with, criticise too freely the works of art that have been established as pre-eminent by the verdict of expert opinion in ages past and present. Take this verdict for granted, and then study these great works by drawing and by contemplation, and try to understand wherein lies the excellence of their proportion, of their detail, and of their general massing.

I do not consider it advisable in pursuing these studies to exclude a study of the modern building from your curriculum; however enthusiastic in your admiration for one style or period, do not blindly condemn all others.

In giving your attention to the old masterpieces, do not omit to observe very carefully the materials in which they are built, for this is of the utmost importance. The student should not only make himself thoroughly familiar with the right use of materials, but he should be sure to realise the great influence that these have upon style. He should also compare the varying qualities of workmanship. Ruskin, I think, has somewhere made the assertion that perfection is not always desirable. An illustration of this theory may be found in comparing the perfection of the Greek Doric workmanship with the roughness and unevenness of the porphyry and other columns in Sta Sophia at Constantinople. In the latter case, perfection, I think, would have been fatal; the very unevenness of the surface of the columns gives additional charm. I will venture to uphold the theory that excellence of workmanship as regards exterior finish is altogether desirable for any architecture founded on the Classic, but that very high finish is not always desirable in Byzantine and Mediæval work. In most old examples it is not met with.

Let me counsel you, when you have made some progress in the study of a particular style, to practise design in that style; but I must warn you to avoid efforts after originality. A strong personality will inevitably assert itself sooner or later, but pray do not force it. There is nothing new under the sun, and it may safely be said of any too "original" kind of building that it has been done as badly before. I have warned you against the "New Art;" this, however, I do not utterly condemn, because I think it has occasionally shown some signs of merit; but a previous and acknow-

ledged style is generally found on careful scrutiny to be the basis of these signs of merit, the origin of "originality." Do not attempt the new art until you have a knowledge of the old. In your education as architects I think you will find plenty to do without striving to impress the public with your originality. In practising designing do not lose heart; this branch of your studies requires as much patience and perseverance, perhaps more, than any other. Do not hesitate to use india-rubber; never mind the soiling of paper—perhaps you will find the dirtier your paper becomes the nearer you are to achieving your aims. All may acquire an ability to give the world something pleasing although it does not come within the scope of all to leave a lasting mark on the history of their generation.

To turn to more prosaic matters, a somewhat homely comparison may be used to illustrate the diverse nature of acquirements necessary to an architect. A second-hand furniture dealer in a back street advertises the magnitude of his undertakings in quite a forcible manner. Over the doorway of his sordid-looking shop is written—

Do you want it? We sell it!
Don't you want it? We buy it!
From a microbe to an air-ship.

Well, this gentleman's business would seem to cover good deal of ground; perhaps his advertisement errs on the side of exaggeration. But some of the same words might very appropriately be applied to our calling. It is expected that your education should include a knowledge of almost every possible trade. You must necessarily be acquainted with the habits of the microbe, the mysterious tenant of the sewer; and possibly you must also be acquainted with the suitable decoration for a steamship saloon. You must certainly understand something of all the building trades involved in erecting anything from a cottage to a palace. It really appears, therefore, that your education must be as wide as the business operations of the man who will deal in anything from a microbe to an airship. But do not be discouraged. As you progress you will find that this diversity of subjects is not so formidable as at first appears. It is true that besides the fine art of architecture and the art of construction, there are many subjects with which the architect must have more than a casual acquaintance. Although experts may be consulted on steel construction, sanitary work, electrical work and heating, yet the young architect should endeavour to become master of the principles involved in such matters as these. It is also very important for the student to have some knowledge of the sister arts of painting and sculpture and under proper guidance to study the old masters. He should know something of the history of painting, and should be able to trace the gradual development of colour-decoration from early work, such as the Byzantine mosaics, to the culminating point of colour-decoration as exemplified in the pictures of the Italian Renaissance. Let him also study sculpture; in our museums he will be able to compare the Ninevehite and Egyptian work with the Etruscan marbles, and from them he will pass to a study of the Italian work. Neither must the lesser arts be neglected. Furniture, porcelain, needlework, tapestry, in fact, every department of the fine arts, should be considered. The collections at South Kensington Museum should be studied and compared with the architecture of the same date. Chippendale and Sheraton, Jacobean and Carolian furniture should be observed in reference to the houses of the periods in which they were designed to adorn.

In conclusion, let me repeat how great has been my pleasure in addressing you to-night. You are starting on your careers; I may be considered as having entered on the last stage of mine. I can conscientiously assure you that I still feel as great a devotion as ever to the art I practise, although age is generally supposed to dull enthusiasm and to give rise to a prosaic and worldly spirit. Happily our art always tends to maintain youthful thought. With all its difficulties it has this great compensation—that to the last we can take a joy in our work and a pleasure in striving to arrive at that ideal in art so ably described by George Gissing:—"Art might be defined as an expressive, satisfying and abiding, of the zest of life. This is applicable to every form of art devised by man; for in his creative moment, whether he produces a great drama or carves a piece of foliage in wood, the artist is moved and inspired by supreme enjoyment of some aspect of the world about him—an enjoyment in itself keener than that experienced by another man, and intensified and prolonged by the power which comes to him, we know not how, of recording in visible or audible form that emotion of rare vitality."

Mr. A. W. S. CROSS read the following

Review of the Works Submitted for the Prizes and Studentships, 1907.

Before proceeding to discuss, in accordance with the pleasant but responsible duty entrusted to me, the comparative merits of the various essays, designs and drawings submitted this year in competition for the prizes and studentships of our Institute, I propose, with your permission, to make a few general remarks upon the quality of the work I have lately examined.

In the first place, it is somewhat disappointing to the Council to have to record the lamentable fact that, with one or two exceptions, the work received falls below the standard of excellence attained in recent years, at least as regards the designs and drawings, for, as I have not had the pleasure of reading any of the essays submitted on other occasions, I am unable to state whether the two which have received recognition in the recent essay medal competition are above or below the average standard of merit of those of former years. However this may be, the best of the essays of the year, without perhaps possessing that somewhat mysterious and oft-quoted quality known as "literary style," are both eminently readable, interesting and instructive productions, which deserve the honourable positions they have obtained. Whilst it would be invidious and altogether unnecessary to point out glaring weaknesses in any particular design, it is quite obvious than many of the competitors for the Soane Medallion have paid very little attention to the elements of scientific planning. To those students I would reiterate the well-known fact that the ideal plan is one which is apparently of the simplest possible character, and indeed is so easily read and understood that its dominant idea can be immediately grasped even by an inexperienced observer who would, not unnaturally, imagine that it had been evolved after perhaps an hour or two's work. Now the unnecessarily complex nature of the planning observable in many of the designs is very noticeable, and their authors would be well advised to be mindful of the old saying, "Summa ars est celare artem," and in their future efforts endeavour to conceal, by the production of simple and apparently easily arrived at plans, the vast amount of study and labour involved in the solution of problems in planning arising from the multitudinous requirements of large buildings.

With regard to the architectural quality of the work submitted, I would plead for more accurate scholarship; and although, of course, our students are in no way to blame for the wholly inadequate existing arrangements made for their technical education and training, yet in an address that is primarily delivered to students, I trust I may be permitted to express the hope that the time is not far distant when the younger members of our profession will be enabled, by the institution throughout the country of a well-devised, systematic and co-ordinated curriculum of study, to produce designs of a far more scholarly type than those emanating from the majority of the architects of to-day. Zeal without knowledge is like expedition to a man in the dark, and in support of my plea I may mention the fact that, in some of the designs (and even in a measured drawing of what is supposed to represent a well-known building by an eminent architect of the eighteenth century), the authors have not taken the slightest trouble to correctly delineate the proportions and characteristics of the Classic orders with which the building and designs in question are embellished. Students should remember that the immediate future welfare of our art is in their hands, and endeavour to recognise the undoubted fact that skill in draughtsmanship, when not allied to architectural scholarship, does not admit of the production of good architecture. Although I have ventured to express the opinion that the drawings and designs generally are inferior to those of recent years, yet I must certainly make an exception in the case of Mr. Jackson's work for the Owen Jones Studentship, the quality of which is of so high an order of merit as to be quite beyond reproach, while the drawings submitted by Mr. Robertson for the Measured Drawings prize are also exceptionally good. With these few preliminary remarks I will now discuss the individual efforts of the various competitors.

The Essay Medal.

Six essays on "The Influence of the Use of Iron and Steel on Modern Architectural Design" were received, and the medal has been awarded to the one submitted under the motto "Three Ages," while a certificate of honourable mention has been given to Mr. Verstage, of Godalming, whose essay was placed second in order of merit.

The author of the successful essay treats his subject in a very practical if, necessarily, in a somewhat concise manner, and after a brief but interesting historical introduction there are some valuable notes on the use and properties of cast-iron, wherein mention is incidentally made of the widespread attention drawn to iron construction by the erection in 1851 of the Crystal Palace. The present use of steel as applied to the structure of buildings, its effect on planning, its economy of space and its influence on fenestration and design are discussed at some length, and diagrams are appended showing the comparative sizes of brick piers and steel stanchions necessary for the support of edifices respectively twenty and six storeys in height.

In conclusion, the author is of opinion that while the use of steel is, for the moment, an economical necessity, it does not necessarily follow that this form of construction, with its many unstable qualities, will be in vogue as a system of building for any very considerable time, or that it is likely to take permanent root in this country, and that in all probability the use of structural steel is but a passing phase.

The question is discussed at greater length by Mr. Verstage in his essay, which is copiously illustrated by photographs of Parisian and other buildings, including churches, bridges, railway stations, markets, libraries, and private edifices, in the construction of which iron and steel are employed to a considerable extent, and more or less dominate the designs; and the author quotes Ruskin as saying, in 1849, "that the time is probably near when a new system of architectural laws will be developed, adapted entirely to metallic construction." Mr. Verstage arrives at a conclusion diametrically opposed to that of his successful fellow competitor, for whereas the latter, as we have seen, describes the now general use of iron and steel as a "passing phase," the former states that "we have moved far in the architectural development of iron and steel, and although new laws and new canons have not definitely crystallised, yet, given the continued use of these materials, the time cannot be far distant when the proportions proper to them will be accepted as readily as we now accept those proper to stone."

The Measured Drawings Medal.

Despite the fact that this competition has attracted six competitors, the medal has not been awarded, but certificates of honourable mention have been granted to the authors of the drawings marked "Waynflete" and "Swallow" respectively.

The drawings submitted by "Waynflete" comprise six sheets of very careful brown-ink studies of Magdalen College, Oxford, and those by "Swallow" illustrate, in a singularly attractive manner, that most interesting building, Stokesay Castle, Shropshire. "Swallow" is to be congratulated both upon his powers of draughtsmanship, as evinced by the beautiful drawings he has produced, and upon his happy selection of a building so suitable for the picturesque type of geometrical delineation he has adopted. The measured drawings, marked with the heraldic device of a horse's head and illustrating Kirby Hall, Northants, are accompanied by a badly drawn perspective sketch, and the large scale detail drawing is weak.

"Thrums" has selected for illustration the well-known church of St. George, Hanover Square. The details and ornamentation are not well delineated, and the beauty of the fine west portico has been altogether lost, owing to the want of care or knowledge in drawing the columns and capitals. The full-size mouldings are rather unnecessarily crowded together upon a single sheet, whereby their value is greatly diminished.

The drawings, by "Adze," of Wren's Library at Trinity College, Cambridge, although not very vigorously executed, have evidently been conscientiously prepared.

"Spero" has selected what is now becoming a rather hackneyed subject for measured work, viz. the famous Orangery of Kensington Palace, but his drawings possess considerable merit and show distinct promise of future excellence.

The Travelling Studentships—(I.) The Soane Medallion.

In this competition, for which fifteen designs were submitted, the medallion and the sum of 100*l.* have been awarded to the author of the drawings marked "Cameo," whilst those prepared by "Simplex" and "Urn" have gained honourable mention.

"Cameo's" design is of the now popular Renaissance type, but I am glad to see that its author has not slavishly followed the prevalent fashion to an extent that would have

compelled him to leave a huge gap in his main cornice for the sake of more fully exhibiting the attractions, whether real or imaginary, of an attic storey. But whilst "Cameo's" elevations are satisfactory, there are several blemishes in his design; thus, the four small areas are objectionable features of the ground floor, and the access to the ball-room, on the first floor, is anything but good and direct, and neither the large-scale detail drawing nor the section exhibits a very happy effort of draughtsmanship.

"Simplex" submits a design in which the winter garden occupies the central position of the ground-floor plan. The external architectural treatment is good, but some of the details of the planning are weak, as for instance, in the case of one or two of the bath-rooms on the first-floor, which are, apparently, altogether enclosed by internal partitions.

The author of the drawings marked "Urn" has produced a design that, on the whole, is distinctly the best of those submitted. "Urn's" plan is laid out on broad and simple lines, and his elevations possess considerable merit; but I understand that its author, unfortunately, lost his chance of securing the prize by ignoring one of the salient conditions of the competition.

The time at my disposal does not enable me to do more than briefly mention the other designs, amongst which "Novo" is conspicuous by reason of a well-treated elevation accompanied by a simple and attractive plan. "Aero" and "Applique" both show the influence of trans-Atlantic art. "Pax" has a fairly good elevation, but his sections and plan are rather crude. "Cid's" design is in many respects a meritorious one. "Rush's" drawings include a rather poor-looking perspective, and those submitted by "A.T." are not particularly well prepared. "Dentil's" plan is weak, and "Kokrel's" Greek elevations are hardly suitable for a city hotel. "Silver Shield" has not overcome the lighting difficulty in an altogether satisfactory manner, and the capitals of his Ionic order are incorrectly drawn. "I. Parve's" plan is laid out on simple lines, and its author has happily managed to dispense with small internal areas, but "Pan's" scheme is of far too complex a nature.

(II.) *The Owen Jones Studentship.*

Two applications were received for this studentship, from Mr. Robert Atkinson and Mr. Arthur R. H. Jackson, and the certificate and the sum of 100*l.* have been awarded to Mr. Jackson, of the Royal College of Art, South Kensington.

Mr. Jackson's drawings, which are of far more than average merit, comprise very careful and painstaking water-colour delineations of the ceilings of Raphael's Loggia at the Vatican, mosaics from San Clemente at Rome, the painted barrel vaulted ceiling (by Luini), the later frescoes (by Ferrari), of the dome, and other drawings, sketch plans and elevations of the Santuario Soronno.

Studies from nature of chrysanthemums and three drawings of ornament, showing the conventional application of the studies, a design for a panel and a charmingly coloured representation of a Della Robbia-ware panel from the Pazzi Chapel, Florence, a tempera study after Raphael, and many other beautifully executed sketches and studies are also submitted, and Mr. Jackson is to be highly congratulated upon his brilliant exhibition of thoroughly good and conscientious work.

Mr. Atkinson sends a goodly array of very clever water-colour sketches and measured drawings of well-chosen subjects from notable buildings in Florence, Ravenna, Siena, Rome and Venice, and a finely drawn and coloured design for a lounge and staircase. Mr. Atkinson's drawings are all of a very charming character, but unfortunately, with one or two exceptions, they seem to bear no particular reference to the requirements of a studentship primarily founded for the special study of ornament and coloured decoration.

(III.) *The Pugin Studentship.*

Three applications were received for this studentship from the following, viz. Mr. F. Townson Clark, Mr. A. G. Margetson and Mr. Wilfred I. Travers; and the medal and the sum of 40*l.* have been awarded to Mr. A. G. Margetson.

Mr. Margetson's measured drawings, which are superior to his perspective sketches, include careful delineations of the organ screen and chapter-house doorway from Southwell, a bay of the arcading from the lady chapel at Ely, and other studies. The pencil perspective sketches include drawings of St. Mary's Church at Oxford and many of the collegiate buildings of that city.

Another competitor, Mr. Wilfred Travers, submits many good pencil sketches of well-chosen subjects, including

drawings of the old schoolroom at Uppingham, the Palladian Bridge at Bath, a pier of the Lion gate at Hampton Court, the Guildhall, Peterborough, and others from Gloucester and Lincoln Cathedrals, Crowland Abbey, &c.

Unfortunately Mr. Travers's measured drawings are few in number, and the examples selected for illustration comparatively unimportant.

Mr. Clark sends pencil and water-colour sketches of some of the colleges at Oxford, and a rather weakly delineated measured drawing of no very great interest.

(IV.) *The Godwin Medal.*

Only one application was made, and the Council was unable to award the bursary for this year.

(V.) *The Tite Certificate.*

No less than twenty-one designs for a Loggia for Sculpture were received, and the prize has been awarded to the author of the design marked "Vignola," Mr. G. Salway Nicol, of Birmingham. Mr. Nicol's design fully deserves the honourable position it has obtained, as it possesses the indispensable architectural qualities of good proportion and effective enrichment; but exception must be taken to the manner in which the short entablatures of the Ionic columns (which serve as the impostes of the large semicircular arches) are broken against small rustic pilasters, carrying cartouches, placed in the spandrels of the arches. The pencil perspective drawing scarcely does justice to the undoubted merits of the design.

The author of the drawings marked "Nisi" receives honourable mention for a well-thought-out design, of which the architectural treatment of the main block is decidedly good; but the general effect of the composition is irretrievably spoiled by the relative want of scale apparent in the side colonnades, of which the diminutive Ionic orders and small pavilions seem to bear no architectural relation to the stately and monumental appearance of the main building. Portions of the perspective view are out of drawing, notably the entablatures crowning the coupled Doric columns.

Among other prominent designs, that by "Hermit" is conspicuous for many good qualities, but it is conceived on too ambitious a scale; whilst the design by "Vita," although more in accordance with the spirit of the instructions, is illustrated by rather weak drawings. "Gradus" submits a carefully-thought-out scheme, accompanied by good drawings. "Spread Eagle's" perspective is a poor one, and the author of the design "Forced Draught" has rather allowed his imagination to run riot with his judgment.

"Valhalla's" drawings include a vigorous pencil perspective sketch, in which, however, the Ionic orders do not appear to be very correctly drawn, and the author of the design marked with the device of a "Wreath" submits some carefully delineated elevations. "Heart-easing-Mirth" sends some well-prepared drawings, and "Orne" a wreath set, of which the details are said to be taken from the north porch of St. Paul's Cathedral. The drawings of "Ecclesiastes" are effectively prepared in coloured ink, and "Delta's" elevation is well drawn, but his perspective is unfinished.

"Si Jeunesse savait si Vieillesse pouvait" submits an elaborate design in the French style. The drawings of "Ionicus" and of "Vincit qui patitur" are weak. "Robinson Crusoe" sends a rather crude detail and a poor perspective. "Meg's" design has merit, and "Crown's" is well thought out and illustrated, although the perspective view is spoiled by its heavy colouring. The design of "Altiora Petamus" is fairly good, but the outline perspective is weakly delineated, and "Cheiro's" unambitious scheme is suitably arranged.

The Arthur Cates Prize.

Competitive drawings for this prize were received from Mr. W. W. J. Calthrop, Mr. Frank Dyer and Mr. W. I. Quirke. The prize has been awarded to Mr. Calthrop, who has submitted a number of sketches and measured drawings of well-known examples, including the beautiful centre bay of the south front of Wilton House, the Palladian Bridge at Prior Park, the Banqueting House, Whitehall, and the cloisters of Norwich Cathedral. A sheet of working drawings for a stone dome are also included in the successful competitor's exhibits.

Mr. Quirke sends a set of well-executed measured drawings of the church of St. Nicholas, Old Shoreham, and other studies, including a perspective view and measured drawing of the portico of the church of St. Martin-in-the-Fields, and a well-executed sketch of King Henry's Gateway at St. Bartholomew's Hospital.

Mr. Frank Dyer's selection of drawings comprises a sketch of the tomb of Archbishop de Grey, from York Minster, and one of an oriel window from Lincoln Cathedral. St. Mary's Church, Beverley, York, forms the subject of the measured drawings submitted by this competitor.

The Grissell Gold Medal (for Design and Construction).

Four designs were received in competition for this prize, the subject being a grand stand, constructed of timber, on a racecourse. The medal has been awarded to Mr. W. A. Mellon, the author of the drawings marked "Royal Ascot," who has submitted a clever design of a Renaissance type, which, however, is marred by the introduction of a large semicircular shaped laminated timber rib placed over the central entrance and presenting a rather incongruous appearance.

The design by "Sceptre" appears to be worked out on perhaps more practical lines than that selected for the prize, and its suitable architectural treatment is well illustrated by a meritorious set of drawings.

The designs of "Hurst Park" and "Video" are of a commonplace type of architecture, but the plan of each of these competitors possesses merit, and the practical requirements of a building of the class in question have evidently been well considered.

In conclusion, I must compliment this Institute upon the wonderful zeal and praiseworthy self-denial of those students who have taken part in its competitions for the current year, as is proved by the enormous amount of time and study expended upon the designs and drawings it has been my privilege to examine and admire. I heartily congratulate the prize-winners upon the successful results of their labours, and to those who have been unsuccessful in the struggle, I would point out that an architect's success in the subsequent practice of his profession is not necessarily dependent upon his all-conquering career as a student. Finally, while I can scarcely expect that my estimate of the architectural value of the work submitted will be endorsed in every instance by the competitors, yet I am sure they will all credit me with having founded it upon a perfectly fair and impartial basis, and I advise any student who may, perhaps, feel momentarily disposed to take umbrage at my remarks, to solace himself with the comforting reflection contained in Byron's well-known lines, viz :—

A man must serve his time to every trade
Save censure. Critics, *all* are ready made.

Professor F. M. SIMPSON proposed a vote of thanks to the President for his address, and to Mr. Cross for his careful review of the students' work. The speaker reminded the meeting that last year he was selected to play the part of critic when the work submitted in the competitions was exhibited, and he said he found it difficult to preserve a balance between praise and public censure. The distribution of prizes he thought was always an interesting event in the history of the Institute, but he wished to see more importance attached to it. The work of the students of architecture was a matter of deep concern to their body, for it was by the quality and amount of that work they were able to take account of the ability and energy of the youth of their profession. In alluding to the prizes themselves, Professor Simpson said he had some hesitation on one point. It was true that travelling studentships were greatly coveted, but one might be permitted to doubt whether they were an unmixed benefit. The habit of regular work was difficult to acquire and of enormous value to the student, yet, at the beginning of his career, having gained a travelling studentship, he was released from all discipline and supervision, and off he went to wander where his fancy bade him, to study good or bad art in his own way. Professor Simpson admitted that in some cases travelling studentships had produced good results, but at the same time there were instances where study in that form had resulted in unsettling the student's mind. In this respect France set a good example, and the method of training offered to students in the Villa Medici was one that might be followed by our own students, but he thought it was perhaps hopeless to expect the Legislature to be interested in the importance of a British school of fine arts in Italy.

Mr. J. M. MONRO seconded the motion.

The President then distributed the prizes and studentships:—Essay medal and twenty-five guineas: silver medal and cheque, 26*l.* 5*s.*, to Mr. Victor D. Horsburgh; certificate of hon. mention to Mr. A. Halcrow Verstage. Measured drawings: certificate of hon. mention to Mr. R. Wynn Owen; David Robertson. Mr. Owen I not agree with the award of the Council, and declined his certificate. Same medallion and 100*l.*: medallion to Mr. Harold

Cooper; certificates of hon. mention and cheque, 10*l.* 10*s.* each, to Mr. Anthony R. Barker, Mr. A. J. Pitcher. Owen Jones studentship and 100*l.*: Owen Jones certificate to Mr. Arthur R. H. Jackson. Pugin studentship and 40*l.*: Mr. A. J. Margetson was presented as the successful student. Tite prize and 30*l.*, augmented by 20*l.* from Wimperis Bursary: Tite certificate to Mr. G. Salway Nicol; certificate of hon. mention and cheque, 10*l.* 10*s.*, to Mr. P. Napier Hemy. Arthur Cates prize, forty guineas: cheque to Mr. W. W. J. Calthrop. Grissell gold medal and 10*l.* 10*s.*, augmented by 10*l.* 10*s.* from Wimperis Bursary: medal and cheque, 21*l.*, to Mr. W. A. Mellon. Ashpitel prize: books value 10*l.* to Mr. J. T. Halliday. Godwin Bursary, 1906: medal and cheque, 35*l.*, to Mr. H. Inigo Triggs. Pugin student, 1906: medal and cheque, 40*l.*, to Mr. G. Drysdale.

DECORATION OF THE PALACE OF WESTMINSTER.

IN last July it was resolved to appoint a select committee to inquire and report with respect to the unfinished condition of the rooms in the Palace of Westminster appropriated to the service of the House of Lords, and their approaches. The following members were nominated:—Marquess of Cholmondeley, Earls Brownlow, Carlisle, Liverpool, Lytton, Plymouth, Lords Denman and Stanmore. The chairman was Lord Staunton. There were several meetings, and various artists gave evidence. Finally, their lordships stated that owing to the short time at their disposal they were unable to bring their inquiry to a conclusion, and recommended that they should be reappointed during the next session of Parliament. The following evidence was given by the first witness, Sir E. J. Poynter, P.R.A.:—

Chairman.

You are the President of the Royal Academy?—I am.

Are you acquainted with this building, and the apartments in it?—Yes, I went over it with your lordship yesterday.

What is the impression you have formed in regard to the interior of the building as to whether architectural ornament or painting should be the dominant feature as regards decorative treatment?—I have considered that point, and it appears to me that the architect almost settled that for us by providing everywhere spaces which were intended to be filled with pictures.

Are you aware that the architect did that somewhat under duress, and that it was not part of his original design?—I did not know that.

Sir Charles Barry's original design provided in many places for arcading and architectural ornament, but the Fine Arts Commissioners required the spaces for pictures, and he had to alter his design accordingly.—I was not aware of that, but as it stands the spaces are so provided, and it would be a little difficult to know what kind of architectural decoration would be suitable; to take this room, for instance, I do not quite see how architectural decoration could be carried out in the spaces provided.

Not in this room, but in some parts of the building it might be done?—In some parts of the building it appears to me it might be done.

May I ask in what parts of the building you would suggest such architectural treatment?—Those rooms where some of the panels are already treated with paintings it would be necessary to carry out the work in the same style. For instance, in the room which is decorated with Mr. Burchett's paintings of the kings and queens of England, the upper panels are left as if for wall-paintings; but I do not see why an architectural treatment should not be introduced in the upper panels. Paintings above paintings in regular order do not look very satisfactory, but arcading judiciously introduced into the upper panels would relieve the monotony of the room and would provide spaces perhaps for paintings of single figures or small groups, or such panels might be filled with sculptured decoration. As an instance I might refer to King's College Chapel at Cambridge, where carved coats of arms fill some of the panels very effectively; and there is a more conspicuous instance of it in Toledo, in the church of San Juan de Los Reyes, where there are magnificent coats of arms filling the panels with a very splendid effect. Or subjects in bas-relief or any other form of sculptured decoration might be introduced.

Is there any other part of the building you saw yesterday which you think would be more suitable to architectural

than to pictorial treatment?—I think in almost all the other rooms some of the panels are already treated with paintings, except in St. Stephen's Hall. There the panels are so evidently suited for wall-painting that I think it would be a pity to fill them up with architectural decorations. Architecture is already prominent in St. Stephen's Hall, and the wall spaces are well suited for some kind of pictorial decoration.

If a pictorial decoration were adhered to what, in your opinion, would be the relative merits of keeping them on a very large scale, or of a reduction in the size of the panels?—I should think the panels might in some instances be reduced by borders within the framing of the panels—decorative borders enclosing the picture. I do not think that ought to be carried too far; wall-paintings on the heroic scale are most effective. The paintings in the Royal Gallery, for instance, in the House of Lords are more effective than the paintings in the corridor, which are on a smaller scale. When the paintings are near to the eye the defects of the design or workmanship are more visible than when they are high up. The fault of the paintings in the corridors lies in their being treated more in the style of enlarged pictures than as decorative works. I can imagine that pictures in the corridors treated more decoratively would have a good effect, but on the whole I think the large paintings are more effective. Placed high and above the eye, they demand a large style of treatment and afford more scope for design and for the encouragement of a dignified style of decorative art.

Earl of Plymouth.

With regard to what you have just said, St. Stephen's Hall is another instance where the decoration would be rather lower down. It comes below the windows, does it not?—Yes. Of course, what I say is subject to limitations. The effect in the corridors is certainly not good, but whether this is due to the fact of the paintings being too near the eye or to their not being suitable to the architecture is doubtful.

What I had in my mind to ask you was this: the architectural treatment, so far as St. Stephen's Hall is concerned, would have, I suppose, to follow the Perpendicular style—that is, you would have to treat the wall as plain stone with mullions brought down through the stonework?—Yes. As regards the architectural work I ought to have said that everything, of course, ought to be done in accordance with the style of the building.

It would convert it really into a stone hall without any other decorations?—Yes; you mean that the decoration would be by perpendicular mouldings carried through from above.

Yes; and it would depend entirely upon the glass windows for any colour in it?—Yes. Of course there is an enormous amount of space provided for painting, and it would be a very long time before it could all be filled up. It would be an advantage in that way to have one of the rooms treated with the arcaded panelling. There is plenty of scope for painting still in the Royal Gallery and on panels in the other rooms which are not painted, without beginning on St. Stephen's Hall.

Chairman.

With regard to that I would like to ask you to look at the drawing in this book, where the marker is put in, of an arch in St. Stephen's Chapel. (The drawing is placed before the witness.) In your opinion, is not that kind of painting more in consonance with the feeling of the Perpendicular style than large paintings?—You mean the painting of these figures in the panels? I think perhaps they are more in accordance with the style of the building, but I do not think one should adhere too strictly to style in these matters. There are places about the palace in which the kind of decoration shown in this drawing might be appropriate, but I think it is possible to be too pedantic in the endeavour to be consistent, and produce an imitation of a Mediaeval building. I do not think that an exact adherence to style in all details is absolutely necessary—it is only necessary that there should be some accordance with the style of the work all through.

Earl of Carlisle.

In looking round the building, have you formed any opinion as to the comparative claims of the different spaces for treatment?—You mean for immediate treatment, I presume?

Obviously it would be impossible to undertake the whole of the work at once. I presume whatever is done would have to be done gradually. Have you focussed any

opinion as to what spaces or what parts of the building most pressingly require treatment, and what, supposing work is done, it would be best to begin with?—It appears to me the wisest thing would be first to complete the halls or galleries that are at present incomplete; for instance, the Royal Gallery, where Maclise's paintings are, is at present partly filled with paintings, but there are several panels which are not filled. It is the same, I believe, with the King's Robing Room—there are a certain number of Dyce's beautiful paintings, but three or four panels are not filled at present; I should have thought the right thing to do was to begin with the work of completing the unfinished rooms.

Chairman.

None of the panels are filled in St. Stephen's Hall?—No.

Earl of Carlisle.

But your view is that it would be desirable to complete things that are already begun?—I think if it were my own house that is what I should prefer. I am not making any objection to beginning with St. Stephen's Hall, but it appears to me that the other would be the more obvious course.

I was asking you what you thought would be the best place to begin with, and you say the Royal Gallery?—I should say so; if I had the control of it that is what I should do.

Chairman.

I think you are the designer and executer of the two mosaics in the central hall?—Yes, those were my work.

There are two panels vacant there still, I believe?—Yes and there are other panels in the building that might be dealt with in the same material. There are some panels still vacant over the paintings in one of the rooms where mosaic decoration would be effective. I do not think mosaic suitable for any position near the eye, but where there are upper panels they might be decorated with mosaic with great effect, partly because mosaic always looks best with reflected light, especially if there is gold in it—it does not look well in a direct light, because the gold always overpowers the colouring—but where you have a reflected light and the gold does not receive a direct light a gold background to a mosaic is extremely beautiful. I should certainly confine mosaic to the higher part of the building.

Then I pass to the next head, about which I wanted to ask you, which deals with just that subject, namely, in what proportion you think these spaces might be most appropriately filled, whether by painting, mosaic or tapestry, and whether there are any parts of the palace which appear to you to be more suitable to any one of these methods of decoration than the others?—Tapestry is very effective anywhere. Very large tapestries would be very effective in a room like this, for instance, but I do not see why the panels in St. Stephen's Hall should not be filled with tapestry—it would be very effective. Tapestry must be put in a good light, as it absorbs light; it is no use putting tapestry in a room where there is not plenty of light. But I suppose there would be great difficulty in getting tapestry suitable for the purpose.

Do you mean difficulties of expense?—And also difficulty in finding it. I do not know whether, in speaking of tapestries, you refer to getting ancient tapestries or to having tapestries made.

I was at the moment thinking of the Morris tapestry in Exeter College?—I have not seen it there. You mean, take it, that it would give an opportunity for promoting a school of tapestry. I think tapestry would look very well in St. Stephen's Hall.

(To be continued.)

The Curator to the Liverpool Corporation, in his report to the library, museum and art committee on the Holman Hunt Exhibition, states:—It has been more than usual difficult to obtain the results desired, because a large number of Mr. Hunt's more important pictures have already been out of their owners' possession for several months. The London and Manchester exhibitions, and there has been a natural unwillingness to be deprived of them for a further period. The curator, however, is glad to report that eight of the eighty-four pictures on view at Manchester have been secured, that five of the seven pictures previously shown at London, but not at Manchester, have been secured, and that in addition nineteen works not previously shown at any recent exhibition, several of the first importance, have been added to the list. One or two others may possibly be secured. There is, therefore, good reason to hope that the exhibition will be by far the finest collection of Mr. Holman Hunt's work ever shown.



A New System for Building Houses, &c.

SIR,—After long and careful consideration and making experiments and tests, I have arrived at the following conclusions:—A dwelling-house should be thoroughly dry, vermin-proof, weatherproof, fireproof and well ventilated. To do this successfully the timber employed must be old and well seasoned. After being cut to the sizes required—viz. rafters, beams, joists, &c.—these must be prepared with wood preservative, which is a preventive against vermin, fungi, dry rot, &c., so that the timber can be placed in water (if necessary). The timber-frame house can then be filled out with thin asbestos cement slabs, both externally and internally (ceilings, walls and floors). These asbestos cement slabs are extremely strong, fireproof, sound-proof, vermin-proof and weatherproof, and resist damp rising from the soil, such as a clay soil, &c. The spaces between the exterior and interior asbestos cement slabs to be filled out with broken bricks, concrete, mortar, &c. All timbers, either externally or internally, to be painted with asbestos fireproof paint. This paint dries hard, does not blister, crack or peel off, either under the sun's heat or the fiercest fire; the roofs to be covered with asbestos cement slates, which are much cheaper than the natural slates or tiles now in use. They are unbreakable and indestructible, and can be used over and over again, such as taken from old roofs and fixed again on new roofs. Buildings erected upon this system can have much thinner walls than either stone or brick buildings, and are far stronger and last longer, requiring no repairs, such as repointing, reslating and replastering, &c. All the materials are much cheaper, stronger and better than those in use at the present time. Directly a house is built it can be inhabited, as there is no waiting for plaster or cement to dry, &c. Building operations can be carried out in any season of the year according to my system. These houses being built of a non-conducting material are warm in winter and cool in summer, and are especially suitable for motor-houses, boat-houses, railway stations, sheds and all buildings where there is a large traffic going on, also cold storage, fireproof warehouses and offices, &c. According to this system old buildings can be made fireproof, weatherproof, damp-proof and strong at a comparatively small cost.—I am, sir, your obedient servant,
HENRY H. B. SANG, architect.

An Architect's Dilemma.

SIR,—Could any of your readers advise me under the following circumstances? I had a client I designed and superintended the carrying out of ten villas for. An objection was that we had provided too many rooms, mostly small (against my wishes), and although they all let this difficulty arose whenever he was letting. He had more land, and I designed some twenty more, getting over that difficulty, rents ranging from 45*l.* a year to 75*l.* My client died suddenly about two months back, and no correspondence had taken place between us, and no witness can be produced of my preparing these further plans and elevations at his request. His executors now repudiate the whole affair, and have instructed the local auctioneer and surveyor to prepare plans. Have I any redress, and if so, can I commence proceedings? My solicitor thinks I have a very poor chance, and suggests my not attempting it. Thinking possibly some of your readers may have had a like experience, I venture to ask you to publish this letter for

A YOUNG PRACTITIONER.

British and Foreign Marble Working.

SIR,—In explanation of enclosed letter and its delay in being forwarded on to you, we beg to state that the meetings of our Association are held every Saturday evening, and upon your issue of January 25 being brought to our notice (the same evening), the members voted that a letter should be drafted and read at the next meeting, which was duly done on the 2nd inst. It was then voted that we forward the same on to you, trusting you will do us the honour of publishing the same.—Signed on behalf of the Stone Carvers' Trade Association,

H. J. HERRIDGE, President.

ALBERT E. HARRIS, Vice-president.

Sir,—After perusing the account of the R.I.B.A. meeting in your issue of the 25th ult., some of the chief points were

discussed by the members of the Stone Carvers' Trade Association, who have long deplored the apathy shown to the British workmen in the marble trade.

In recent years carvers in this country have suffered to the extent of many thousands of pounds by imported worked materials, and in some cases grave suspicions rest on the British employer as to whether he has not for his own personal ends subcontracted work to foreign manufacturers and passed the same off as the work of British craftsmen.

It is a fact that a large marble hall erected on an estate in Suffolk a few years ago was mostly worked in a foreign country by foreign workmen from models actually taken from the small portion done by our own carvers and masons in London, who were thus in the unenviable position of knowing that the bulk of the money would go to the foreigners for copying that which British brains had supplied. So this instance proves in itself it is not the incompetence of our craftsmen to carry out the work.

One of the authors is reported to have said in the opening paragraphs of his lecture:—"He laments the fact that the bulk of the money spent in marble in this country should go to foreign manufacturers and workmen." We, the members of this Association, would like to ask him if he has not placed many of his works in the hands of the foreigners to the detriment of the workmen of this country?

The same author also says, "He regrets that this country imports annually thousands of tons of ready-made monuments in marble and granite for cemeteries and churchyards, most of them devoid of artistic character of any sort." With these remarks we are sincerely in accord, and we positively believe that if only three-fourths of the imported work was done in this country 90 per cent. of the masons and carvers at present out of employment would have plenty to do.

Mr. Hugh Stannus, in his reply, remarks on "The wonderful development of the use of marbles in their theatres, restaurants, town halls and other public buildings." We ask, is it not most deplorable that the public officials should permit the public money to be spent in a foreign country on work which could be done at home to the mutual benefit of those who help to raise the funds?

THE MEMBERS OF THE STONE CARVERS'
TRADE ASSOCIATION.

"The White Bear," Kennington Park Road, S.E.

Letchworth Housing Exhibition.

SIR,—The importance of matters that affect housing is now so widely recognised that we venture to draw the attention of your readers to the exhibition of urban cottages and homesteads for small holdings to be held at the Garden City, Letchworth, this summer. The project is an attempt to develop and extend the experience gained by the Cheap Cottages Exhibition of 1905, while avoiding the defects—some of them inevitable in a new project—for which that exhibition was criticised. In the exhibition for this year prizes will be offered in seven classes, arranged according to cost of erection, which will be held to include architect's fees and builder's profits. In the urban section, the limit of cost will vary from 175*l.* to 240*l.* for each house; in the small holdings section from 200*l.* to 300*l.*; while there will be a separate class for the best artisan's cottage not limited as to cost. It is hoped that the fullest scope will thus be given for the building of comfortable and well-designed houses, suitable for artisans and allotment-holders. With regard to cost of erection, effectual means will be taken to provide that all buildings entered for competition are entered at the price for which they can actually be erected. Not only will detailed specifications in every case be required, but all competitors will have to undertake, either to sell their cottages to the Garden City Co., if called upon to do so, at the price quoted in the catalogue, or to erect on the estate other cottages exactly similar at the same price. On the other hand, when the cottages are not taken over a rent amounting to 6 per cent. on the stated cost in the urban section and 5 per cent. in the small holdings section will be guaranteed to the exhibitor for a period of five years. The arrangements will thus be placed on a thoroughly sound and businesslike footing, and practical results of the utmost value to municipalities and others engaged in building work may be looked for. The present rapid development of Garden City offers a unique opportunity for such experiments.

The project derives additional importance from the fact that the Annual International Housing Congress is to meet

this year in London. One of the first excursions of delegates attending that Congress will be to the Letchworth Garden City to visit this exhibition.

On these grounds we desire to make a double appeal for support—(1) to builders, architects, landowners and others to enter for the competition, the plans for which must be submitted not later than February 28; and (2) to the general public to contribute to the prizes fund.

The liability for working expenses will be borne entirely by the First Garden City, Ltd., on whose ground the exhibition will be held; but a separate fund, which will be administered by our committee, is being raised for prizes. Donations to this fund should be sent to Messrs. Barclay & Co., Hitchin, Herts, or to the hon. secretary, Mr. W. V. Cooper, at 326a High Holborn, W.C., from whom full particulars may be obtained.—We are, yours faithfully,

(Signed) SALISBURY, President.

PHILIP MORRELL, Chairman of Committee.

W. THOMPSON.

F. E. FREMANTLE.

W. V. COOPER, Hon. Sec.

GENERAL.

The Exhibition of the remaining works of the late James Charles will open on the 9th inst. at the Leicester Galleries, Leicester Square. All periods of his work will be represented in about seventy canvases, and the exhibition will also include some water-colours and black and white drawings.

The Secretary of the Scottish Patriotic Association has received from H.M. Office of Works the following communication, indicating the non-success for the present of Mr. D. M. Smeaton's efforts to have the Borestone scheduled under the Ancient Monuments Acts:—"Referring to your letter of the 24th inst. and to previous correspondence on the subject of the proposal to place the Borestone of Bannockburn under the guardianship of the Commissioners of H.M. Works under the provisions of the Ancient Monuments Acts, I am directed by the First Commissioner of His Majesty's Works, &c., to state, for the information of your Association, that the Board have been in communication in the matter with the proprietor, who, while expressing his willingness to entertain any suggestions, is not prepared to accede to the transfer." The Borestone is situated on the estate of Mr. James Murray, of Polmaise, and lies close to the old Roman road at Bannockburn.

The Lord Provost's Committee of Edinburgh Town Council had before them a suggestion by the markets committee that the new art school to be erected on the site of the Lauriston cattle markets should be built in sections, so that while one section of the school was in course of erection the remainder of the site would be available for the purposes of the cattle market. The suggestion was made in view of the fact that it will be some time before the new markets at Gorgie are completed. It was remitted to a sub-committee to consider whether the proposal, if it were given effect to, would seriously delay the erection of the art school buildings.

The Vicar of Selby states that the work of restoring the abbey has now been seriously commenced. Contracts have been let for the roofing of the entire building. The lower piers are to be underpinned forthwith, and there can be no doubt that, given fair and open weather, the nave will be reopened for services in the autumn of this year. The anniversary of the calamity, October 20, will fall this year on a Sunday, and the latest date for the reopening of the nave must, the rev. gentleman states, be the eve of the fire, viz. October 19.

A Pre-Reformation Altar, dug up from the floor of Almington parish church, near Chepstow, has been fixed in the church. The Church Association has protested to the Archbishop of Canterbury, stating that the "altar is a Roman Catholic altar, and inviting the Archbishop to take such steps as were fitting to secure the speedy restoration of Almington Church to a due conformity with the ritual requirements of the Protestant religion." The Archbishop in reply said that it did not appear that the question was one with which he had anything directly to do.

Sir John Wolfe Barry will act as arbitrator between the Guildford Corporation and the Woking Water Company in regard to the purchase by the Corporation, under their recent extension order, of part of the company's undertaking. The company ask for 105,000*l.* and the Corporation offer 18,700*l.*

The Fifty-fourth Annual Meeting of the American Society of Civil Engineers was held in New York on January 16 several hundred corporate members being present. The Norman medal was awarded to Captain John S. Sewell, U.S.A., for a paper entitled "Economical Design of Reinforced Concrete Floor Systems for Fire-resisting Structures." The Thomas Fitch Rowland prize was given to Messrs. W. F. Denis and Geo. B. Francis for a paper on "The Scranton Tunnel of the Lackawanna and Wyoming Valley RR." No award of the Collingwood prize was made this year. The Society voted to issue a letter ballot to determine whether a committee shall be appointed to investigate the status of engineering education and recommend measures calculated to place it on the highest plane of efficiency.

It is Proposed to provide a new vicarage for Burgess Hill Sussex, at an estimated cost of 2,000*l.*

Messrs. Ould & Grayson, of Liverpool, have been appointed architects for the secondary schools to be erected by the Cumberland education committee. A proposal to obtain designs by competition was rejected.

M. Coutan, sculptor, is to receive the sum of 2,000 francs bequeathed by the late M. Lheureux for the encouragement of art.

The Committee for the erection of a memorial to Aspatia to the late Sir Wilfrid Lawson have met. Mr. Roselieb, the sculptor, and have decided to retain St. George and the Dragon as the surmounting figure above the drinking fountain. Lord Carlisle, who was called in to adjudicate on the designs submitted, had suggested a figure of St. Michael.

A Tablet is to be fixed by the London County Council on 33 Ampton Street, Gray's Inn Road, W.C., which was the first London residence of Thomas Carlyle.

M. Albert Thomas, who was one of the best known French architects, has died in Paris. A native of Marseilles he was winner of the Prix de Rome in 1870, and designed a part of the Grand Palais in the Champs-Élysées.

An Exhibition of drawings by the late Aubrey Beardsley was opened in Paris on Monday. It will close on March 2.

The Museum of the Hawick Archaeological Society is to be handed over to the local Corporation for the public benefit. The collections will be deposited in Wilton Lodge mansion-house, and the Society will contribute 450*l.* toward the cost of cases, &c.

The Main Drainage Committee of the London County Council state that as the third section of the sewer between Stepney and Trafalgar Square will, in its course, pass to the south side of St. Paul's Cathedral, they have been in communication with the representatives of the Dean and Chapter with regard to the manner in which the construction is to be carried out at this point, and they are satisfied with the proposed arrangements. It is anticipated that the work will be executed in the vicinity of the cathedral before the end of the year.

Mr. A. A. Hudson will read a paper before the Surveyors' Institute on Monday upon "The Ventilation of London."

Mr. G. H. Grocock, of Bedford, has been successful in the competition for the new schools at Newark-upon-Trent to accommodate 600 children.

The Croydon Borough Council is again in dispute with the London County Council over matters relating to the erection of houses on the estate at Norbury. On the plan recently presented for fifty-two new cottages the Spring Gardens authorities proposed a system of drainage not allowed under the Croydon by-laws. The Croydon Council has therefore decided to serve notices requiring a separate drain for each house with manhole and trap complete.

In a Review of a book on "Painters' Colours," which appeared on January 25, there was reference to "Charlton white." As our readers are aware, that paint was invented by Mr. J. B. Orr, who continues to manufacture zinc white on a large scale.

A Copy of Watts's fresco in the hall of Lincoln's Inn made by Mr. N. M. Lund, has been fixed in the Bar Library of the Royal Courts of Justice.

Lord Strathcona (High Commissioner for Canada) is informed by the Minister of the Interior at Ottawa that contractors in Canada state that 20,000 men will be wanted this year for railway construction. The Grand Trunk Pacific Railway Co. alone will require 10,000 men to conduct their summer operations.

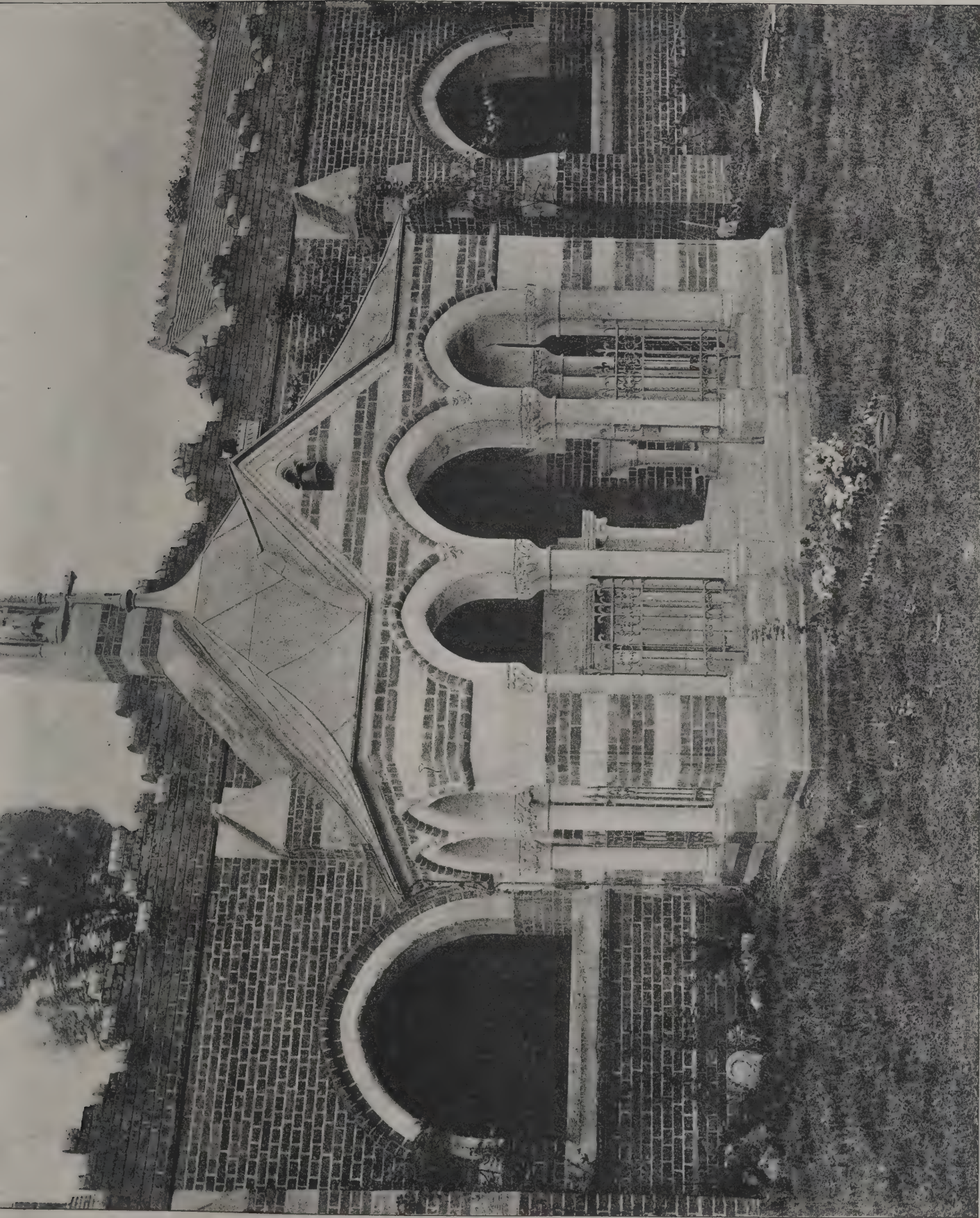


PHOTO BY CYRIL ELLIS.

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MEMORIAL CHAPEL CONVENT OF S. MARY OF NAZARETH, EDGWARE.

J. STANDEN ADKINS (Jas. Brooks, Son & Adkins), Architect.

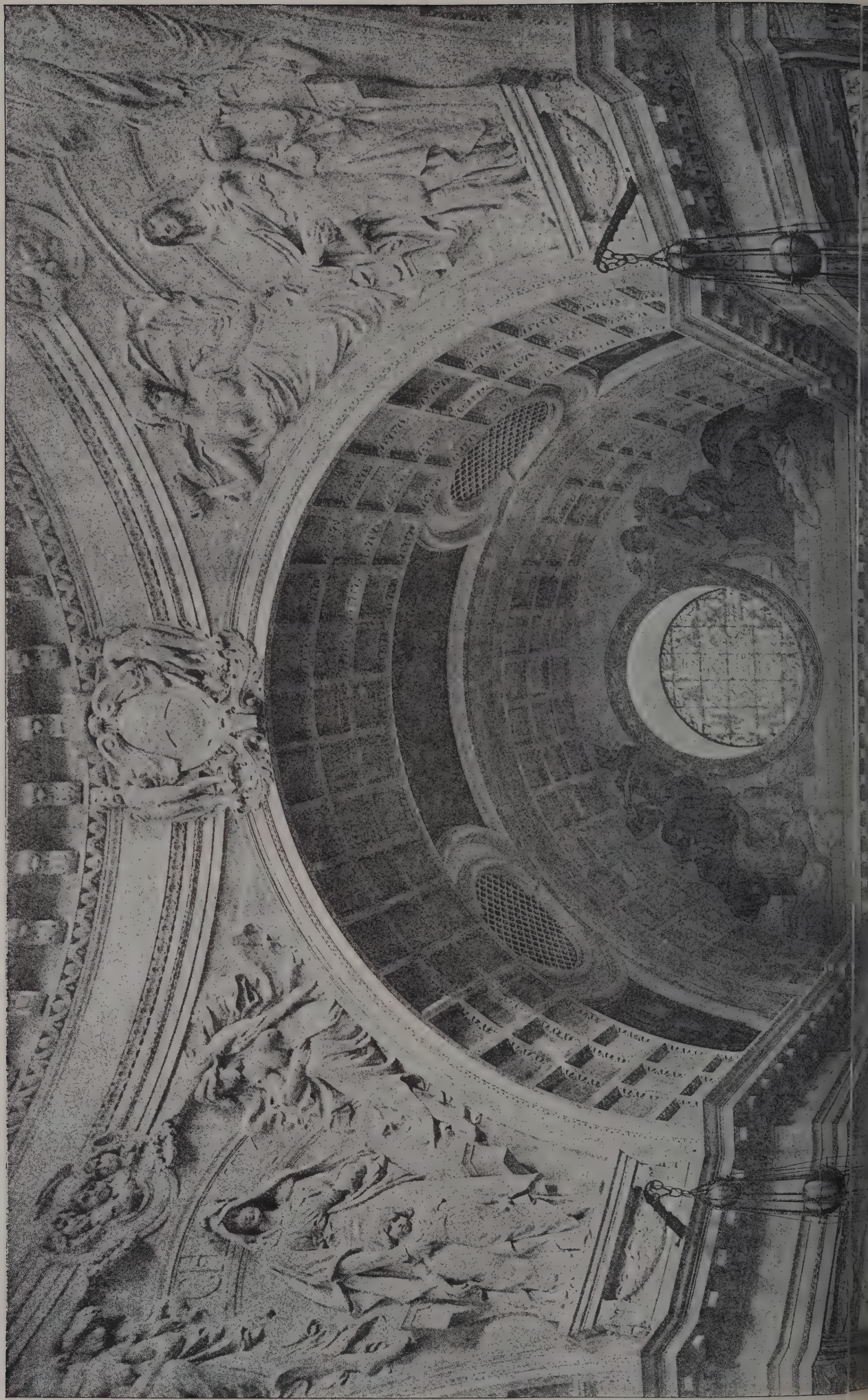


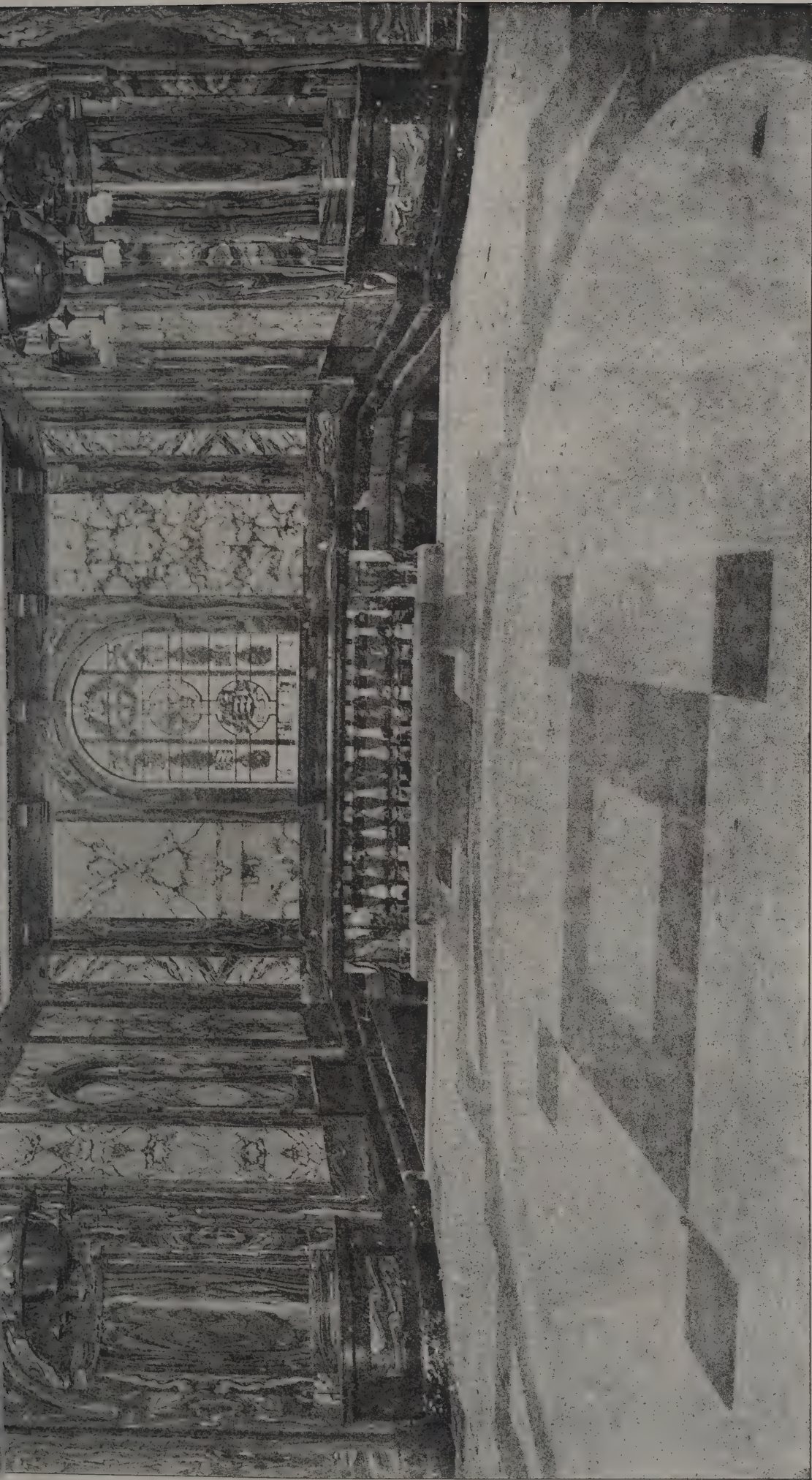
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REREDOS AND ORNAMENTAL PANELLING, WYCLIFF HALL CHAPEL.

W. WALLACE, Architect.

The Architect, Feb 8th 1907.





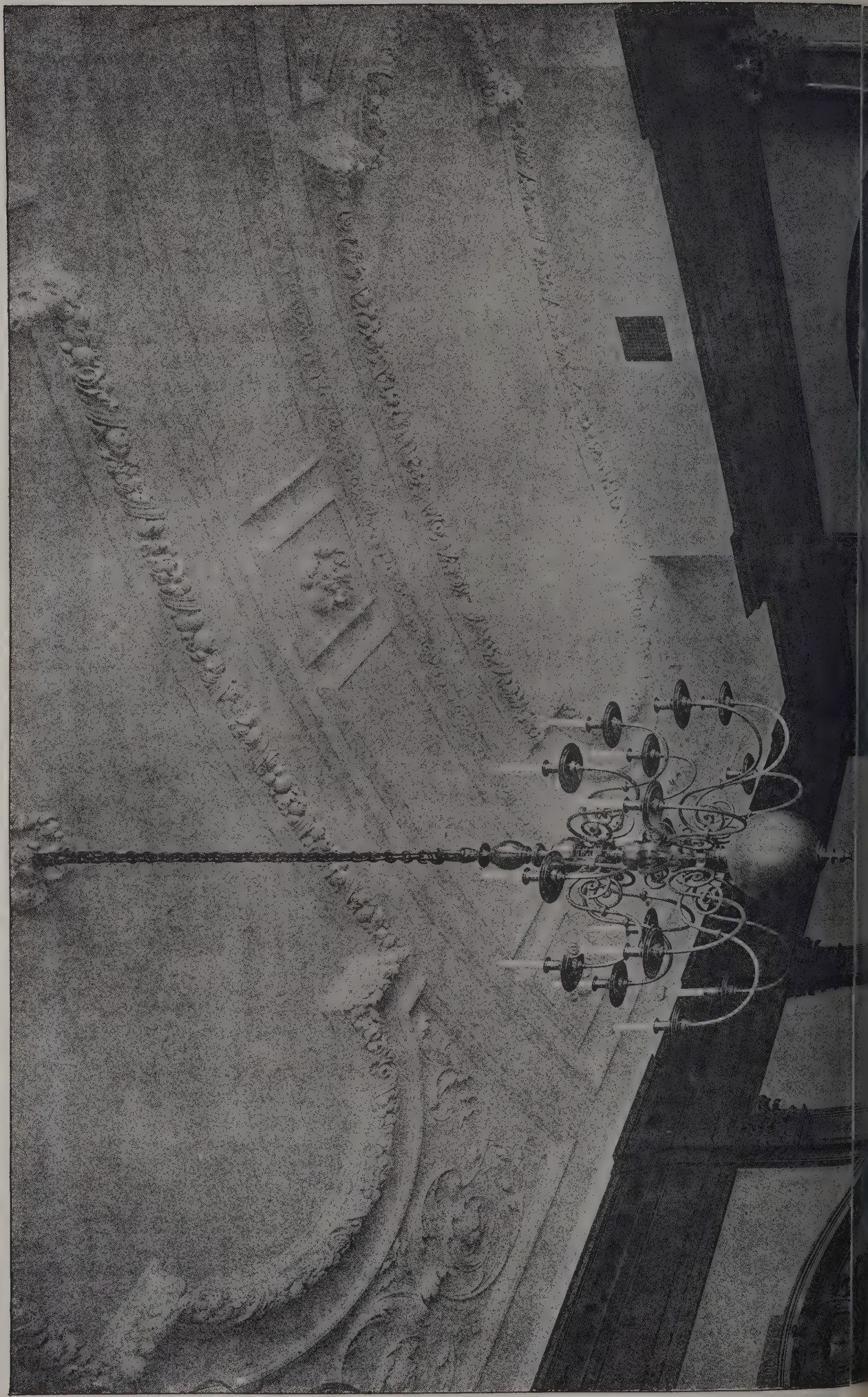
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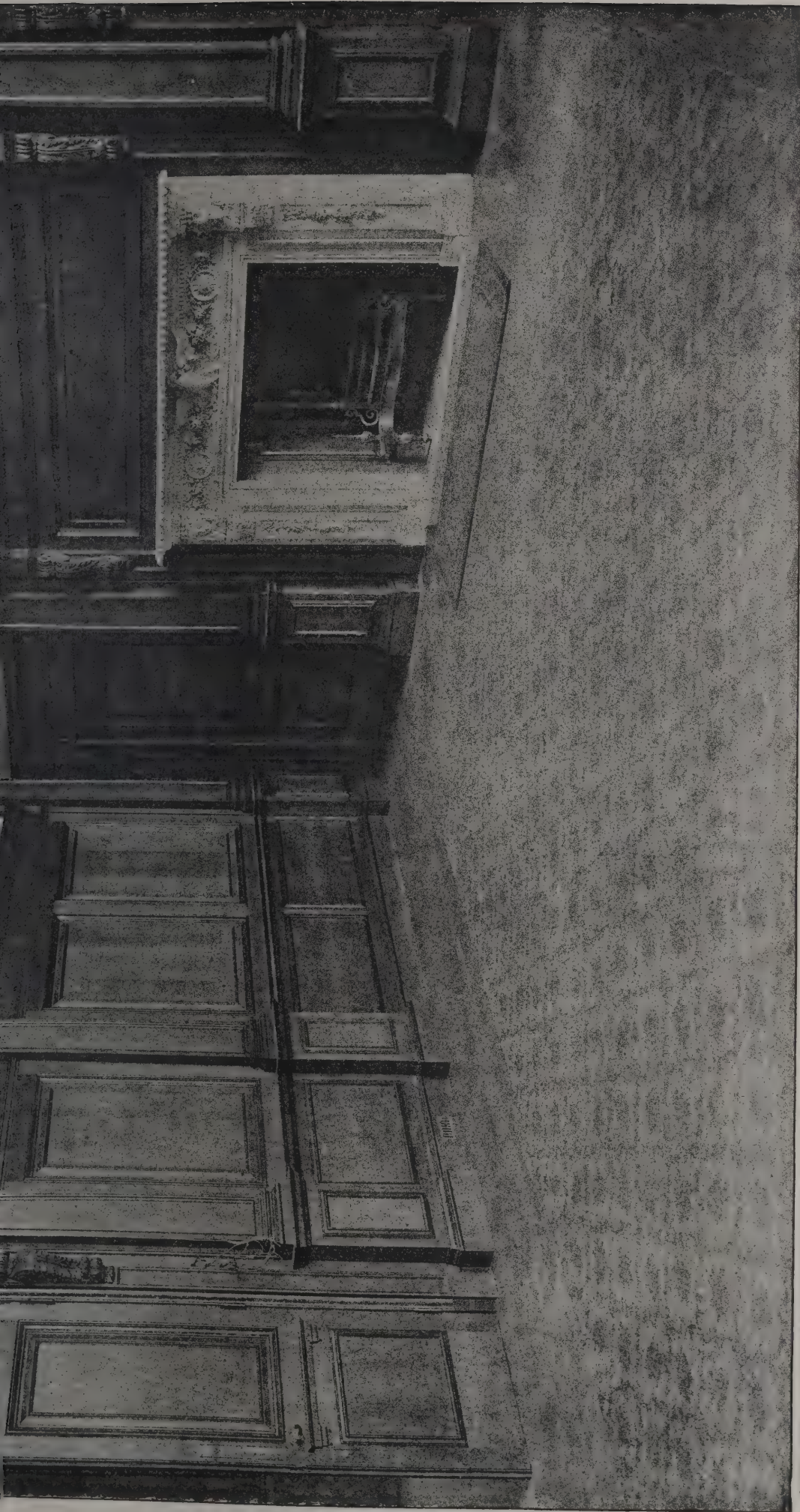
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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: TOP OF STAIRCASE.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

The Architect, Feb 8th 1907.





PHOTOGRAPH BY S. B. GILLIS & S. B. GILLIS, W.

INK PHOTOGRAPH BY S. B. GILLIS & S. B. GILLIS, W.

THE NEW WAR OFFICE, WHITEHALL: SECRETARY OF STATE'S ROOM.

The late WILLIAM YOUNG, Architect.

Carried out by CLYDE YOUNG, with the co-operation of Sir JOHN TAYLOR, K.C.B.

8th 1907



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TECHNICAL, WHITWORTH PARK.
Architects.

The Architect.

THE WEEK.

ALTHOUGH many memorials are set up every year in France, it is rare that one is made the subject of a law-suit. One reason, no doubt, is that each is generally the work of one artist. An architect may occasionally co-operate with a sculptor, but in the majority of cases the sculptor obtains all the credit. A departure from the old method has occurred in respect of the memorial to EMILE ZOLA, the novelist. As he was the most prominent representative of realism, it was decided that a realistic sculptor should have the commission. CONSTANTIN MEUNIER, the Belgian, some of whose representations of miners and ironworkers were seen last year in London, agreed to undertake the work. But he desired to have jointly with him ALEXANDRE CHARPENTIER, the French sculptor. The price of the work (which was to be divided between them) was 90,000 francs, and each artist was to pay all expenses for assistance, &c., which would be in his part of the work. The models were completed. There was to be a statue of ZOLA flanked by the figure of a workman and of a woman with a child. Symbolic figures seem now in favour, and standing behind the novelist was one symbolising Truth, who wore a crown of laurels in her hand. The committee could not approve of it, and it was decided to substitute a relief, to be placed on one of the faces of the pedestal representing ZOLA at the assizes, to which he was summoned for the part he had taken in the DREYFUS case. The bas-relief was to cost 9,200 francs, and it is over the division of that money the action now before the French Courts has arisen. MEUNIER is dead and the action is brought against his heirs by M. CHARPENTIER. The work was arranged to be delivered on June 1, 1906, and the committee expect to have it on April 1, 1907.

Two years ago the Bishop of BIRMINGHAM appointed a commission to report among other things on the new buildings needed in the diocese. Great care was exercised in ascertaining the requirements. The report has appeared. A great many central halls, mission-rooms and parochial rooms are called for. In some places there is also a necessity for churches and vicarages. The church of St. Mark, it is pointed out, is built with soft red sandstone and is rapidly decaying. It is recommended that the church should be pulled down and a new building erected. Various suggestions are offered about alterations in the boundaries of some of the districts. For that purpose a map committee was appointed and an invaluable map was produced. It would, however, be too costly to multiply and distribute, although if reproduced it would be a valuable gift to the diocese. In ascertaining the accommodation of churches and mission-rooms required, the committee assumed that the basis should be one sitting for every ten inhabitants. The calculation only refers to Birmingham and its suburbs, for in the country districts the churches are on the whole large enough, though in some parishes the accommodation needs to be increased.

THE resolution of the Cumberland education committee appointing Messrs. OULD & GRAYSON, of Liverpool, to prepare plans for a girls' school at Carlisle and a mixed school at Whitehaven has not been received with approval by the local practitioners. A petition signed by nineteen Cumberland architects has been sent asking that the subject should be referred back to the education committee, with a view of giving those who desired an opportunity of submitting plans in competition, subject to the usual arrangements and decision of a competent assessor. With their knowledge of what had transpired elsewhere in connection with schoolwork the

general rule was to confine work to architects practising in the county, and the petitioners asked that such a rule should be adopted in this case, or that an equal opportunity might be given to them of submitting designs in competition with other members of the profession. It was suggested that one school might be erected from the designs of the Liverpool architects, but that any others should be thrown open to competition. There was a long discussion, but eventually the action of the education committee was approved. Lord MORPETH said that from his own experience of competitions they were nearly all thoroughly bad. It was stated that the Board of Education had approved of the arrangement, and that Messrs. OULD & GRAYSON had erected secondary schools in various parts of England. The Chairman remarked, in reply to the statement that the petitioners were ratepayers, that if one of the Cumberland architects had been selected he might have produced plans which would not have met with the sanction of the education committee and caused considerable expense to the county. The architect would have benefited himself, but his brother architects and ratepayers would have had to pay a great deal more. He did not think it was an argument that should be used, that they ought to go to a Cumberland architect because he was a ratepayer.

THE report of the committee of inquiry into the working of the Royal Hibernian Academy and the Metropolitan School of Art is likely to be discussed in the House of Commons. The following memorial against the proposals has been presented:—"That we, the undersigned, beg to enter our strong protest against the recommendations of the majority of the Parliamentary Committee of Inquiry into the Royal Hibernian Academy and Metropolitan School of Art, which are aimed at depriving the Royal Hibernian Academy of its academic function, as this must inevitably tend to its abolition and the discouragement of art in Ireland. We consider this to be a most untimely proposal at a moment when so much independent effort is directed to develop art in our country." In the drawing-up of petitions certain technical points have to be observed. That may be the reason why the memorial is less expressive than is desirable. The Royal Hibernian Academy has been during several years subjected to the authorities at South Kensington, and to an impartial member it is likely to appear less humiliating for the control to be exercised by an Irish Department. There does not seem to be much relation between art and agriculture. But, after all, "What's in a name?" The great objection to the report is the suggestion that the Academicians are incompetent to aid in the promotion of Irish art, while the true obstacles to progress are to be found in another direction.

THE promontory of Sunium was the site of two temples, one dedicated to ATHENE, the other to NEPTUNE. The white columns which are now so remarkable in a view from the sea are believed to belong to the former, and ATHENE would thus appear to be the guardian of Attica. The second temple is supposed to have stood on a hill to the north-east. In the latter position has lately been found by the German explorer, Herr STAIS, a colossal archaic figure of a youth as well as a torso of a second statue, which apparently served as a pendant. One is thought to be APOLLO, and, indeed, it is imagined that the second figure also represented the god. In size they must have been equal to the APOLLO of Delium, but the muscular development and the careful arrangement of the hair are also remarkable. It is considered that the two figures stood as guardians of the treasury in which offerings to the temple were placed. DODWELL, the English traveller, it may be remarked, considers that the whiteness of the Temple of ATHENE is owing to the effect of the air, which contains sea-salt, and, instead of the golden patina seen in the Parthenon, exhibits the original whiteness of the marble.

THE PALACE OF THE LUXEMBOURG.

ONE of the prizes which the French Academy can bestow serves as a memorial of CHARLES BLANC, who was about half a century ago respected as a law-giver on all subjects connected with art. It is awarded to writers who, like him, produce a book or books on art, and among the latest recipients is M. HUSTIN, one of the secretaries of the French Senate. That body holds its sittings in the Palace of the Luxembourg, and the prize was awarded for an elaborate account of the buildings and the works of art they contain.

The history of the palace is remarkable, for it was erected by a foreign queen who was disliked while she was alive, and whose memory is not respected. Readers of DUMAS's novels, without going deeper, will learn a great deal about MARIE DE MEDICIS, the wife of HENRI IV., and daughter of the Grand Duke of TUSCANY. She was married to HENRI in her twenty-seventh year, and he was supposed to have acted prudently, for although she had neither beauty nor intelligence she possessed a fortune of fifteen millions of francs—a sum that was of immense advantage to her husband. Ten years afterwards HENRI was assassinated. It was necessary that MARIE should become regent, for her son LOUIS XIII. was only a child of nine. Her office was difficult to fill, and the queen must have expected some kind of revolution by which she would be rendered homeless. Accordingly, in 1612 she purchased the mansion of the Duc DE PINEY-LUXEMBOURG, and during the following years she secured ground near it. In 1615 she was able to give instructions to SALOMON (JACQUES) DE BROUSSE to commence the erection of a new palace. She stipulated that it was to resemble the Palais Pitti in Florence, where she was born. But the Luxembourg is far from being a copy of the Italian building, for French details were liberally introduced in it.

DE BROUSSE belonged to a family of architects, and it is believed he was born in 1560. So much expedition was exercised that in 1620 a large part of the palace was in a condition to allow it to be occupied. The queen, as became an Italian, was fond of fountains, and she ordered that a conduit should be carried from the village of Arcueil, where there was a water supply, to the gardens. The beautiful fountain in the garden, sometimes called the Fontaine de Medicis and sometimes the Fontaine de Brosse, was created. But in the course of time it has been greatly altered. Much attention was given to the gardens, in which the French and Italian styles were commingled. They were originally laid out by DE BROUSSE.

MARIE DE MEDICIS was also desirous that she should have a memorial created by the painter's art as well as by the architect's. In 1620 RUBENS, who was then at the height of his reputation, was summoned to Paris in order to confer with the queen about representations of the events of her life. Twenty-one paintings were commissioned. The series began with *The Destiny of Marie de Medicis* and ended with *Time Disclosing Truth*. One subject was the happiness and prosperity of the Regency. Owing to alterations in the palace the paintings were afterwards removed from the Luxembourg, and they are now to be seen in the Louvre. Allegorical figures and fabulous deities were freely introduced as part of the historical scenes. No doubt they impart variety to the compositions, but it must be allowed that several of the figures instead of elucidating seem to obscure the meaning of some of the pictures. RUBENS at the time had so many able assistants and pupils, his studio in Antwerp could be considered as a factory. Although he had other works in hand, the twenty-one immense paintings for the Luxembourg were completed in less than two years—nineteen in Antwerp and two in Paris. RUBENS superintended their erection, and was most liberally rewarded by MARIE DE MEDICIS. At a later time the Duke of BUCKINGHAM, who was in Paris at the celebration of the nuptials of HENRIETTA MARIA with CHARLES I., met the painter in the gallery,

and thus formed a connection which led to commission from the English king.

A description of the palace appeared in 1616, which mention is made of the paintings by RUBENS. Before entering the gallery the visitor, it was said, passed through the chapel of the queen, in which gallery was largely used. The queen's chamber was remarkable for a chimneypiece, and the bedstead had pillars of silver. The flooring of the queen's cabinet was of marquetry, the chimneypiece was all gilded and the windows were of a fine crystal. In another room the victories of the young king LOUIS XIII. were represented, for no doubt LOUIS took all the credit for the efforts of RICHELIEU. In the next century BLONDEL the architect, declared the building to be a *chef-d'œuvre*. He admitted the virile character of its ordonnance, the severity of its forms, the purity of its mouldings and the air of antiquity which was to be found in the general effect as well as in the details. But, like FERGUSON at a later time, BLONDEL objected to the monotony of the rustication, which is carried to excess. BERNINI, however, said he had never seen a palace that was less built or more regular in treatment.

However well built, the Luxembourg was not strong enough to protect MARIE DE MEDICIS from her enemies. She had endeavoured to make RICHELIEU at first her agent. But finding that "the ungrateful servant" as she called him, had vast schemes of his own, she manoeuvred to ruin the cardinal. She failed and was ordered to leave Paris for Compiègne. From there she fled to Brussels, where she was compelled to depend on Spanish generosity for sustenance. She believed the queen died in Cologne in the most abject misery.

MARIE DE MEDICIS left the palace to her son GASTON. Afterwards it became the property of the Duchesse de MONTPENSIER, and was known as the Palais d'Orléans. LOUIS XIV. obtained it in 1694. In the course of his reign it fell to LOUIS XVI., who made it over to his brother who was afterwards known as LOUIS XVIII. BERNINI, CHALGRIN, the architect, who was to design the new Arc d'Etoile, was commissioned to prepare a report on the restoration of the Luxembourg. Before any work could be executed the Revolution broke out. CHALGRIN was ordered to prepare the building for the accommodation of the Directory. Then 250 armourers' figures were set up in the gardens of the Luxembourg, and afterwards the palace was used as a prison, as CARLYLE says, "a huge loathsome prison." CHALGRIN, anticipating the course of events, fled to Brussels. He left his young wife behind him, and she was arrested as an aristocrat. DAVID, the painter, who was supposed to be her friend, might have saved her, but he decamped and she was one of the victims of the guillotine. DAVID was also fated to become a prisoner in the Luxembourg, and it is said he made the first sketch of his most famous work, *The Sabines*, while confined there. Many of the leaders of the Revolution remained captives. By a whim of the guiding spirits it ceased to be a prison and became the seat of the Government. When NAPOLEON made his *coup d'état* he used it, and it was known for a time as the Palais du Consulat. Afterwards it became a Senate House and then the House of Peers. During his trial Marshal NEY was confined in the librarian's room. Many other political prisoners became acquainted with it. Under the Third Empire it was reconverted into a Senate House, which it continues to be at the present time.

Under NAPOLEON I., CHALGRIN was again allowed on to devise the alterations necessary for the sittings of the Senate. He made several alterations, especially in the interior, and among others removed the original staircase and transformed the gallery where RUBENS's paintings were fixed. They were in consequence removed to the Louvre, where they are at the present place. Under LOUIS PHILIPPE further changes became necessary, and M. DE GISORS was appointed architect. From his writings he might be supposed to have

genuine admirer of the work of DE BROSSE. But his notions are not of a kind to enhance the beauty of the work. It is not difficult to discriminate between the work of the seventeenth and that of the nineteenth century.

In the time of MARIE DE MEDICIS the principal parts of the Luxembourg must have appeared resplendent in silver and gold. It suggests the change in the character of the proprietorship when it is found that no painters were employed on the palace until after the fall of the first Empire. Under LOUIS PHILIPPE scriptural and other paintings were commissioned for the chapel. Sculpture was also introduced. But under NAPOLEON III., the emperor was acquainted with the palace as a prisoner, and it was made to suggest the greatness of his uncle, an apotheosis of NAPOLEON I. appeared on the walls of the Throne Room. Some of those Imperialist embellishments are now covered with simple panels. Under the present Republic sculpture appears to find more favour than painting, and several examples have been obtained, especially for the adornment of the gardens. Of late years the friends of poets and artists have preferred sites in the gardens for memorials to be set in Paris streets. In consequence the gardens have been destined to become a rival or a supplement to the Panthéon in upholding the fame of representatives of two classes of the great men of France.

AN AMERICAN HISTORY OF ARCHITECTURE.*

At one time in the United States everything relating to the past was undervalued. To the Young American the present was all-sufficient. "I can find Greece, Asia, Italy, Spain and the Islands," said HERSON, "the genius and creative principle of each of all eras, in my own mind." The aim of every inquiry into antiquity, according to him, was to substitute the Here and the Now—i.e. an American town of the nineteenth century—for the preposterous There and the Then of the Old World. In that spirit alone the past was to be studied by the superior beings of New England. It was a natural outbreak of conceit among people endowed with so large a part of the earth's surface for their operations, and who were not fettered by tradition. They had also at their command steam and electricity, which were more powerful than the armed Titans.

It was not long before the Americans discovered that the past was possessed of treasures, and to obtain their share they must imitate the example of many generations of benighted Europeans. The lesson was not taught through the agency of architecture. Although its "philosophy" was plain to all, a new style of distinctive American character did not spring up at command. If there were to be beautiful buildings in their towns it was necessary for the designers to have recourse to the antiquated forms which were in use in ancient Egypt, Greece and Italy. An effort was made to surpass the old architects, for having once blocked out the heart of the mystery of the art there seemed to be no reason why they should not become more Egyptian than the Egyptians and more Roman than the Romans. But superiority was not attained in this way. Better results, it was found, were secured by looking at Classic art through British eyes. Now, as the President remarked at the late celebration of the foundation of the American Institute, there is a fear that through the ready access to the architecture of the world and from the training derived in foreign schools, they are not unlikely to forget the interpretations of antiquity which were the work of English minds, and to attempt others of an inferior kind.

A History of Architecture: having special regard to the Natural Artistic Results of Construction and those Methods of Design which are the result of Abstract Thinking and of the Pure Sense of Form. By Russell Sturgis, A.M., Ph.D. Vol. I.: Antiquity. Three hundred and forty illustrations. (New York: The Baker and Taylor Company. London: B. T. Batsford.)

While we desire that American buildings, as well as American books, should be reminiscent of England, it would be satisfactory if there were also American theories of art, literature and history. What is ancient is likely to gain in value if it can be considered from points of view which hitherto were neglected. On that account we are glad to welcome the experiment of Mr. RUSSELL STURGIS. As well as we can judge from the first volume of his "History of Architecture," it is not intended to explain art by a theory of races or one of evolution; nor does the author confine himself to descriptions of the ornament of ancient buildings. He considers the buildings as creations in which skilful construction as well as painting and sculpture were combined. In doing this he is rigorous in keeping to evidence that will be acceptable and deductions that are warranted by the remains. Imagination is not exercised, for when there are only dubious grounds existing on which to base a statement the reader is informed of the deficiency.

The author therefore avoids a discussion about the origin of architecture, and there are no descriptions of prehistoric structures. He starts with Egyptian architecture. At the beginning of the first chapter we have an example of the logical method employed, and by which the reader is enabled to distinguish between definite and indefinite evidence. Mr. STURGIS, in referring to the ordinary houses of the old Egyptians, built of half-dried mud and framed construction, asks:—

What is the evidence as to these long-perished buildings? First, as to the wood-framing, the evidence is in the sculptured walls of tombs, both on their inner and outer faces. The sarcophagus of Menkaura found in his pyramid, the third in size of the pyramids of Ghizeh, was an enormous monolith of basalt, which would be accepted at once as the sculptured representation of a one-storey house framed of light, squared posts and horizontal bars. Every part of the surface of the hard stone is sculptured in relief with this representation of framework, the only additional ornament being a limited use of the lotus flower. The inner wall-face of a tomb at Ghizeh shows a similar decoration covering an end wall in a mastaba very near to the Great Pyramid of Ghizeh, on the east. It is about 14 feet long from left to right, the width being about 5 feet. At the outermost corners of a recess in the middle the depth is about 5 inches, and the middle panel from top to bottom is recessed about 5 inches more, these measurements being to the face of little upright strips, which clearly indicate studs of squared wood, having horizontal interstices of smaller section. The only ornament other than this copying of wood-framing is in the pretty sculpture of lotus flowers in pairs, for the carving on the lintel is of the nature of picture-writing.

Elsewhere it is remarked that although a bird's-eye perspective of an Egyptian house could easily be made, "to express aright the architectural character of the buildings so studied and so sketched is beyond any artist's power. So far as present observation goes, there is no attainable knowledge of the architectural treatment of the Egyptian dwellings." The work of the military engineer in Egypt has not survived. We are therefore dependent mainly upon the temples for the display of their powers in architecture. Photographers have become more enterprising, and are not content with general views. Many details of parts of Egyptian buildings which ordinary travellers rarely see are introduced. The statue of King KHAFA and the head of Queen TAYA (both from the Cairo Museum) are by themselves enough to disprove the old theory of the priests laying down certain proportions for every figure, which painters and sculptors were compelled to follow. Both are vigorous examples of portraiture.

In treating of the architecture of Chaldea and Syria no attempt is made to trace a connection with Egypt. In fact, Mr. STURGIS generally avoids the investigation of claims of indebtedness. It is now impossible to speak with certainty about the forms of the buildings, and the restorations of PERROT and CHÉPIEZ are relied on. Some examples of sculpture from the Louvre are

illustrated, but a more suggestive series of Assyrian art is in the British Museum. French authors have also inspired the greater part of the chapter on Persian architecture. For the architecture of Syria and Phœnicia the books of some English travellers are utilised. A tomb with two lionesses in high relief is suggestive of the Mycenæan Lion's Gate. If Syria is disappointing in its architecture, it is pointed out that it was long a battlefield for various races, and destruction of buildings was therefore inevitable. Mr. STURGIS says:—

No part of the whole field can be said to be so far known to us that the "history" of architecture can include it. Of Phœnician art we have nothing but an apparent trace of rock-cut buildings on the coast and of two or three minute shrines; and the subject has to be studied in the islands of the Mediterranean and in Carthage and Utica, with their neighbouring villages—a region so thoroughly rebuilt by the Roman colonists that research in this direction is made particularly difficult. Of the Hittites not one building has been identified. So with the other peoples and powers named above, it is not they to whom we can accredit any monument found in Asia Minor or Syria, or even of the islands of the sea. All the historian can do is to mention a monument, if one of the very few which have architectural interest, and to state that a controversy is raging about its probable associations, ethnic and chronological.

History has been compared to an old almanac, and one of the advantages of Mr. STURGIS's treatment is that the reader can realise how much was blotted out in the course of time. Architecture was not always respected. In commencing his chapters on the art in Greece the absence of any basis for the precise fixing of dates has also to be pointed out. Many readers will probably be surprised when they are told that the South Sea Islanders were more skilled in wood-carving than the Greeks at one time, for "the carver of a paddle in the Solomon Islands or in New Caledonia reached a degree of artistic skill in the arrangement of his triangles, and his little sunken squares with ridges crossing them, left in the solid wood, which the early Greek does not seem to have thought of or cared for." Mr. STURGIS likewise maintains that Greek architects never developed architectural sculpture into a varied or very effectual system. At the time when figure sculpture had attained perfection the architectural ornament, palmettes, frets, egg-and-dart were limited. Nothing, in fact, is extenuated in respect of the shortcomings of the early Greek builders. The progress of temple construction is followed, as exemplified not only in Athens but elsewhere. On the disputed subject of the lighting of temples, Mr. STURGIS has the following remarks:—

The main reason for the demand which so many students make for a roof light is the importance and beauty of the temple-statue within, the value and charm of the dedicated offerings, or many of them, and the probability that the interior of a noble structure would itself be an interesting piece of architecture. Because of all these things, it is said, there must have been daylight. On the other hand, there is to be considered the amount of light which would be received by reflection from the floor and walls, when the great doors were open, under the sunny sky of Greece or Sicily, and with it is to be considered that indifference to bright daylight which travellers from the north find everywhere in Mediterranean lands. A dealer in fine carved furniture, delicate stuffs, precious church embroideries and the like, in a city of Provence or of Southern Italy, will live and attend to his business in a series of rooms so dark that the visitor cannot, even after ten minutes' stay, discover what he wishes to examine; and the dealer never thinks of the importance to himself and to his goods, even when they are fine, of bringing them out into full daylight. In like manner the sombre interiors of the Japanese temples have often been described, and the absolutely dark interiors of the Egyptian holy places behind the great hypostyle hall have been considered in Book I. of this work. It is partly because of this darkness that polychromatic decoration is used in such interiors. It has been pointed out by writers on Japanese art how successful is the colouring of the statuary—the colossal temple figures with gilded teeth and inset eyes of some gem, to enable their form to be seen in the semi-darkness under the roof; and the puzzle to

moderns of the painting of the Egyptian tombs remain emphasise the great importance laid upon such treatment with colour. No window is known to exist in any building of the great time, nor, indeed, during the independent existence of Greece, and to imagine a series of clerestory windows arranged something like dormer windows on a roof is to make a very bold assumption.

Excellent as they were as masons, the Greeks do not appear to have been skilful carpenters. Apparently they were ignorant of triangular framing for timber roofs. But Mr. STURGIS believes that the Ionic capital was derived from a wooden beam. As regards sculpture, he suggests that the noble figures which adorn the pediment of the Parthenon would have become more suited to their purpose as architectural decorations if a better provision had been made for supporting them. For anyone who wishes to be able to decide on the subject he advises six weeks of study in the museums of Athens, which he considers to be the finest school of sculpture in the world. Etruscan buildings are treated in a chapter on the Italian peoples before Imperial Roman control. Roman buildings are classed as arched buildings and columnar buildings. There are chapters on massive construction; plan and disposition of large buildings; plan and disposition of small buildings, and surface decoration.

"The History of Architecture," by Mr. STURGIS somehow suggests THIERRY's "Récits des Temps Mérovingiens." The Frenchman found there were no materials available for a continuous history, and therefore endeavoured by a series of remarkable narratives or episodes which could be accepted as true to suggest the character of a remote time, allowing the reader to perform the unifying action. Each of Mr. STURGIS's chapters has a completeness which would qualify it to be a magazine article or a lecture, although it is not without relation to what precedes or follows. This arrangement enables the volume to be made more with less labour than would be required for the execution of a continuous work. Although printed in New York the style of execution adopted exactly corresponds with the admirable examples of typography with which Mr. BATSFORD is identified. The work therefore will become a fitting companion for volumes with which English architects are familiar.

THE AMERICAN INSTITUTE OF ARCHITECTS AND SIR ASTON WEBB, R.A.

A MEETING of the American Institute of Architects was held in the Corcoran Art Gallery at Washington, on January 8, for the purpose of awarding the first gold medal to Sir Aston Webb, R.A. The president, Mr. Frank Miles Day, delivered the following address:—

Sir Aston Webb, Members of the American Institute of Architects, ladies and gentlemen,—The American Institute of Architects establishes upon this, the fiftieth anniversary of its foundation, a medal, the intention of which is to mark distinguished achievement in architecture wherever attained. To you, Sir Aston Webb, it will be our privilege to-night to give this medal, and we are gathered here to signalise not merely by that token, but by our presence, the admiration that we feel for your works and the respect that we attach to your career.

That this medal should first be given to an Englishman needs little explanation. A reasonable modesty might well constrain us to look beyond our own borders, and it is but natural that our thoughts should centre on that land which, more than with any other, we are united by ties of race and thought. We cannot escape from our indebtedness to that land, for of how large an import are the institutions that came to us from it. The principles of liberty, civil and religious; the foundation of our law of speech itself; all these and countless other gifts received from forefathers who were both yours and ours. But this, of little meaning as it is, would be little pertinent; to-night were it not that, among those gifts, our early forefathers brought the wholesome tradition of your native art of building; and as each wave of immigration reached our shores from yours, it brought with it a larger knowledge of the art and a stronger impulse to build wisely and well.

ly we learned our lesson you would see, sir, could you visit such widely separated places as Newport, Annan, and Charleston, or could you follow the windings of the river James. You would find "Westover," "Homewood," or a dozen other mansions as convincing in their quiet dignity as "Raynham Hall" or "Groombridge Place," and churches, town halls, State houses expressing in the same admirable fashion the aspirations and the limitations of life in those early days.

And just as we then received from you the traditions of Sir Jones and Sir Christopher Wren, traditions that gave quality and character to our colonial buildings, so at a later time the Classical revival that swept over Europe reached directly from its English source, William Thornton, who signed "The Octagon," he who stamped a definite and noble character upon the nation's Capitol. Thornton, no less than his patron Thomas Jefferson, gained his knowledge of classic architecture from those studies of it in which your countrymen were pioneers.

But if in those days we saw our Classic art through British eyes, I fear that to-day, with ready access to the architecture of the world and with a leaven of men among us trained in foreign schools, we might forget an indebtedness of centuries, were it not that we are irresistibly drawn to your island by the splendid fabrics that adorn it, from Cornwall to Caithness. For, sir, all that is best in your art is ours, if we have but the skill to make it so. Majestic Durham, high above the river Wear; the tree-emboweredaddon, with its terraces and stately gardens; the very obsequy by the Thames itself—innumerable treasures of a thousand years, all these are ours, if we but read them right.

But we have not failed to recognise that, glorious as is the past of your art in England, its present is full of vigour and charm. For many years this Institution has elected to honorary membership Englishmen, the mere mention of whose names calls up the vision of many a noble edifice and many a service to the cause of art. To name only the dead—Sir Charles Barry, Scott, Penrose, Street, Cockerell, Burgess, Ruskin. But among the living, how many are there whose names are dear to us, with whom you have the privilege of an intimate friendship—Ernest George, Phené Spiers, John Belcher, the venerable Norman Shaw, whose laurels are yet green, Bodley, whose perennial youth justifies him in Washington commencing even a cathedral.

It is from among men such as these that we have chosen you, sir, a younger but no less distinguished man, to confer upon you an honour which we shall perhaps not frequently award; and therefore, and because an ancient custom sanctions it, I am to recount in good set terms the reasons that have moved us to choose you as our medallist.

Matthew Arnold's dictum, that not only is good work needed to put a poet in a secure place, but a great body of good work, is no less true of other arts than it is of poetry. On the score of amplitude, your achievement lacks nothing, for no architect in England, save Sir Christopher himself, has been entrusted with the conduct of so many and such vast works. Whether they be houses, churches, courts of law, schools, museums, colleges, government offices or universities, I can name not a tithe of them. Yet, perforce, I must speak of some of them, and of these I name first the Victoria Courts, in Birmingham, the model of many similar buildings, and next the new buildings for Christ's Hospital, one of the largest groups of school buildings in the world, yet clearly conceived and treated with a charm that cannot fail to leave an imperishable imprint on the lives of its students. But these were years ago. Just now, in the Metropolis itself, you bring to completion the great buildings of the Royal College of Science, no less admirable for the way in which they solve a difficult technical problem than for that in which, without losing their individuality, they have been brought into harmony with a structure utterly different in purpose and conception, their opposite neighbour, the Imperial Institute.

Did time serve, I should wish to say more than a word upon those vast additions to the Victoria and Albert Museum, South Kensington, upon which you have been engaged these fifteen years, and in which we may hope shortly to see installed the noble collections which they are intended to shelter and to dignify.

Through your hands also the British nation is giving to the world an example of municipal improvement upon a vast scale and under circumstances the most fortunate. I mean the treatment of the grounds about the National Monument to Queen Victoria in front of Buckingham Palace, and the planning of the Mall and the "Processional Way"

leading from the monument to Charing Cross. Although progress with an undertaking of this size is necessarily slow, yet perhaps you will have it finished before we, in our capital city, have brought back to its original simplicity the much-perversed plan of L'Enfant and of Washington.

Not the less interesting, because it deals in a prosaic age with the world's most splendid spectacle, is the arrangement upon which you are now at work for the site of the "durbars" at Delhi.

Of these and many others of your works all may tomorrow gain an idea from the collection of illustrations of them which are hung in the Institute's house, the Octagon.

But in the midst of these large affairs you have not neglected to perform a labour of love in the restoration of ancient edifices, as at the fine old Norman church of St. Bartholomew the Great, the oldest church in London, which for well-nigh thirty years has been within your charge, and which you have rescued from neglect and ruin and wisely rehabilitated.

Nor have you ever failed to discharge those burdensome duties which every leader owes to the rank and file of his profession. On how many committees, in how many offices you have advanced their interests, it boots not to say. From among these let me note only the Presidency of the Royal Institute of British Architects—that Institute that we are proud to regard as the model and prototype of our own—and the Chairmanship of the Board of Architectural Education, that is so successfully unifying and improving the training of architects in the United Kingdom.

That your talents have not been unrecognised by your countrymen is shown by the volume of your works, by the honour of knighthood conferred upon you by the King, and, most of all, by your election as a Royal Academician.

Thoreau exclaims, "How admirably the artist is made to accomplish his self-culture by devotion to his art," and in you we see that it is not only nature but devotion to your art that has endowed you with "the intellectual versatility and refinement, the felicity of temperament" which we recognise alike in you and in the work that you have done.

And now, sir, because you have these qualities, and because, for a lifetime, you have dedicated them with signal success to the service of your profession, the American Institute of Architects confers upon you its "medal for distinguished achievement."

Reply of Sir Aston Webb.

Mr. President, Mr. Howard, ladies and gentlemen and Members of the American Institute of Architects,—I am afraid that no words of mine can possibly express the high appreciation that I feel that this Institute should have seen fit to bestow this gold medal of yours upon the architects of England through so humble a representative of that great profession as myself. Sir, any little modesty that I may have had, I am afraid must have entirely vanished as I sat hearing your far too kind remarks upon myself and what I have done. I thank you sincerely, and I must ask the audience to take off some of it.

I have come over here personally to say "Thank you," in the sincerest and the directest and the simplest way I can. And to assure you that all architects on the other side of the water will deeply appreciate the fact that on this, the jubilee day of your Institute, and the institution of this gold medal, you should send it over to the other side. Nothing, I am quite sure, in speaking for my brother architects, would they appreciate more than that, and I venture to think that it must do a great deal to strengthen the good feeling and friendship which I am glad to think already exists between the architects of both countries. Strengthened it already has been by the delightful personal intercourse that many of us had the opportunity of having during the International Congress which took place in London last summer.

As some slight indication of that good feeling, I have received this morning—before it was light—a cable from London from the Secretary of the Royal Institute of British Architects, asking me to make an announcement of the fact that at their meeting which they held last night they elected, subject to their acceptance of the election, three new honorary corresponding members of our body. Those three members I hope you may be interested to hear they have elected are your president, Mr. Frank Miles Day; your vice-president, Mr. Cass Gilbert; and your past president and almost father, I believe, of the Institute, Mr. George B. Post. We shall be very proud if these three gentlemen accept that election, and become one of us. As honorary member of the body we have already the honour of having Mr. McKim as one.

It adds greatly to my pleasure to receive the medal from an architect so eminent as yourself, one whom, if I may so say, has done such refined and distinguished work, much of which I have had the pleasure the last few days of seeing and admiring.

It has always been one of my happiest recollections that it fell to my lot to have the privilege to hand our medal to Mr. McKim. He came over personally to receive it, and I need hardly tell you that directly he arrived he entered into our hearts and affections, and has remained there ever since.

There is very much to an Englishman, landing here for the first time, that is very familiar to him. One does not feel at all in a strange land. He meets also, of course, a great deal that is not so familiar—that is another of the charms of coming over here. And as I walked about the streets of Philadelphia and New York I have had constantly running in my mind the words of Jean Ingelow, who was herself the sister of a well-known architect and a great friend of mine, when she said:—

It is not likeness only charms the sense,
It is not difference only sets the mind aglow;
It is the likeness in the difference,
Familiar language spoken in the snow.

As one who has spent only a few days in your country, I am sure you will not expect me, and I feel it would be the greatest presumption on my part, to express any opinion on the splendid architectural achievements I have seen in Washington, Philadelphia and New York. But I have noticed how great a hold architecture seems to have on the heart and imagination of the people here—not of architects only, but of the people generally; and I was very much prepared for that by a remark that Mr. Post made when he was speaking at the Guildhall, in London, when he said that fifty years ago in America architects and their work were not very much considered, but at the present day the position of both the practitioner and the art has been greatly, very greatly, improved. That seems to be one of the most hopeful signs for architecture in any country, that the people take a real and living interest in it. It does not seem to me to be at all wonderful, when one looks about and sees the wonderful problems that architects have to solve.

Take New York, for instance: there appears to be a terrific problem being solved there at a terrific speed which takes a poor English architect's breath away. To see the lower part of New York being practically rebuilt with new buildings some five or seven times taller than the buildings that stood on the site before. At present the work is only half accomplished, and it is difficult to judge of the ultimate effects. For the moment we see mainly the unfinished side of these huge structures, and there is naturally a sort of gappiness and want of scale in the whole city which will disappear when the streets are filled with these buildings. And, for myself, it seems to me—as far as a tourist is able to judge—that the proportion of these streets will finally assimilate on a gigantic scale very much to the streets of some Italian town, such as Genoa or Florence. These streets will have the great overhanging cornices apparently almost meeting across the road, and it does not surprise me to find that these streets have already attracted the pencil of artists, such as Mr. Pennell and Mr. Cooper, and I imagine before long they will attract the pen of the poet. The busy traffic of the streets and the idea of the quiet thinker in the top storey really seems to me a suggestive and a very impressive thing. I am quite serious. I felt this very much the other day, when I was taken out of a very crowded and unusually busy street and shot up into the air—I do not know how many storeys—and found myself in the calm artistic surroundings of Mr. Cass Gilbert's rooms, in a pure and tranquil air, and forgot all about the noise and bustle below. Just as I was leaving, some papers published illustrations of buildings twice the height of the highest skyscraper that is in New York. When these are up I imagine the present monsters will be reduced to pigmies and all the scale retired again, and what will happen then, I am glad to say, it is not for me to forecast.

The problem of the proper control of the expansion going on in our large cities seems the same in both countries. The abnormal growth in many of our large cities is the same as in your own. We feel—I don't know if you feel it so—that this expansion ought to be controlled by certain conditions, which should include open spaces for air and recreation, and also sites for public buildings, churches, &c. The present development of many of our cities at any rate is, I am afraid, along the lines indicated by the Bishop of

Birmingham, who said the other day:—"We walk through miles and miles of streets in our big cities without open spaces, without anything except what Dickens called 'an uninterrupted view over the way.'"

We want the whole mass of our cities to be organised, planned and laid out, but instead of that our cities grow in the will of the jerry builder—I don't know if you have them here—orderless, shapeless, without method, because there is no one to plan and forecast, to give the city dignity, space and order, nothing to make it worthy to be called a city.

Over here, I believe, you are taking this matter seriously in hand, and your Institute is often consulted in such matters. I am glad to say that is also becoming a fact with us, that the Government and public bodies do to some extent consult us in these matters. And we are making some small progress. For instance, Regent Street and the Quadrant had to be rebuilt, owing to the leases falling through, and the design was submitted to a small committee of architects, with the final result that the design is now in the capable and artistic hands of Mr. Norman Shaw. You of course, have an outstanding example of what may be done for architecture in the plans proposed with such extraordinary ability by the Park Commission for the improvement of this already beautiful Capitol of yours. The details of this great scheme are already very familiar to us in England, and we look forward to its full completion and to seeing Washington one of the beauty spots and wonders of the world. I hope you will agree that the proper placing of our public buildings is as important as the design itself. Wren, in his time, complained that our public buildings were nearly all seen sideways. That is the same now. It is quite an exception for any of our large public buildings to be really handsomely approached. You, of course, have a magnificent example of the proper placing of a building in the Capitol here, and in many other cases. We, I am sorry to say, have very few. The French, of course, are the masters of the work of arranging public buildings, and we all know how the Opera House in Paris gains by the splendid Avenue de l'Opéra, and how the Avenue de l'Opéra is improved by the Opera House at the end of it. With us it seems to be thought that for the purpose of traffic no street must ever be ended, going on for ever, and I must confess I have seen streets on this side of the water which have the same tendency. I venture to think that among the public duties of the several institutes of architects is to educate the people that in the laying out of cities there are other matters to be considered than traffic and sewerage, and that the placing of buildings at the ends of vistas is one of the matters that ought to have their consideration. A vista, in my opinion, ought to be closed, and closed in good time.

In architectural matters—and I hope I am not too technical, but this is the only opportunity I shall have of talking on matters architectural—the most important is architectural education. I think the Convention has had a most interesting and important report on that matter just brought before it. We ourselves are going through a sort of revolution quietly in the matter of architectural education. All our young men hitherto have gone to an architect's office for three or four years and been apprenticed. Now they go to school for two years and afterwards to an architect's office. We hope to teach systematically what can be taught systematically, and afterwards put them to work in an architect's office. We hope to substitute for the dry study of old work through dates and comparison of dates—as introduced by Rickman and others—the more important comparison of the whole structure by plans and sections and the balance of weights and thrusts. We have started a Board of Architectural Education, which your President has mentioned, with a view to co-ordinating the work of the schools. I have only touched on this because it is a matter of deep and abiding interest, whether in your country or in ours. For we must remember that the young men we are educating will follow us, and we shall soon have to consider them as our equals, possibly as our superiors, and perhaps stand aside to see them pass us, and we must recognise education to be the greatest influence on our art.

By encouraging the study of motives rather than the history of architectural design, we hope to bring before the mind of the student that our art is creative rather than imitative, and that though looking backward is informing and delightful, looking forward is more hopeful and stimulating still. The last century was spent by us at any rate in analysis and criticism of what had already been done, the present century may be spent in showing there are

resources that will clothe the multifarious requirements of the present day in reasonableness and beauty expressive of our times.

Mr. President, ladies and gentlemen, the memory of this evening will remain with me all my life. I shall take the medal home and keep it amongst my most treasured possessions, and hand it down to my children, who, I am glad to say, are architects too, and will therefore appreciate it. And when I look at it, as I often shall, it will remind me—though no reminder will be needful—of your wonderful country, your splendid architecture and your boundless generosity and hospitality which you so lavishly bestow on my countrymen and have extended to me on this occasion.

NORTH AND SOUTH IN ART.

A LECTURE was delivered last week by Sir William Armstrong in Dublin on "North and South in Art." The lecturer observed that by the North and South he meant the North and South of Europe; properly speaking the Latin races versus the Germanic. It might be said, however, that the word against was out of place, and that the phrase should have been "North and South;" but the inspiring principle of Latin art was opposed to that of Teutonic art. In some cases the distinction was not very broad. Speaking broadly, Latin art was sympathetic, Teutonic art was analytic. The Latin employed his subject in the making of new creations, of new unities and harmonies. He was not interested in his subject so much for its own sake as for the facility with which it lent itself to the expression of his own emotions and opinions—in short, of his own personality. The Teuton, on the other hand, was fascinated by his subject. He loved it for its own sake. His delight was to peer into its constitution and to say as much about it to his public as that medium in which he worked allowed. With the Latin the emotional side prevailed, with the Teuton the scientific. It was in the emotional element that art rested. Science alone could not supply those selections and preferences on which unity of a work of art alone depended. It was to the fine development among the Southern races of that emotional element that they owed their superiority in art over their Northern rivals. But the arts of the Western and North-Western countries of Europe, owing to the fact that they are inhabited by mixed races, showed various combinations of the principles of the North and South. Sometimes the combination was very intimate indeed, and resulted in a happy marriage between the two. This prevailed chiefly in France and the Low Countries. The British Isles afforded the best example of the two principles alternately taking command. The Germanic was prominent in the sixteenth century, but in the eighteenth the formative arts became almost completely Latin. One hundred years later the presentation of Latin art had fallen into the hands of inferior men, and its principle became discredited. A demand was made for more objective truth. Painters were sent back to the scientific study of facts, to humility before their models, and they then had the pre-Raphaelite movement. By the aid of lantern slides portrayals of Latin and German masterpieces were thrown on to a screen, and interesting, though brief, accounts were given of the pictures and their creators. Specimens were also given of the fate which befell the two principles amongst these two nations, which owed a certain duty to both. The lecturer then proceeded to deal with Gothic architecture, which was born in North-Western Europe. Its parentage was claimed by both France and England. The fact was perhaps that the actual birth occurred in England at Lincoln, but that France was the nursery of the Gothic style. Gothic art became more warm and flexible according as it departed from Germany and was utilised in the Low Countries. Holman Hunt and Madox Brown adhered to the Germanic style, whilst Millais and Rossetti, of Latin extraction, deserted it for the Southern school. The lecturer thought that the great artist was of a higher type than the great scientist. Newton, great as he was, had to take a lower place than Shakespeare and Michel Angelo. It was a greater feat to master the facts of nature and then use them for the purposes of a new creation of an organised nicety, in which some of the qualities of the creator himself reappeared, than to be content with knowing and handing on the knowledge to those who came after. The battle often lay between knowledge for its own sake and art for its own sake, and in that case many would prefer the latter, for knowledge was amplified by art, while art was scarcely amplified by knowledge.

VENTILATION OF LONDON.

A PAPER was read by Mr. A. A. Hudson at the meeting of the Surveyors' Institution on Monday. He said the streets, like houses, depended for ventilation upon diffusion, but chiefly upon the action of wind, which was caused by the unequal weight of air at different temperatures. Speaking generally, the large open squares of London were well ventilated, but the smaller squares in back streets were very badly ventilated. The best natural ventilator of London was the river Thames, owing to the water changing its temperature less quickly than the air, which caused currents of air, and to the river being tidal. The parks were also most important, the dew on the grass, the water of the lakes, and the large areas causing draughts. The Thames and open surfaces ventilated, however, little more than the houses fronting them. The openings of the streets leading from them were generally so small that the air was not driven far down them. Eddy-winds were also means of ventilation, and these were caused by the unequal heights of buildings. Flat-pitched roofs and streets with long rows of more or less level-topped houses created very little eddies, and were therefore bad for ventilation. Buildings or gables, steep-pitched roofs and irregular skyline were better for ventilation than the square blocks of houses produced for cheapness by the speculative builder. The much-abused sky-signs might not only be used for advertising, but for the purpose of producing eddies. The winter ventilation of towns was better than the summer ventilation, because winds were stronger and more frequent, and currents of air were caused by the heat of the houses. In summer-time the streets might be flushed more frequently as a means of producing currents of air by changing the temperature of the pavement. It was pointed out that the sewers were ventilated directly into the streets, although they were trapped. While the streets were undermined by elongated cesspools supposed to be sealed, there was nothing to prevent sewer-gas discharging into the streets in time of suddenly-diminished atmospheric pressure. Possibly some improvement might be effected by cleansing and deodorising streets and refuse, and by ventilating the sewers by tall shafts and flushing them. But at present the state of some streets was deplorable, especially in hot weather. Wood pavements had been laid down to deaden sound, but they appeared to be injurious to health by breeding bacteria, and affected the eyes and throat by the dust they threw off. But beyond this pollution there was the deterioration of the air and the increasing use made of it by motors and all kinds of machinery. The action of motors in stirring up germ-laden dust was a very serious matter. Fresh air must be found somewhere until liquid air had become cheap enough for ordinary use, and if it could not be obtained from the streets, it could only be obtained from the back and the top of the houses. Street noises prevented to some extent the opening of windows facing streets, and if it should be necessary in the future to design such windows to obtain light only, the ventilation would chiefly have to be derived from shafts running down the middle of the houses. Mr. Hudson thought it would also be necessary to cause ventilation in many more cases by mechanical means. Spaces at the backs of houses should not be permitted to be closed in by houses on all sides. Inasmuch as inequality of height of buildings produced better ventilation, he suggested that those in authority who had the control of high buildings should sanction and encourage them in selected places. He referred to the bad ventilation of basements of shops, and urged that it would not be unreasonable to legislate that the air should be kept pure, according to Government tests. Mechanical means would have to be adopted in many cases, and, speaking generally, mechanical ventilation was far better than natural ventilation, because the latter did not insure equally distributed purity.

The Chairman of the London County Council, as well as the official heads of the municipalities of Paris, Berlin, Vienna, Rome and Athens, were invited by the municipality of Alexandria in May last to submit the name of a candidate for the post of engineer to that city. On the recommendation of Mr. Maurice Fitzmaurice, C.M.G., the Council's chief engineer, the name of Mr. D. E. Lloyd Davies was submitted from London. The municipality of Alexandria, at a meeting held on November 28 to consider the applications of the nominees of the different capitals of Europe, decided to confer the appointment on Mr. Lloyd Davies.

NOTES AND COMMENTS.

REAR-ADMIRAL RABY, who died on Wednesday morning at Southsea, had an eventful history. The first work on which he was engaged was in 1842, when as a lad he aided in superintending the removal of the Xanthian marbles which are now in the British Museum. Mr. CHARLES FELLOWS, having visited Lycia in 1838, was so impressed with the remarkable character of the remains, that he induced the Government to send a vessel to remove them. Among the works obtained is the Harpy Tomb. It consisted of a square shaft in one block, weighing about 80 tons; its height 17 feet, placed upon a base rising on one side 6 feet from the ground, on the other but little above the present level of the earth. Around the sides of the top of the shaft were ranged bas-reliefs in white marble, about 3 feet 3 inches high. Upon these rested a capstone, apparently a series of stones, one projecting over the other; but these are cut in one block, probably 15 or 20 tons in weight. It was believed that the tomb was used in the early ages of Christianity by some anchorite. Still more interesting was the Horse Tomb, in which was buried a satrap named PAIAFA. It resembles a wooden house, the upper part suggesting a Gothic vault. The reliefs represent a combat of warriors on foot and horseback. Many other remains are also interesting, and Mr. FELLOWS was well deserving of the knighthood he received for his energy in securing them for the British Museum.

THE disposal of the infirmary site in Manchester has not yet been settled. At last week's meeting of the City Council it was proposed "That the Royal Infirmary site be appropriated for the purposes of the libraries committee and the art gallery committee, subject to the widening of Parker Street and the provision of an adequate open space, and that it be referred to the special committee to obtain plans and to formulate a scheme for submission to and approval by this Council." That arrangement has been for a long time under consideration. But in Manchester, as in other parts of the kingdom, taxation is an onerous burden, and there were fears expressed that with so fine a site there would be a temptation to expend large sums on the proposed buildings. An amendment was therefore brought forward to the following effect:—"That it be an instruction to the infirmary site committee that, in inviting designs and plans for the new municipal art gallery and reference library to be erected on the infirmary site, no proposals involving an outlay greater than 250,000*l.* shall be entered into." The decision of the Council was adjourned for a fortnight.

A CONFERENCE is to take place on the 22nd inst. between representatives of the Manchester Chamber of Commerce and officials of the Board of Trade respecting the proposed Bill relating to copyright in design. The report of the Chamber also states that a committee of the Board of Trade has been appointed to inquire and report (1) as to the nature and extent of the benefit accruing to British arts, industries and trade from the participation of this country in great international exhibitions, and (2) whether the results warrant His Majesty's Government in financially supporting such exhibitions in the future. If this question be decided in the affirmative the committee are further to inquire what steps ought to be taken to secure the utmost advantages from the expenditure of public moneys on this object. The various sections of the Chamber had been asked by the Board to report on the subject, and the preponderance of opinion was in favour of the continuance of the participation and support of the Government. The Engineering and Metals Section considered that such support should be accorded on at least the same scale as heretofore. They recommended that greater efficiency as regards the knowledge of the language of the country in which the exhibition is held

and a higher degree of competence in commercial affairs should be required of the British official representatives having the management of the business of the spot. The Chamber adopted these views, and representations will be made to the Board of Trade.

ILLUSTRATIONS.

CATHEDRAL SERIES.—CARLISLE: THE EAST WINDOW.

FOR many visitors to Carlisle Cathedral the east window is the most attractive feature. The late R. W. BILLINGS had the patience to scrutinise the tracery, and found that the curves were struck from 263 centres. There are eighty-six pieces, and the majority of them could be singly removed without any risk to the arrangement. From the armorial bearing it would appear that the tracery belongs to the latter quarter of the fourteenth century, although the arches and shafts may belong to the beginning of that century. The greater definiteness of the glass forming the higher lower lights as shown by the illustration suggests a modern character. It was executed less than half a century ago. The old glass amidst the tracery is supposed to represent the Last Judgment.

THE NEW COUNCIL SCHOOLS, BEXHILL-ON-SEA.

THE new buildings erected for the local educational authority are placed at the corner of the Down on a site of one acre, which has cost 1,000*l.* The plan by Mr. BURKE DOWNING, were selected in competition. Accommodation is at present provided for 200 girls and 200 infants, but a larger scheme will be carried out, as shown on plan. The infants' entrance doorway, with its heads of cherubs carved by Mr. F. B. HITCH, will then appear between two large blocks. The materials employed are bright red brick and white stone for the walls, purple bricks for plinths, rough-cast for the tw gable ends, and tiles for the pitched roofs. The central hall is about 74 feet long by 25 feet wide and 23 feet high, and has a gallery at one end. The class rooms (each about 25 feet by 22 feet by 14 feet 6 inches high) all open directly out of this hall, as does also the head-mistress's room. The stairs leading to the gallery lead also to a large room for the assistant teachers which is furnished with a range. This room has been placed so that its windows overlook the playground for convenience of supervision, and one window also looks into the babies' room. The building is heated by a warm-air system, in connection with which a system of ventilation, supplementary to the natural ventilation of the windows, has been arranged. The heating chamber has been placed so that it will be centrally situated between the two blocks. The building is lit by electricity supplied from the borough mains. The present portion has occupied ten months in building, and, apart from some additional works ordered by the committee as the building proceeded, an expenditure of about 20*l.* only beyond the contract sum has been incurred. Builders have done their work remarkably well. The general contractor were Messrs. R. COOK & SONS, of Crawley. Mr. F. B. SELF was clerk of the works. The whole of the sanitary fittings were supplied by Mr. T. H. HARRIS, of Blackfriars Road; the heating system was installed by Mr. JOHN GRUNDY, the electric-light installation and fittings were provided by Mr. WILLIAM NEWTON, the wrought ironwork is by Mr. E. NORKETT, wood-block flooring by Messrs. ARTHUR JEFFRIES & Co., and lock and door furniture by GEO. WRAGGE, LTD.

ST. JUDE'S CHURCH, NEWCASTLE-ON-TYNE.

THIS church is built in brick with red Carlisle stonework and dressings. It cost 3,086*l.*, including vestries, heating and font, and tinted design lead glazing. It is planned at a cheap first cost, but arranged and designed for a further expenditure of fresco or mosaic decoration and a tower. The builder of the church is Mr. W. BASTON, of Newcastle, and the architect Mr. A. PLUMMER, F.R.I.B.A., of Newcastle.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at the premises in Tufton Street, Westminster, Mr. Walter Cave, vice-president, in the chair.

The following gentlemen were elected as members:—Messrs. J. L. Denman and V. S. Whitaker.

Mr. MERVYN E. MACARTNEY read a paper entitled

Regent Street.

He said:—I have taken the subject of my paper, "Regent Street," to mean the line of route from St. James's Park to Regent's Park, and since to have omitted Waterloo Place and Portland Place would have cut out two of the most interesting portions of the matter in hand, I will include them in our survey. I intend to divide my paper into three sections. Of these the first deals with the history of the site which it now occupies; the second with its laying out and construction by Nash and others, up to the lamentable year when the Hanover Chapel was destroyed; while the third embraces all the subsequent history of the street up to the present day, and hazards some guesses as to the future.

To begin with the top end of the street. What is now Park Crescent was pasture land, known as Duppersfield, long after Portland Place had been erected. It formed part of Marylebone Park, which extended southwards to Mortimer Street, and was portion of a royal manor belonging to Henry VIII. In his reign hunting in this manor was strictly preserved for royalty. The manor-house itself was situated nearly at the top of High Street, Marylebone. As you are doubtless aware, Marylebone should really be Marylebourne—i.e. the church of St. Mary-by-the-Burn, Tyburn. (This district of Tyburn was a large one, extending roughly from Tottenham Court Road to Paddington east and west, and from St. John's Wood to Oxford Street.) The origin of the name is somewhat curious. The district of Marylebone took its appellation in order to sever its connection with Tyburn, which had got into bad odour owing to the executions held at Tyburn gallows, which were situated at the south end of Edgware Road. In some maps of the Portland estate the region of Portland Place is set out differently from its present condition. The site of the Langham Hotel is put down as Queen Anne's Square, and from it radiate two streets north-west and north-east, called respectively Langham Street and Portland Street. This scheme was abandoned, and Lord Foley bought the Langham Hotel site with the proviso that nothing should be built to interrupt his view to the north. Of the consequences of this we shall have more to say later.

But to come to our street itself.

Swallow Street.

Information about the first period is meagre in the extreme; indeed, we have to rely almost entirely on such old prints as have come down to us. These show us a very different scene to the present wide and populous thoroughfare. We see a long, ugly and irregular "street"—if that be not too grand a name with which to dignify it—frequented by people of more than doubtful reputation. Amongst these were counted even highwaymen, who had a noted house-of-call in a certain livery stable somewhere in the street. Lord Macaulay tells us that in King Charles II.'s reign "he who then rambled to what is now the gayest and most crowded part of Regent Street found himself in a solitude, and was sometimes so fortunate as to have a shot at a woodcock." At this time, it must be remembered, Oxford Street was a country road running between high hedges. This is practically all the information we have concerning the early history of Regent Street. It takes us back no further than the year 1600; but, indeed, the subject of the paper is comparatively a modern road, when we consider that Oxford Street, Piccadilly, and the Mall can trace their history back almost to Roman times.

The Period of Construction.

Before detailing the planning and reconstruction of Regent Street itself, we must tell of the building of Carlton House. Although this may seem at first sight to be somewhat irrelevant, it will be found afterwards to be most eminently to the point: for, had it not been for the existence of Carlton House and Regent's Park as well, Regent Street might never have come into existence. Carlton House, then, was built for Lord Carlton in 1709. On his death, it went to his nephew, Richard Boyle, Earl of Burlington, the architect, who, in 1732, gave it to his mother, the Countess Dowager of Burlington, who in her turn—and in the same

year—sold it to Frederick, Prince of Wales, the father of George III. The house was originally of red brick, in the style of Queen Anne; but Prince Frederick, on taking possession of it, fronted it with stone. Sir Robert Taylor is said to have been the architect. (In 1734 Flitcroft, or some other, drew out a plan for its improvement.) Attached to the house were large gardens, said by Walpole to have been laid out in imitation of Pope's gardens at Twickenham, which contained, amongst other objects of interest, a cascade designed by Kent, and a large grove of trees holding a rookery, which was not deserted by the rooks till 1827. The house stood opposite Waterloo Place, looking north, and the forecourt was later divided from Pall Mall by a long range of columns, supporting nothing. Hence the well-known lines:—"Care colonne, che state qua? Non sappiamo in verità," which mean literally, "My dear columns, what are you doing there?" Here the columns are supposed to answer, "We haven't the faintest idea." With reference to this colonnade, a witty remark of Lord North's is reported, though some claim it for Sheridan. It so happened that while the Prince of Wales's house had a row of pillars in front of it, York (now Dover) House, the residence of the Prince's brother, had a circular court. Lord North said:—"Then the Duke of York has been sent, as it would seem, to the Round House, and the Prince of Wales to the pillory." This house witnessed many extraordinary scenes. It saw in 1749 Frederick, Prince of Wales, hold secret conclave, and make full arrangements for what should occur on his father's death, even to the framing of a new Civil List. This Prince's death, in 1751, does not seem to have been any great loss to the community. In his lifetime he would go disguised to see bull-baiting, and he was a royal patron to fortune-tellers. He allowed Lady Archibald Hamilton to build herself apartments giving on to the garden of the house, so that he might visit her secretly.

It was this Prince who, in answer to the fulsome flatteries of Pope, the poet and satirist, expressed his surprise thus:—"I wonder that you who are so severe on kings should be so complimentary to me." "Oh, sir," said Pope, "that is because I like the lion before his claws are full grown." In 1783 Holland repaired and beautified the house for the Prince of Wales (who was afterwards George IV.). He added a portico with six Corinthian columns. His details he took from the Temple of Jupiter Stator at Rome. Above this was a frieze and a tympanum with the Prince's arms. In 1784, George, Prince of Wales, on two consecutive days celebrated banquets of the most gorgeous description to celebrate Fox's return for Westminster. This was, of course, in entire disregard for his father's wishes. The house was modernised in 1788, and again internally in 1815. In 1789 the Prince received at Carlton House a deputation offering him the Regency, which later on he accepted.

During this time the famous Beau Brummel was a constant frequenter of Carlton House; but he and the Prince fell out, and he ceased to visit there. Some time after the Prince invited the Beau to dinner once more. So overjoyed was Brummel at dining again with his old friend that he took a trifle too much wine—no great matter in those days; but the Prince turned to his neighbour and said in a voice audible throughout the room, "I think we had better order Mr. Brummel's carriage before he gets quite drunk." The story goes that the Prince acted so in revenge for an insult he had received at Brummel's hands. He was in the same room at some function with Brummel, when the latter passed by the Prince with a lady on his arm, who turned to her partner and asked, "George, who is your fat friend?" In George IV.'s time the poet Moore was a constant guest at Carlton House. He has left the following description of the Prince's breakfast-room during the height of the season:—

Methought the Prince in whisker'd state
Before me at his breakfast sat;
On one side lay unread petitions,
On t'other hints from five physicians;
Here tradesmen's bills, official papers,
Notes from "my lady," drams for vapours;
There plans for saddles, tea and toast,
Death-warrants and—*The Morning Post*.

In 1814, on the occasion of the visit of the allied sovereigns, the famous Nash designed a reception-room in the gardens of Carlton House. It had twenty-four sides and a curious roof, and was 120 feet in diameter. Afterwards it was given to Woolwich, and is now a museum for naval and military models. In "The Beauties of England and Wales" the writer describes, in

a tone of rapturous admiration, the splendours of Carlton House. There was a crimson drawing-room, a circular cupola-room, a throne room and a rose-satin drawing-room. From these descriptions it is evident that the interior of the house was of the most gorgeous description, but whether it was in the best of taste is very doubtful. This is particularly the case when he goes on to describe a "splendid" Gothic conservatory, which to me at least seems almost a contradiction in terms; this was designed by Thomas Hopper, after Henry VII.'s Chapel. Among other apartments was a suite on a lower floor, which was used for domestic purposes and familiar parties. These were designed by Nash, and consisted of a golden drawing-room, a "Gothic dining-room" and the above-mentioned "splendid" Gothic conservatory. In somewhat violent contrast to this uncritical admiration is the following extract from the "Tour of a Foreigner in England" (1825):—"Though the royal . . . palaces are among the most remarkable in London, they serve to show how little the dignity of the sovereign is respected in England in comparison with other countries of Europe. . . . There are in Paris many hotels preferable to Carlton House." The portico, which only served to conceal the house from Pall Mall, then comes in for severe criticism. As regards the other features of the exterior, they were apparently not very striking. The façade had a centre and two wings. It was rusticated and without pilasters. The entablature and balustrade concealed the roof from view. The whole of Carlton House was pulled down in 1828 to make room for the central opening of Waterloo Place. Some of the Corinthian columns from the colonnade were used in the portico of the National Gallery. Other columns were employed in the chapel at Buckingham Palace. The interior decorations were for the most part removed to the last-named place.

Regent's Park and Regent Street.

In July of the year 1793 the Treasury empowered Fordyce, who was then Surveyor-General, to offer a premium of 1,000*l.* for the best plan for building on the Marylebone estate. John Nash, who was the architect and surveyor to the Woods and Forests Commission, and also one of the architects attached to the Board of Works, submitted a plan, in which he was assisted by James Morgan, a former pupil, showing detached villas. There was also sent in a plan by Leverton & Chawner, of a more urban character, and also one by White. Nash's plans were approved. After this the Crown obtained an Act of Parliament and appointed a Commission to form a park in accordance with Nash's plans. Marylebone Park, as Regent's Park was then known, was begun in 1812. About the same time Park Crescent and Square and the adjoining streets were completed. At this time the Prince Regent conceived the notion of building a mansion for himself in the park, and desired some means of communication with Carlton House. This was the genesis of Regent Street. Nash was commissioned to lay it out, and in 1813 the work was actually taken in hand. In the construction Nash did not find his way entirely smooth, though in one particular he was certainly fortunate. When Lord Foley built Foley House in 1778, to the designs of James Wyatt, he had stipulated with the Duke of Portland, the ground landlord, that no other building should be erected to the north. Later on this prohibition considerably embarrassed the duke. But the Brothers Adam, the architects, cleverly evaded the difficulty by building Portland Place, on a most sumptuous scale, of the same width as Foley House.

It strikes me as strange that such fine mansions should have been erected on this spot at a time when the New Road had not been formed, and when Foley House blocked the south end of it (Duppensfield shut it in at the north end, so that it could only be approached by a roundabout route from Harley Street or Great Portland Street). Looking at the scheme as shown in contemporary plans, it does not seem a good speculation, but when Nash came on the scene all this was changed, for he made it the connection between his new street and Park Crescent. So far Nash had his street ready-made, but to continue he had to buy up Foley House and grounds. This cost him 70,000*l.* After this, through some disagreement with Sir James Langham, he was compelled to alter his plan of bringing his street straight over the site of Foley House, and constructed in its stead the present Langham Bend. The quadrant also grew out of a change of plan, owing to the erection of the County Fire Office by Robert Abraham in 1819. Nash himself designed the façade. The portion of the street up to Piccadilly was finished by 1817, and the whole practically complete in

1820. The total cost of the street, including the sewer, was 1,533,582*l.* 16*s.* 10*d.*

I will now describe to you the chief buildings of interest in the street, beginning at its northern end.

All Souls.

I have already mentioned Portland Place, Foley House, and the Langham Bend. Just at this bend still stands All Souls Church. This was built by Nash between the years 1822 and 1824. The tower and spire of his very original edifice seem almost detached from the rest of the church. It was thus placed by Nash in the centre line of the street in order to form a striking termination to the vista.

Argyll Rooms.

The first point of interest to which we come below Oxford Circus is the Argyll Rooms, or rather their site, for they exist no longer. They were built by Nash in 1816 for Joseph Welch. Afterwards they were turned into concert rooms, and became the most famous in London. They were used by the Philharmonic Society and many others for their concerts. In 1834 a fate befell them not uncommon to buildings used for such purposes; they were burned down.

Foubert's Academy.

Not far from the Argyll Rooms, and on the same side of the street, stood Foubert's riding academy. It was kept by a certain Major Foubert, who moved his academy there in Charles II.'s reign, from behind Leicester House, where it had previously stood. This riding school was patronised by the *élite* of society. Its name is still preserved in "Foubert's Passage."

Hanover Chapel.

Nearly opposite this stood, till quite lately, Hanover Chapel. It was built by Cockerell, R.A., in imitation of the Temple of Minerva Polias, at Priene, at a cost of 16,180*l.* Of the pillars of the portico Ruskin said:—"They look as if they were standing on a pile of pewter collecting plates." None the less, the general effect was undoubtedly fine, and of its destruction we may say, "'Tis true, 'tis pity, pity 'tis 'tis true." That extraordinary monstrosity, Regent House, now stands on its site.

Trinity Chapel.

In the reign of James II. a chapel on wheels was erected at the camp on Hounslow Heath, in which Mass was daily performed. At the Revolution the chapel was removed to a position not far from Conduit Street and reconstructed. In 1725, when Conduit Street was built, the present chapel of Trinity Church was erected on its south side. It has since been built in, and is invisible from the street. Another name for this chapel is the Chapel of Archbishop Tenison, who was its founder. It was conveyed to trustees, amongst whom was Sir Isaac Newton; and when Regent Street was constructed it was refronted. But in 1850, the endowment proving insufficient, the west end was cut off and converted into shops.

The Quadrant.

We next come to the famous quadrant. It originally had a colonnade of 270 cast-iron hollow pillars, 16 feet high, topped by a granite plinth. Of these columns, eight still remain across Air Street and Swallow Street. Above this again was a balustraded roof. In its palmy days the quadrant was the gayest and most crowded part of London, as the following extract will show:—"During the day this quadrant is one continued scene of amusement. The shopkeepers submit every article of necessity or luxury to the inspection of the public, and find ready customers amongst the multitudinous people who visit the place. But when Somnus has spread his mantle over its inhabitants, and the moon sheds her silvery rays on its edifice, contrasting its depth of shadow with the most refulgent brightness, when the stillness of death succeeds to almost confusion, the being who can behold it with indifference must be destitute of the finer feelings of human nature." Owing to the complaints of the shopkeepers the columns were removed in 1848, and a balcony was added to the principal floor by the architect Pennethorne. Nash was in a rather equivocal position in some of his dealings with the laying out of Regent Street, and more particularly with regard to the quadrant. He seems to have acted both as the Government surveyor of the new street and also to have dabbled as a private speculator in acquiring property to carry through the scheme. So far as I can discover, his hands were quite clean in the matter, but it seems rather strange conduct on the part of a public official, and I can hardly believe it would be tolerated at the present day. He undoubtedly mixed himself up

th the acquisition of land bought for the quadrant, and ent his fingers over the job. However we, with our modern notions, may regard his conduct in the matter, we must admit he showed himself a man of large ideas, who was prepared to carry them out, even at considerable personal risk. We may take the opportunity to mention here Nash's extensive use of stucco, which brought upon him that famous epigram beginning, "Augustus at Rome was for building renown'd," an epigram of which my hearers must be heartily sick, and so I will quote no more of it.

Piccadilly Hall.

Next we must say a few words about Piccadilly Circus, named after Piccadilly Hall. The derivation of the name is in dispute; formerly it was written Pickadilla. Some refer it to the seventeenth-century name for the hem of a garment, and say the house was so called because it was the outmost or skirt house of the suburbs in these parts. Others say it took name from this:—"One Higgins, a tailor, who built it, got most of his estate by Pickadilles, which in the last age were much worn in England." This, however, seems to be a pure myth, no such person as the tailor Higgins having ever apparently existed. Others again believe that the name relates to the position of the ground on which the place is built; that it is, in fact, a peaked hill for pickadil also meant a kind of stiff collar. This last derivation seems the most probable, as there are many Piccadillies in various parts of England, all situate on the tops of hills.

Nash's House.

Having passed the Circus, we reach Nash's own house, built to his own designs. Here he lived till his retirement. It was later turned into the Junior Constitutional Club's premises, when the original Constitutional Club left it for more commodious quarters. It was afterwards known as the Gallery of Illustration, from the panoramas there exhibited. Later, German Reed used it for his entertainments. It is now occupied by the "Coupé Co."

St. Philip's.

Nearly opposite this was St. Philip's Chapel. It was built after the designs of Sir William Chambers, by Repton, and was a copy of the choragic monument of Lysicrates at Athens. Owing to its position the altar was at the west end instead of at the east. It has since been destroyed.

Waterloo Place.

We are now in Waterloo Place and at our journey's end. It was designed by Nash, and is chiefly interesting by reason of its literary associations. At No. 13 used to house the establishment of Messrs. Taylor & Hessey, the publishers of "The London Magazine," in which appeared for the first time "The Essays of Elia" and the "Confessions of an English Opium-eater." A quotation may prove not uninteresting:—"It was then (circ. 1823) the contributors met once a month over an excellent dinner given by the firm and consulted and talked on literary matters together. Charles Lamb came to most of these dinners, always dressed in black (his 'snuff-coloured suit' having been dismissed for years), always kind and genial." Until the middle of 1890 No. 3 was occupied by Messrs. Rivington, the publishers.

The following verses of Hood refer to a somewhat earlier date:—

Thy first great trial in this mighty town
Was, if I rightly recollect, upon
That gentle hill which goeth
Down from the "Country" to the Palace [Carlton
House] gate,
And like a river, thanks to thee, now floweth
Past the Old Horticultural Society,
The chemist Cobb's, the house of Howell & James,
Where ladies play high shawl and satin games,
A little Hell of lace!
And past the Athenæum, made of late,
Severs a sweet variety
Of milliners and booksellers who grace
Waterloo Place,
Making division, the Muse fears and guesses,
'Twixt Mr. Rivington and Mr. Hessey's.
(THOMAS HOOD, Ode to Mr. MacAdam.)

Life of Nash.

Before proceeding to our concluding section, a brief life of Nash will not be out of place, because Nash was the originator and designer of our street. John Nash was born in 1752, most probably at Cardigan, in South Wales. As his parents were well-to-do, he was placed with Sir R.

Taylor, where he was a contemporary of Cockerell, Craig, Leach and others. On leaving Sir R. Taylor he went into retirement at Carmarthen for several years, but was induced by a visit of Cockerell to that place to renew his architectural career.

The following is a brief list of his principal works:— In 1797-9 he carried out alterations at Corsham House, in Wiltshire, for Paul C. Methuen, Esq. The north front of this house is Tudor Gothic. The cost of the alterations was 80,000*l.*, so they must have been of an extensive nature. The grounds were laid out by Repton, who afterwards claimed the whole design for himself and his son, who was then in Nash's office. In 1799 he designed Sundridge Park, Kent, in the Italian style, for Claude Scott, Esq. In 1803 he was commissioned to design a house for Lieut.-Col. Stewart. This house called Killymore Castle, co. Tyrone, cost 80,000*l.* In 1812 he redesigned Highgate archway, which, begun in 1811 as a tunnel 24 feet wide, had fallen in early in the year. On August 1, 1814, there were held grand displays in the three parks in commemoration of the general peace. There were fireworks, miniature naval battles on the Serpentine, and other like festivities. As his contribution Nash made a bridge and a Chinese pagoda at St. James's Park and a Temple of Concord in the Green Park, which had originally been suggested by Sir William Congreve. The bridge, although originally intended to remain for one night only, was afterwards strengthened by Mr. J. W. Hirst, and left as a permanent structure for several years.

It was at this time that Nash first came into contact with the Prince Regent, and gained his favour, the which secured for him his name and fortune. Thus it happened that when James Wyatt suddenly died Nash was given temporarily the post of Surveyor-General, by command of the Prince. For his patron Nash designed in 1814 the twenty-four sided pavilion in the gardens of Carlton House, which we have noticed above. In 1816-8, in collaboration with Repton, he altered and enlarged the Opera House in the Haymarket, and added an arcade and colonnade of cast-iron columns, which have since been removed. In July 1793 his design won the premium offered for the Marylebone Park. The only terraces not designed by Nash are Cornwall Terrace and Munster Terrace, which was not built till 1827. He designed Park Crescent and Square, Albany Street and the adjoining streets, the Park villages and the outer road of the Park. In 1813-6 Regent Street was designed and carried out, in 1816 he built Argyll Rooms, in 1819 the front of the County Fire Office and the Quadrant. In 1823 he built his own house in Regent Street, moving thither from Dover Street, where he had previously resided. For this house he employed painters in Rome to make copies of Raphael's pictures in the Vatican. To do this he got the Pope's special permit. He also combined into one uniform façade the façades of several shops. This practice was continued by subsequent architects. The years 1826-8 saw the construction of the United Service Club House, Pall Mall, and perhaps of Waterloo Place. In 1825 Parliament made a grant for the repairing and enlarging of Buckingham House for George IV. On the strength of this Buckingham Palace was built, although the grant permitted no such extensive an undertaking. Nash was the architect. The Marble Arch was originally in front of the palace, whence it was removed in 1826. It is of Carrara marble, and cost no less than 30,000*l.*

Windsor Castle was also altered by our architect, who was apparently in great favour at Court. When St. James's Park was laid out in 1828, Nash was employed; but this was his last work of importance, for shortly afterwards he retired to Cowes Castle (Isle of Wight), one of his own earlier designs. There he died in May 1835 in his eighty-third year. Contrary to expectation, he left but little property, though he must have made enormous sums by his profession. In his old age James Pennethorne, a relative, carried through his works for him. Among his pupils was John Adey Repton, and among his clerks Pugin, Foulon and Morgan. Considered as a builder, Nash showed his originality by his employment of stucco, the use of which he practically introduced, and of cast-iron columns, by which he anticipated the present enormous use of iron and steel in architecture. While if we regard him as an architect and artist, we must admit that if his details were poor his conceptions were at least grand and magnificent. But it is for his planning that he deserves particular commendation. I doubt if many of my audience are aware that a perpendicular let fall from the west end of Park Crescent would hit the south end of Park Lane. It is an excellent object

lesson, showing how to cut a series of parallel lines by a diagonal.

A similar problem was set when the Charing Cross Road had to be made. The contrast between the two is only too evident. Regent Street is an ordered and satisfactory lay-out. Charing Cross Road is a hopeless jumble. In many places it is difficult to pick it out from the other lines of traffic, whereas Regent Street never loses its identity. Why is this? The answer is simple. In the one case the line of the street was laid out by an engineer, in the other by an architect. And while on the subject I may say that there is no doubt that the London County Council are well aware of the disastrous muddling policy of their predecessors in street planning, and in the scheme of Kingsway and Aldwych they have shown great skill in laying out, except in the case of the left horn of the Strand Crescent. Financial considerations have here interfered to mar a great improvement. The pity of it is that when once the buildings are up there is no possible chance of altering the line of frontage.

Now we come to the last stage of our paper—the future of Regent Street. There have been of late years five important reconstructions of buildings in this street. In chronological order they come thus:—The Hanover Chapel, Waterloo Place, Robinson & Cleaver's, St. Philip's Chapel and St. James's Hall. In the words of St. Paul, "all things are lawful, but all are not expedient." It is lawful to criticise all these designs, but, at the same time, hardly expedient. Accordingly I will not discuss the new façades in Waterloo Place; but I have described the destruction of the Hanover Chapel as lamentable, and this description suits equally well the erection of the building that replaced it, and even better the monstrosity erected by Robinson & Cleaver.

I will say no more on this subject, but turn to the design for the rebuilding of the quadrant. This we have seen on paper, and can now fairly judge by the actual work. I confess that I view it with mixed feelings; the predominant one, admiration for the architect and the Office of Works; but together with this is present a haunting sense of fear that it is too good to last. I cannot divest myself of the feeling that it is not twentieth-century architecture. I wish it were. I repeat "all things are lawful," but is it expedient that we should deliberately set ourselves in opposition to the tendencies of the age? Bad as they may be, they form a part of the essential spirit of the times. Now I consider this design to be the finest effort of modern times, and I pray for its success. In principle, too, it is absolutely right, but the old remark of the cynic, "I don't believe in principle, but oh, I *do* in interest," comes forcibly to my mind in this connection. If you are letting shops, you must consider the interests of the shopkeeper. Do not think that I would advocate the plate-glass construction, but I think there is a *via media*, by the use of metal columns, which would overcome the difficulty. For the eye is gradually being accustomed to estimate the strength of metal at its proper worth, and not to require that great bulk for its satisfaction which it does in other materials. It is not alone in this country that we are "up against" this question, as our Transatlantic cousins would say. European and American architects are equally confronted by it. In "the States" I have seen some ground-floor shop-fronts that seemed to me in a great measure to solve the problem. They had bronze columns that both were and looked strong enough to carry the superincumbent structure, and yet were not offensive in design or obstructive to the display of goods.

Mr. H. T. HARE said it gave him great pleasure to propose a vote of thanks to Mr. Macartney for his interesting and unusual paper. It was an unusual kind of paper because it was not often they had an historical survey of a portion of London so well known to most of them. He, however, knew very little of the history, and he had no doubt that many of those present had been as ignorant on the subject as himself. The paper for the most part was merely a statement of facts, and did not therefore admit of much criticism. The lay out of Regent Street and the motive for the turn in the street in Langham Place was obscure, but whatever might have been the motive it seemed to him to be a fortunate accident, if it was an accident. Had the street gone straight through in the line that Nash intended, Regent Street would not have been so interesting as it was at the present time. With regard to the rebuilding of the street, of course there was much which could be said in relation to the recent developments, but one felt a great deal of diffidence in expressing what could be

said in view of the work of so eminent an architect as Mr. Norman Shaw. If the same method of procedure was to be followed as had been allowed in some buildings at the northern end of the street it would not be satisfactory. A regulation should be made that no individual building should be erected at all, and that the street should be built in one conception, otherwise they would have each separate occupation having its different expression. What Mr. Macartney said with regard to shop fronts and modern requirements he, Mr. Hare, could not quite agree with, for he believed it was an easy matter for the requirements of the shopkeeper in the way of window space to be exaggerated. The amount of glass taken up by piers was not unreasonable. The only trade probably which might benefit by utilising every inch of glass was the draper. In no other trade but that could he see that the maximum amount of glass space was required. The belief of the shopkeeper should not be taken as an absolute necessity. Of course he did not mean to say it should not be considered, but he thought there should be moderation in considering the architectural aspect with the commercial requirements.

Mr. H. H. STATHAM, who seconded the vote of thanks, said it was not so easy to discuss a historical paper of which the general facts were not new. At the conclusion of the paper, however, they came to the present and future treatment of the street, and for the most part he supported the opinion that Mr. Hare had expressed. The feeling he had was anxiety whether the present scheme was not too fine or costly to have the whole quadrant carried out in that way. Such a development would be magnificent. He could wish to see emphasised what Mr. Macartney had said as to the planning of Regent Street, and he thought Nash deserved great credit for his treatment of it. The idea of Nash was to divide up the whole street into blocks, in which each block should express some individual element, and this undoubtedly was the proper way to treat a long street with architectural effect and dignity. There was one thing about the new design, and that was that the upper portion could not stand on the piers, and he thought they would find there must be iron girders inside to take the superstructure, an arrangement to be regretted.

Mr. ARTHUR KEEN objected that the new buildings in Regent Street were being carried to such an enormous height. He thought the quality of the quadrant would be affected by this, since the scale of the street would be lost.

The CHAIRMAN thanked Mr. Macartney for having so successfully put before them the history of so important a street, and it was a history that would be new to many persons. The arcade question had not been touched upon, and yet in the modern development of streets such treatment was important in the planning of buildings erected in cities.

Mr. MACARTNEY, in reply to the questions put to him, said that as regarded the question of arcading and columns standing out over a pavement there was not the slightest doubt that they were removed in Regent Street because the shopkeepers found them a nuisance, since they were often made to serve as latrines. He agreed with Mr. Keen about the height of the new buildings in Regent Street. The scale was too big and too good to last. He did not think it would be continued, and it was a serious point, for the new buildings remained out of scale with the rest of the street.

RESTORATION OF HOLYROOD ABBEY CHURCH.

By THOMAS ROSS.

I HAVE endeavoured to remain silent with regard to Lord Leven's proposed restoration of Holyrood Chapel, as I am so largely concerned, but I cannot remain silent in face of Lord Rosebery's public challenge. I would therefore ask you to insert in your paper the notes that I wrote at the time of the original controversy for my own satisfaction. In the first place, I briefly describe what of the church remains, the history of its construction, and how it came into its present singular condition of ruin—it is quite necessary to know this in order to understand Holyrood—and conclude with a few remarks on the report by Professor Lethaby.

The nave is the only part of the church now remaining. Its interior length is about 129 feet by 60 feet wide. It has a central avenue, with north and south aisles. The outside walls of both aisles, with the vault of the south aisle, are standing, as are the row of pillars, seven in number, with their connecting arches forming the arcade. The triforium

storey above also remains. The opposite, or north row, of pillars, and all that existed above them, including the lofty vaulted roof, have perished—only the wreck of two pillars remaining.

Thus it will be seen that the arcade and wall on one side are almost entire, the clerestory having perished, and on the opposite side all is clean swept away. The west wall is practically entire, and the great west piers and arch of the central tower at the east end are also entire. The stonework of the low tower at the north-west corner may be said to be entire. It, along with its companion at the other corner, was finished up to about 1544 with a square, stunted timber spire. After the removal of the companion tower in the seventeenth century, this spire was removed from the existing tower, and a timber-leaded steeple was put up, almost identical in design with the existing steeple of St. Ninian's, Leith. I do not know when this was taken down and the existing lead platform put on.

Professor Lethaby opens his report with a description of the existing remains of the church, and towards the end he says that "these remains are but a small portion of the complete nave." I would be inclined to say that considerably more than one-half of the nave remains. The history of the construction of the church is as follows:—

The nave was begun towards the end of the twelfth century, and, like St. Andrews Cathedral, it was built without buttresses, although it was intended from the beginning to be groin vaulted. It was before the idea of such adjuncts as buttresses had been fully developed. It was probably finished after the middle of the thirteenth century. Nothing further is heard of the structure till the time of Abbot Crawford, 1457-83 (a period of about 200 years), when he built a row of buttresses against the wall of the north aisle, and another row in the cloister about 10 feet in front of the south aisle wall. The reasons for this change in the relative positions of the buttresses are that the outside of this south wall is enriched with a double arcade, which the Abbot seemingly wished to conserve; also that the buttresses in this position were useful in connection with a covered walk in the cloister.

From this southern row of buttresses Abbot Crawford threw a broad heavy flying buttress against the top of the south aisle wall. He then reared a buttress on the top of this aisle wall, resting it partly on this flying buttress; then from his north and south upright buttresses he threw across the aisles flying buttresses against the clerestory walls. The high buttresses on the south wall are of considerably less weight than those on the north side. This, of course, minimises the risk of damage to the wall and vault of the south aisle, but they were quite equal to the strain put on them by the high vault, as they are still standing. These details show that Abbot Crawford was quite abreast with the best methods of construction, and his application of these to an old building shows a perfect mastery of the principles of Mediæval architecture.

For the purpose of this review this may be regarded as practically all he did, although it has been often stated that he rebuilt the church. Abbot Crawford has not told us why he carried out this work, but the reason is quite obvious. Undoubtedly the arches of the great vault and of the aisles were pressing the walls outwards, and his expedient to counteract this was most admirable. He completely remedied the original defects of the construction; and with fair play and attention the church might have been standing to-day. The high roof on the outside was apparently covered with lead on rafters; the north aisle with stone slabs. How the south aisle was treated I do not know.

After the English invasion of 1544 the church was subjected to great neglect and indignity. The outer lead covering had been stripped off, thus exposing the stone vault. Charles I. expended considerable sums in putting the fabric in repair for his coronation, which took place within its walls with great pomp and splendour in 1633. The last important episode in its history was its being fitted up as a chapel for the Knights of the Thistle by James II. in 1688. Ere it was completed an Edinburgh mob—on the eve of the Revolution—broke into the building and tore down whatever they could lay their hands on. The history of the chapel for the next seventy years is obscure, but its condition was evidently serious when, in 1758, a new roof, composed of heavy stone slabs, which necessitated the use of a good deal of masonry, was put on, and ten years later, during the night of December 2, 1768, it fell, reducing the church to its present condition. During his interval attention was drawn to the dangerous state of the church, but the warning fell on deaf ears.

Now, the question arises, what caused it to fall?

What *did* happen was this. The flying buttresses, or the props (as we may call them), on the north side gave way. Nothing else will account for the disaster and for the present condition of the church. It was like cutting the string of a bow—the outward thrust came into immediate operation. It was not a downward crushing weight, as is generally supposed. The walls would have stood this weight many times over, and the south wall did sustain it; but when one or more of the north props gave way, the pressure of the south flying buttresses, intended to counteract the outward pressure of the vault, operated the other way and sent over the south clerestory and the roof. The mass, gathering strength, sent over the north clerestory crash down on the top of the north aisle vault, smashing any of the flying buttresses which might otherwise have stood firm, and in turn this confined, tumbling uproar of ruin burst the pillars inwards, and the result is what we see to-day; but the south buttresses of Abbot Crawford stood the strain, and have not moved one hairbreadth—they saved the north aisle wall (the south one was not in danger) and his flying buttresses would have saved the whole structure had they been properly attended to and kept in repair. These flying buttresses were exactly 300 years old. They were up in the air, difficult of access, and exposed on all sides to gun shots and to the effects of storm, rain and frost, and clearly no attention was paid to their condition. Need we wonder if the centre one (which was subject to the greatest pressure) gave way suddenly, and the falling walls broke all the others and the whole thing came down like a child's house of cards? All this is perfectly plain, and accounts for the disaster in a clear and practical way, and the only possible way. There is a remarkable illustration of the tremendous effect of the falling mass of masonry to be seen at the great piers of the crossing, which at the same time is a striking testimony to the splendid nature of the masonry of the church. It may fairly be surmised why it was that the north flying buttresses gave way rather than those of the south. They were considerably longer (about 5 feet), consequently of less strength. To compensate this they were slightly increased in breadth (9 inches), so as to make them strong enough. Now, Abbot Crawford might have shortened these. Why he did not do so is another proof of his knowledge and skill. The north aisle wall, then as now, had an outward leaning, and still more so had the vanished clerestory wall. His object was to keep these in their position and prevent them from going further. The design on the north side shows how careful he was to avoid incorporating his new work with the old, only providing a sure and firm rest for the inclining walls. Had he shortened the flying buttresses, he would have been obliged to tie the new work to the old by taking a grip of the top of the aisle wall, by which operation he would have run the risk of dislocating the old groin vaulting, had his new heavy buttresses forced the old aisle wall into a different position; and as a section of the church shows this was not an unlikely event.

Having traced the history of the construction of the church and the cause of its fall, I proceed to point out what Lord Leven proposed doing.

It was proposed to rebuild the pillars, the triforium and clerestory of the north side, and re-erect the fallen clerestory of the south side, to restore the central groined roof as also that of the north aisle, and to re-erect the flying buttresses. I need not go into further details, such as finishing the top of the east and west gables, new outside roof, glazing, flooring, &c. Nothing was proposed to be done to the tower.

I will now make a few remarks on Professor Lethaby's report, which, as is well known, recommends that the scheme of restoring the Chapel Royal should not be entered on, and I think I am correct in saying that in support of this recommendation three counts are brought forward.

First, the decayed state of the walls and arches.

Second, that most of the existing work is out of the vertical.

Third, that there is no sufficient evidence for making anew certain of the lost parts.

As to No. 1, the report says:—"The walls and arches are much decayed by the weather and disintegrated by the action of smoke deposits, &c." It may be asked, are there any walls, centuries old, in any large town of which some such remark might not be made? Fortunately, however, we have Professor Lethaby's assurance that it is the surface which is "everywhere attacked and blackened," so that the decay may be said to be only skin deep.

The outside of every building is exposed more or less to these influences, and for a period of about five centuries

the atmosphere of Holyrood was that of a rural village, and during this long time there formed on the stone what masons call its natural skin, hardened under the most favourable circumstances, and this is the reason why the outside of the walls show so well to-day. Then, for the interior, it was not intended to be exposed, and it is quite certain that it is only since it was exposed that it has deteriorated in the manner we see. To reroof the building will surely not accelerate this, but rather by protecting it from the weather will it be found to be the only way of averting this decay. Probably, for any ordinary building fallen into ruin, this would be admitted by most proprietors, but because it chances that Holyrood is a building of historic fame and a fine example of architecture, there is neither rhyme nor reason for the reversal of such a sound principle. The rain falls on the just and the unjust alike, and so does it on the finest historic monument and on the meanest hovel.

The pillars, we are told, are "largely patched with cement." Where the falling walls struck the edges of the pillars some of them doubtless got injured, and these are now patched with cement in several places. To suggest that this is serious is to exaggerate. The pillars and arches are composed of the very finest masonry, and show no signs of fracture or crushing—any weathering or decay is confined to the surface. Their mouldings are clear, sharp and in good condition, and the freestone was undoubtedly from a first-class quarry and well selected for the important purpose. When Professor Lethaby tells us that the pillars seem to be better than they are, he should have said that they are better than they seem.

We are told that "the triforium is in a still worse condition," and that the three eastmost bays "are formless in respect to mouldings and details." I say this is an overstatement. The forms of the arches are quite distinct, and one-half of the cap mouldings remain at the ingoings. The remainder of the triforium is in fairly good order, except the shafts and vaulting shafts, which are kept in place by hoop-iron straps where they have not fallen away altogether, as many of them have; they were doubtless swept away by the falling masonry and by subsequent exposure. These features can all be restored exactly as they were, as every shaft missing from one place can be restored from corresponding ones found remaining in other parts. It should be understood that these shafts are ornamental, and that the walls will stand and bear the clerestory and vault, whether they are restored or not.

As to restoring the broken string-mouldings and bases to which Professor Lethaby refers, the idea is to leave them as they are, but restore them on the new wall opposite; for every feature required on this wall there is a precedent in the old one. I would leave the old walls very much alone, with all their scars, furrows and wrinkles.

No. 2.—That most of the existing work is out of the vertical. Professor Lethaby obtained the figures of the divergence of the walls on his one-day visit to Holyrood. I agree with him in saying that some of these are serious—and in the instance of the pillars and south wall of the nave, unless some protective measures are taken, the seriousness will undoubtedly increase. Of this wall Professor Lethaby says that it "should not be loaded with a new clerestory and roof, to say nothing of a stone vault." I cannot agree with this opinion. The wall is perfectly able to support the weight it was intended to bear, and which it did carry for 500 years, and which it would have carried for centuries to come but for the neglect and carelessness already referred to. Will Professor Lethaby say that this wall, if prevented from falling forward, will not bear the crushing weight it sustained 140 years ago? This is a matter of figures, and I can assure the Professor that it will carry the proposed weight many times over; and the stone vault is the thing which will prevent this leaning wall from going further; and that it does lean, and lean inwards, is a point decidedly in favour of what is proposed. To restore the stone vaulting is the thing that will save the church from utter ruin. There is probably not an architect in the country who has not loaded walls of poorer substance than those of Holyrood with far greater proportionate weight than is proposed to be done here, and weight which they were never intended to carry; while at Holyrood it is only intended to put back the weight the pillars were designed to bear, and which they did bear for centuries. The leaning of various other parts is all carefully detailed. Professor Lethaby knows how to rely on the cumulative effect of these insignificant details, which are of no practical account. What does it matter that the

north aisle wall (4 feet thick) leans outward 4 inches? It has not moved since Abbot Crawford's time, and it never will nor can move. That the tower should lean 4 inches one way and 7 inches another is not of the least consequence, and as Lord Leven had no intention of touching it, it is a matter quite irrelevant.

The west wall, we are informed, leans outwards $4\frac{1}{2}$ inches. Is this serious in a wall 10 feet thick for a height of about 50 feet? Above this level, to a height of about 60 feet, the wall is reduced to 6 feet thick, and the reduced wall so placed as to counteract the outward bend, and the few feet of new wall required will still further serve the same purpose. But I will not do the Professor the injustice to suppose that he dreads the outward falling of this splendid west front.

No. 3.—That there is no sufficient evidence for making anew certain lost parts.

Under this count the clerestory and west gable are twice referred to, so that they may be regarded as Professor Lethaby's strong points. We are told that "the form of the clerestory and west gable are unknown." If Professor Lethaby had called on me when in Edinburgh I would have prevented him making this double mistake twice over. The kind of vaulting, as he may remember, is sexpartite. The working out of this with plan and sections will give the form; the height is marked on the ruin, but even without this latter it can be obtained, three points of a circle being given; the problem is to find the centre. At Holyrood Professor Lethaby can get five points. Not only is its form not unknown, but the height, width and number of its windows are not unknown. This shows that Holyrood cannot be taken in at one visit. Then as to the west gable, it stands to the height of the vaulting, about 60 feet above the doorstep. It might have occurred to Professor Lethaby that the form of the west gable would take the form of the roof behind, more especially as the east gable is standing and has that form.

Does the Professor not know that there is a measured drawing in existence giving the last form of the west gable?

The report goes on to deplore the condition of the north doorway and the glorious west doorway (and here it is a pleasure to heartily join Professor Lethaby in admiration of this splendid piece of work), with calculations of how much of its carving is lost and of how much remains. But what has all this to do with the rebuilding of fallen Holyrood? Just as much as the building of Tenterden steeple had to do with the formation of the Goodwin Sands: nothing whatever. It was no part of the proposed restoration to touch either doorway—there they are, let them alone.

We are informed that the carved capitals of the arcade are mostly "shapeless masses." This, again, is a subject quite outside the proposed work, but is it true that they are in this condition? The carving is sound, but in many instances is filled up with soot and dirt, which could all be removed without the use of an iron tool. The Professor gravely asks, "What is to be done with work which might be called late and debased?" Does he expect a serious answer to this? If so, I would say, let it remain in its late debasement. There is nothing to be ashamed of in this so-called debased work in the west front. The Professor calls it "curious but interesting." Yes, it is very curious, very interesting, even pathetic, when one knows its history. But it is not of the time of Charles II., as probably by a slip Professor Lethaby says it is.

Towards the end of the report we are told "what is old would largely disappear in handling it, and that in turn would be swamped by entirely modern work." How what has disappeared in handling can be afterwards swamped by something else is not quite clear.

THE ROYAL OBSERVATORY, GREENWICH.

A SPECIAL committee was appointed by the Admiralty in July to inquire into the working of the London County Council's electricity generating station at Greenwich in relation to the Royal Observatory. The committee consisted of Lord Rosse, representing the Royal Observatory, Professor J. A. Ewing, representing the Admiralty, and Sir Benjamin Baker, representing the Council. The conclusions arrived at by the special committee, after an exhaustive inquiry, are contained in the following recommendations, in which are suggested certain modifications in the arrangements at the generating station, and as to the manner and times at which the first portion of this station shall be worked, so as to avoid any possible interference

with the work of the Observatory:—(a) The question, both as regards effects of vibration and obstruction through chimneys or discharge from chimneys, to be further reviewed after, say, two years, by which time experience should be obtained with the second portion of the station at work. (b) The generating plant for the second portion to be turbines, which, as well as the dynamos, must be of a perfectly balanced type, such as has been proved by trial not to cause vibration. (c) An undertaking to be obtained that when the plant in the second portion is available for use, the reciprocating engines of the first portion shall not in ordinary circumstances be used after 10 P.M., and their use shall be restricted as far as possible after 8.30 P.M. (d) The two chimneys of the second portion, at present incomplete, to be not higher than 204 feet above Ordnance datum. (e) The discharge of gases both from these and from the existing chimneys not to be materially hotter than the discharge is now from the existing chimneys, namely, about 250 deg. Fahr. (f) No further extension of the station to be made beyond the 20,000 kilowatts now contemplated in the equipment of the second portion.

The highways committee are advised that the difficulty with regard to the erection of the second two chimneys to their full height of 271.88 feet above Ordnance datum would be met if one of them were carried to the same height as the existing chimneys, and if the other, which is on the meridian of the altazimuth, were constructed to a less height, so as not to interfere with the observations on that meridian. This continuation upwards of one of the chimneys would have the additional advantage of minimising any possible interference with observations by the hot gases from the other chimney. Moreover, it is thought that, as regards the arrangements for the working of the reciprocating engines, it may be practicable to establish means of communication between the Observatory and the Greenwich generating station, so that the Astronomer Royal and his assistants may communicate with the Council's officials whenever it is proposed to take observations, in order that the working of the machinery may be modified to meet the requirements of the Observatory.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the rooms of the above Society on Thursday, the 7th inst., Mr. W. H. Thorp, F.R.I.B.A., read a paper on "Villas and Gardens of Rome, Tivoli and Frascati." Mr. H. S. Chorley, president, was chairman. The lecturer drew a comparison between an ancient country house of a Roman patrician of the time of the Cæsars, and the sumptuous villas erected by the wealthy cardinals in the sixteenth and seventeenth centuries in the vicinity of Rome, and more especially those to be found in the favourite resorts of Tivoli and Frascati. Leaving classical times behind and devoting ourselves to the country house and its garden of the Renaissance, it may be well, he said, before describing any villa in particular, to take note of the general characteristics that pertain to Italian villas as a class. More often than not they are built on a hill-side. This afforded the architect an opportunity to place his house in a fine position for effect, and for so arranging his terraces, avenues and balustraded flights of steps as to enhance its attractions. The garden setting in truth is sometimes so elaborate in its devising that it outvies in importance the villa itself. Strange as it may appear to us, the cult of flowers and the brilliant effects of colour to be obtained thereby did not form an important feature in the Italian garden decoration scheme, and the architect relied for his effects on other means than those afforded by the massing of vivid colour in carpet-like flower-beds. Benches of marble bordered the avenues at intervals, and statues, vases and relics of antique sculpture stand out in sharp relief from the sombre background of cyprus and evergreen oak. Nothing probably impresses the visitor more than the variety imparted to the gardens by the introduction of water in the form of cascades and fountains for adding to their charms. In many cases the hydraulic engineer was a man of renown or ranked in equal importance with the architect. The term "villa" in the Italian sense of the word is not applied merely to the country house itself, but includes the whole of the estate, with its vineyards, olive plantations and gardens. The country house or Italian "Maison de plaisance" did not usually demand the extensive accommodation of the Palazzo in the

city; hence it was planned on a smaller scale. Its arrangement of rooms was simpler and did not as a rule comprise the extensive suites of apartments considered necessary for the nobleman's town house. As befitted its situation in the suburbs or country an airy and cheerful aspect was desired and secured by means of loggias, open arcades and lofty rooms, with balconies giving upon the landscape. The lecturer described in detail the Villa Medici and Villa Borghese in Rome, Villa d'Este in Tivoli, and Villa Aldobrandini, Villa Falconieri, Villa Mondragone, and Villa Torlonia in Frascati, and illustrated them with lantern slides.

PEVENSEY CASTLE EXCAVATIONS.

FOR about three months men have been engaged on the excavations which are being carried out at Pevensey Castle, and particularly inside the area of the Roman walls in the part historically known as the "outer bailey," and the work is being continued with much vigour. It is hoped to further add to the results before the close of the winter necessitates a temporary abandonment. It is rather important to remember, says the *Sussex Daily News*, that in view of the known facts concerning the traditions of the castle, the results of the excavations must necessarily be small and not by any means sensational, such as might be expected from the exploration of a buried Roman city or a site on which there existed and lived a civil population, such as was the case at Silchester, in Hampshire, for example. In this place traces of streets and buildings, and an accumulation of objects connected with the ordinary life of a people were discovered, but it must be borne in mind that Anderida (Pevensey) was purely a military camp, and, comprising as it did a link in the chain of stations on the Saxon shore, was merely an outpost of Roman power.

Nor was Anderida occupied by picked troops of the Roman army; the probability is that it contained a small garrison, with perhaps an auxiliary force of Britons who were coerced into the Roman service. At any rate it is certain that the fortress of Anderida was not erected until a late period in the Roman occupation, and consequently was not occupied by the Romans more than a century or perhaps 150 years. While, however, engaged in a comparison of results here and at Silchester, the peculiar interest of the Pevensey excavations centres in the fact that few, if any, cities occupied in a similar way and under identical circumstances, and having been untouched by the spade of the workman for ages, have been excavated in modern times. The present excavations have shown that there were no permanent buildings on the site, at least of that part which has been explored, but they have revealed the existence of a regular line of temporary buildings which agree with the accounts of ancient writers as to the disposition of a Roman camp. In years gone by a controversy raged round the question of the accurate site of the ancient Anderida, and the general weight of the circumstantial evidence was in favour of Pevensey.

The present investigations have furnished valuable testimony in support of this theory, and it may be anticipated with some measure of confidence that when the work is brought to a successful conclusion this question will have been settled beyond doubt for all time. One important object in view is the pronouncement, as near as possible, of the date when the Roman settlement took place and the huge walls surrounding the area were built, and much evidence has been secured towards the satisfactory solution of these questions. The pottery and bones which have hitherto been discovered are of a very fragmentary character, and necessarily so, for it must be remembered that on the withdrawal of the Roman forces they would be likely to carry away with them almost every article of utility, and in the subsequent troublous times, the Britons would no doubt make havoc of everything which remained. However, the excavations have already produced quite a representative collection of different kinds of Roman pottery, including a rather large proportion of painted ware in imitation of true Samian, which is by no means common. After Roman times the fortress was occupied by the Britons, and numerous traces of the memorable siege by the Saxons of 490, so graphically described by the historian, have been found, with additional traces of Norman and Mediæval occupation. Careful records are being kept of all the discoveries, and plans are being prepared of the parts uncovered from accurate measurements. It is now proposed to excavate the great Decuman gate from the west end, and the Prætorian gate on the east; also the Southern Postern

gate, which is at present completely buried beneath débris. It is probable that an exhibition will be held at the conclusion of the season's labours, when the specimens will be on view and papers read dealing with the excavations and results. It may be noted, however, that exploration necessitates funds, and, as the supplies are running short, an appeal for financial aid is made to enable the work to be completely and thoroughly done. Money may be sent to Mr. L. F. Salzmann, 16 James Street, Haymarket.



Proposed National Association for Monumental Sculptors.

SIR,—As the result of a correspondence I commenced in another journal last August, it has been decided to hold a preliminary meeting for discussing proposed Association, electing a committee, &c. The meeting will be held at the Cannon Street Hotel, London, in the afternoon of Tuesday, March 12, at three o'clock, to be followed by a dinner at eight o'clock on same day. The meeting is only open to master sculptors and masons, and by ticket only, application for which should be made not later than March 3 to the undersigned.—Yours, &c., WILLIAM BORROWDALE.
Durham Road, Sunderland.

GENERAL.

The Royal Scottish Society of Painters in Water-Colours at their twenty-ninth annual general meeting elected Sir Francis Powell, R.W.S., as president for the ensuing year, Mr. W. M. Taggart, R.S.A., as vice-president and Mr. A. MacBride, R.I., as deputy president.

Mr. John Ely, architect, King Street West, Manchester, has been awarded the first premium of 50*l.* in the competition of designs for the enlargement of the Salford Royal Hospital. Mr. John Keith D. Young acted as assessor. The extension committee have issued an urgent appeal for 70,000*l.* to enable them to carry out the complete scheme of extension, which includes the purchase of land.

M. Edouard Détaillé, the French painter, has been enrolled in the second class of the Victorian Order.

The Edinburgh Architectural Association discussed on Wednesday the following motion by Mr. James Bruce, W.S. (a lay member):—"That, looking to the public interest that has been aroused on the question of the repair and restoration of the Chapel Royal, Holyrood, through the intimation of a legacy of 40,000*l.* for these purposes by the late Earl of Leven and Melville, it be remitted to the Council to report upon the following points, viz. :—(1) What remains of the structure exist; (2) the conditions and capabilities of the parts remaining; (3) whether the evidence of these parts is sufficient to enable a satisfactory repair and restoration of the structure to be made."

The Education Committee of the London County Council have appointed an advisory sub-committee for the school of building, consisting of Messrs. W. H. Atkin Berry, F.R.I.B.A., W. J. Carpenter, J. S. Holliday (of Messrs. Holliday & Greenwood), F. Higgs (of Messrs. F. & F. H. Higgs), H. R. Taylor, G. Dew, Lewen Sharp, F.R.I.B.A., F. Barter (United Operative Plumbers' Association), and R. F. Gilling (National Association of Operative Plasterers).

The Chester Education Committee on Monday unanimously approved of the plans for the erection of a new public elementary school in Love Street at a cost of 13,700*l.*

The Holborn Borough Council have received the sanction of the London County Council for a loan of 20,000*l.* in connection with the extension of the municipal offices. It is proposed to convert the ground floor of the present town hall into shops.

Mr. Louis Ambler, architect, has been elected chairman of the Council of the Society of Yorkshiremen in London.

The Committee of Henshaw's Blind Asylum has, subject to the approval of the Governors of the Institution, selected the plans of Messrs. Mangnall & Littlewood, architects, Manchester, for rebuilding Hayesleigh, Warwick Road, Old Trafford, at an estimated cost of 25,843*l.* A large number of plans were submitted.

The Brussels Fine Arts Society known as the "Libre Esthétique" intend to include a series of works by the late Eugène Carrière in the next exhibition. He was known by his idealisations of scenes of Parisian life.

An Exhibition of the works of Mr. F. J. Shields is to be held in Manchester.

Dr. Martin, assistant director of the Mauritshuis museum, The Hague, will deliver two lectures on Dutch landscape art at the Royal Institution on February 28 and March 7, and he will repeat them at University College on March 5 and 12. The subject of the first lecture will be "The Development of Landscape Painting in Dutch and Flemish Art until about the Year 1600;" and of the second, "Landscape Painting in Holland in the Seventeenth Century." The lectures will be delivered in English, and will be illustrated by lantern slides.

Sir R. Rowand Anderson has prepared a report with plans on the proposed physics laboratory for Dundee University College.

Mr. Wm. H. Goodyear, curator of fine arts in the Brooklyn Museum, has been elected an honorary member of the Royal Academy of Fine Arts in Milan, in recognition of the contributions to Mediæval architectural research in Italy which have been made by the Brooklyn Museum. Mr. Goodyear was also elected a corresponding member of the American Institute of Architects at the Annual Convention.

The Carnegie Dunfermline Trust recently invited plans for a branch library in the city at a cost of 5,000*l.*, and offered three premiums of 20*l.*, 15*l.* and 10*l.* Nearly 100 plans were sent in from all parts of Scotland. Mr. George Wilson, of the firm of Messrs. Sidney Mitchell & Wilson, architects, Edinburgh, acted as assessor, and made his award as follows:—(1) Mr. Hippolyte J. Blanc, Rutland Square, Edinburgh; (2) Mr. J. Cumming Wynnes, Woodburn Terrace, Edinburgh; (3) the late Mr. Andrew Muirhead, Dunfermline. A committee of the Trust, however, in making a choice of the plans for their buildings, decided on those of Messrs. H. & D. Barclay, Glasgow, as being the most suitable.

The Award of the official referee (Mr. Muir Mackenzie) in the litigation between Mr. A. Kellett, contractor, and the Stockport Corporation is likely to be the subject of an appeal. Mr. Kellett complained that he had been prevented from carrying out his contract to construct a dam in the Kinder Valley in connection with the waterworks scheme, and Mr. Mackenzie awarded him 52,546*l.*, 29,400*l.* being for loss of profit on the contract. Mr. Bailhache, counsel for the Stockport Corporation, applied to Justices Phillimore and Bucknill in London for a stay of execution as to the 29,400*l.*, stating that he desired to take the opinion of the Court of Appeal on this point. Their Lordships granted a stay of execution as to 12,000*l.* only.

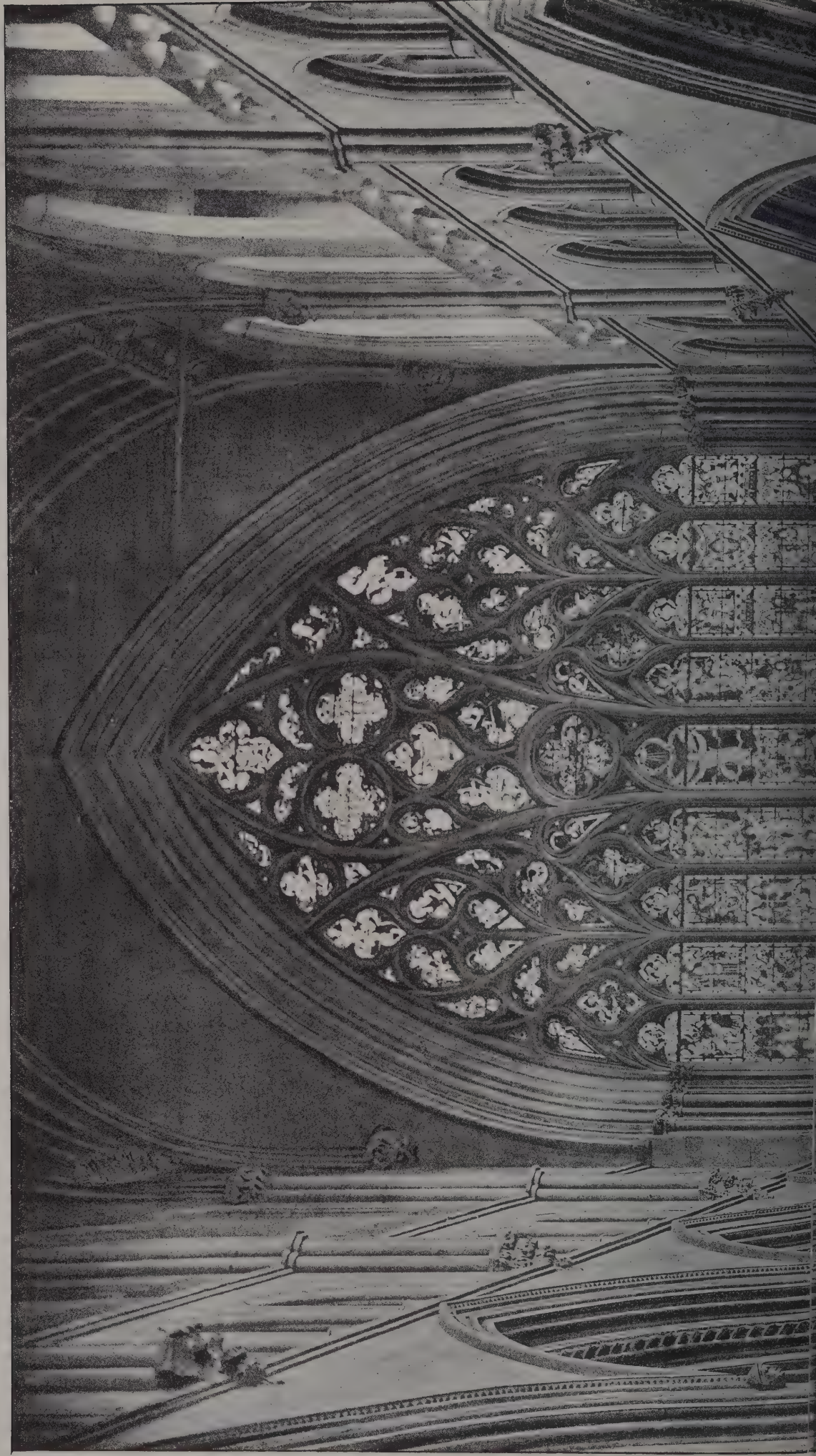
A Conference of the National Housing Association will be held to-morrow at 2 P.M. in the Caxton Hall, Westminster.

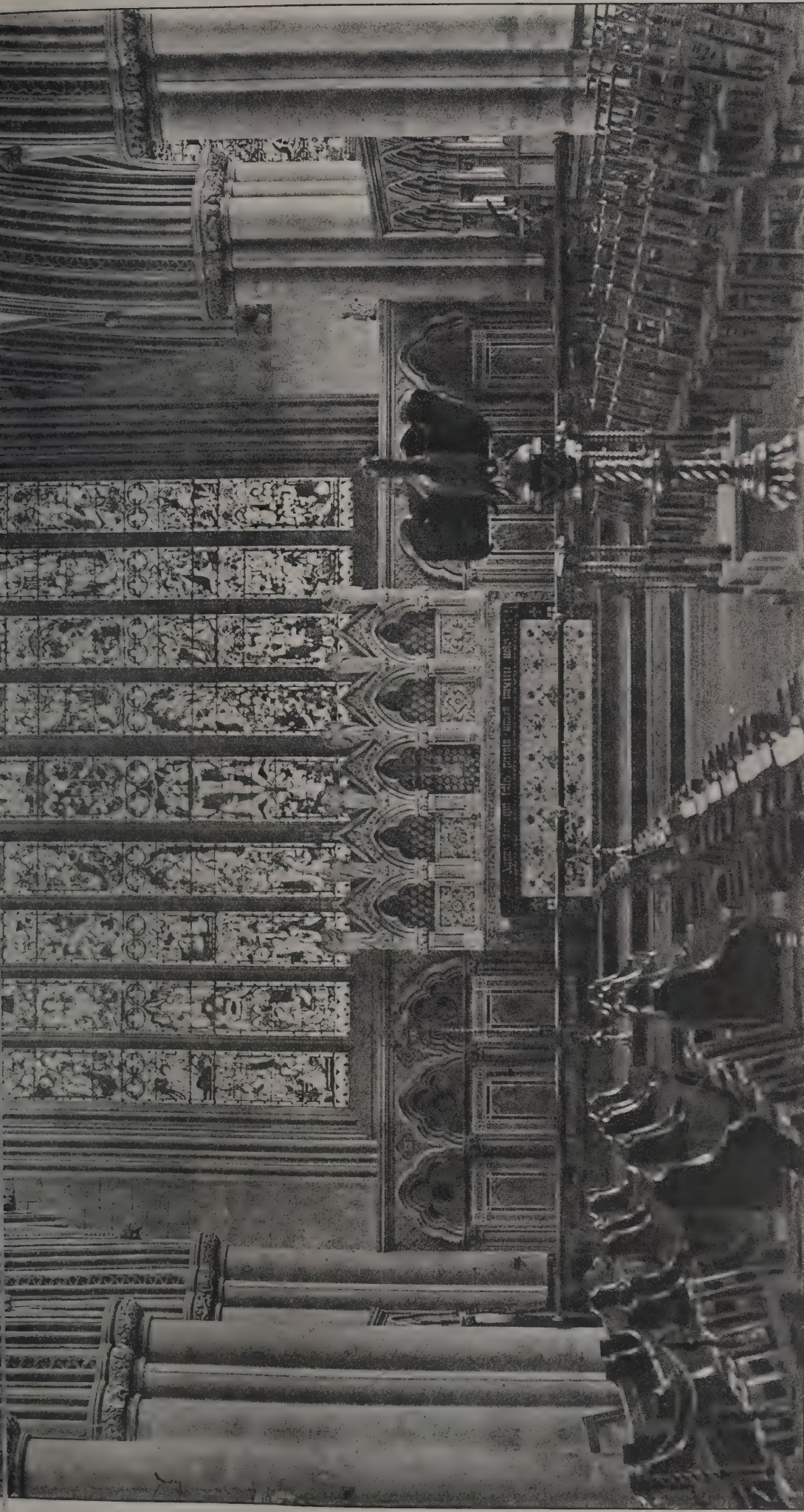
Mr. Edward Bradbury was on Monday appointed architect to the Pembroke Urban Council, co. Dublin. Objection was raised because he was not a ratepayer, but the voting was in his favour.

The Estates and Finance Committee of the Coventry City Council have considered letters from Captain R. Tudor Owen, of Stratford-on-Avon, asking if they would be prepared to consider an offer for the "Bacchus and Ariadne" picture at present in the room behind the gallery in St. Mary's Hall. The committee resolved that they were prepared to consider an offer. At the Council meeting on Tuesday an alderman said no offer would be accepted without the Council being consulted. The picture was valued many years ago at 700 guineas. It was exhibited as one of the sights of Florence for some 150 years. He hoped the Council would not sanction its sale but agree to spending 60*l.* or so to restore it.

The Governors of the Glasgow School of Art, authorised by the Scotch Education Department, have granted school diplomas to six students. This diploma is the highest award the school can give, and entitles the holder to an associateship of the Glasgow School of Art (G.S.A.). It carries the seal of the Scotch Education Department, and the Department accepts it as a testimonial of professional capacity. This is the first time that awards of diplomas have been made. The works of the candidates in each section of schoolwork were submitted to a jury of judges appointed by the Governors, and with these were associated assessors nominated by the Governors and approved of by the Scotch Education Department. Eleven candidates submitted works.

The Architect, Feb 15th 1907





INP PHOTO 31RACUE : C L 4 & 5 EAST HARDING STREET FETTER LANE EC

CATHEDRAL SERIES, No. 593.—CARLISLE: THE EAST WINDOW.



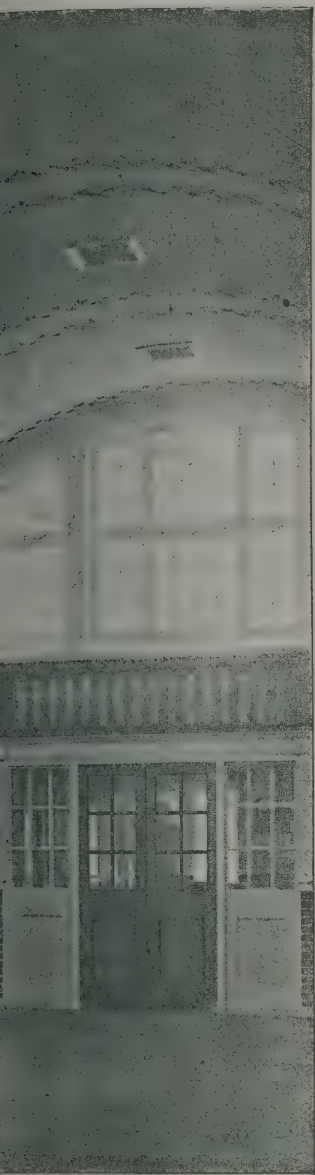
Infants' Entrance Doorway.



The Cellar.



Temporary End of Completed Portion.



ry End.



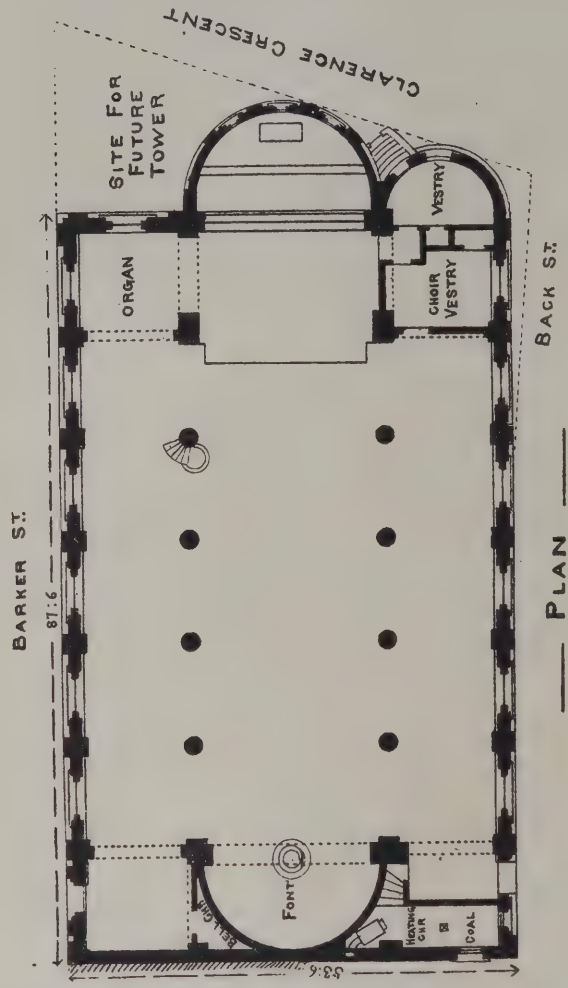
A Gateway on the Downs Road



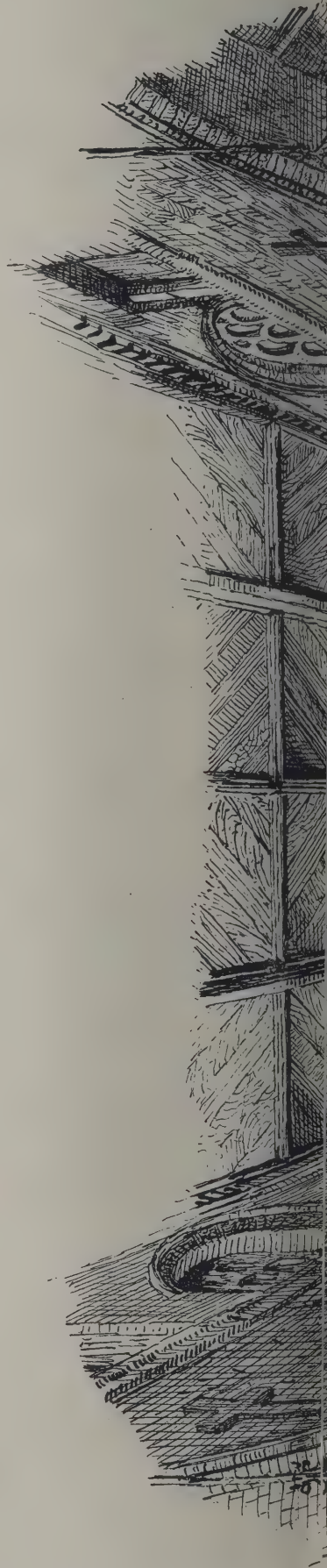
The Central Hall, Platform End.

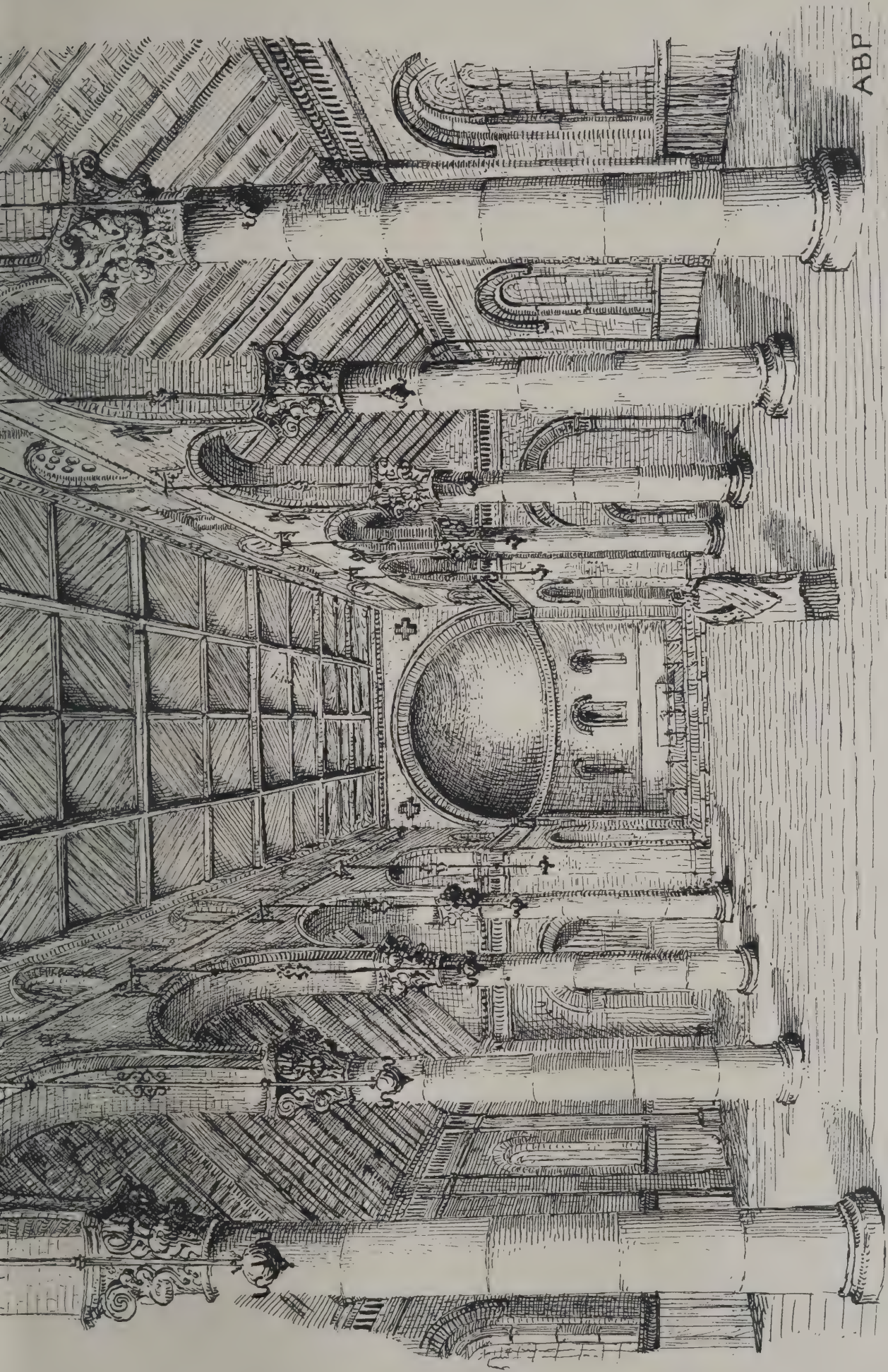


VIEW OF SOUTH SIDE & EAST END



PLAN





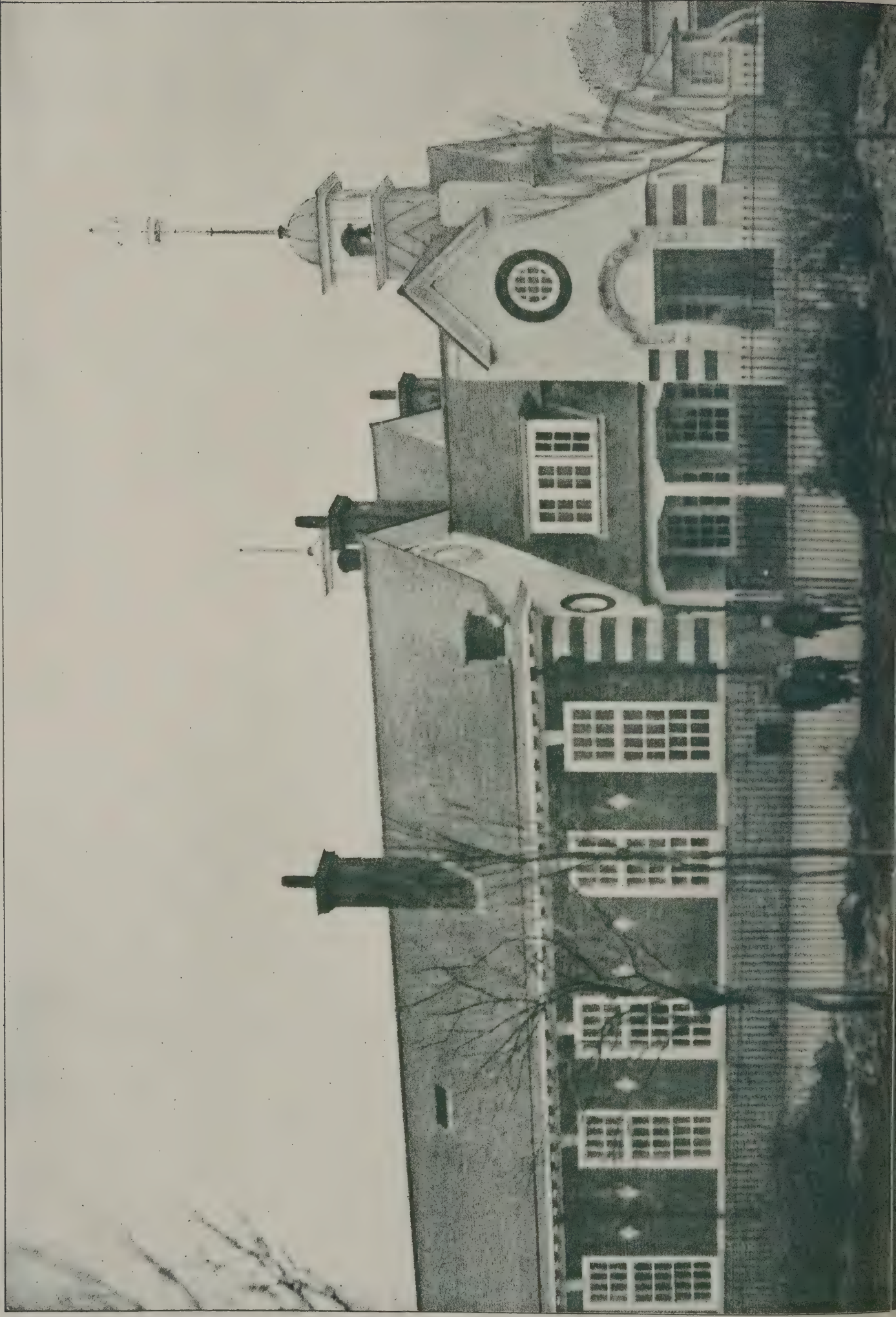
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PHOTOGRAPH BY SPRAGUE & CO. 4 & 5 EAST HARDING STREET, PETER LANE, E.C.

ST. JUDE'S CHURCH, NEWCASTLE-ON-TYNE.

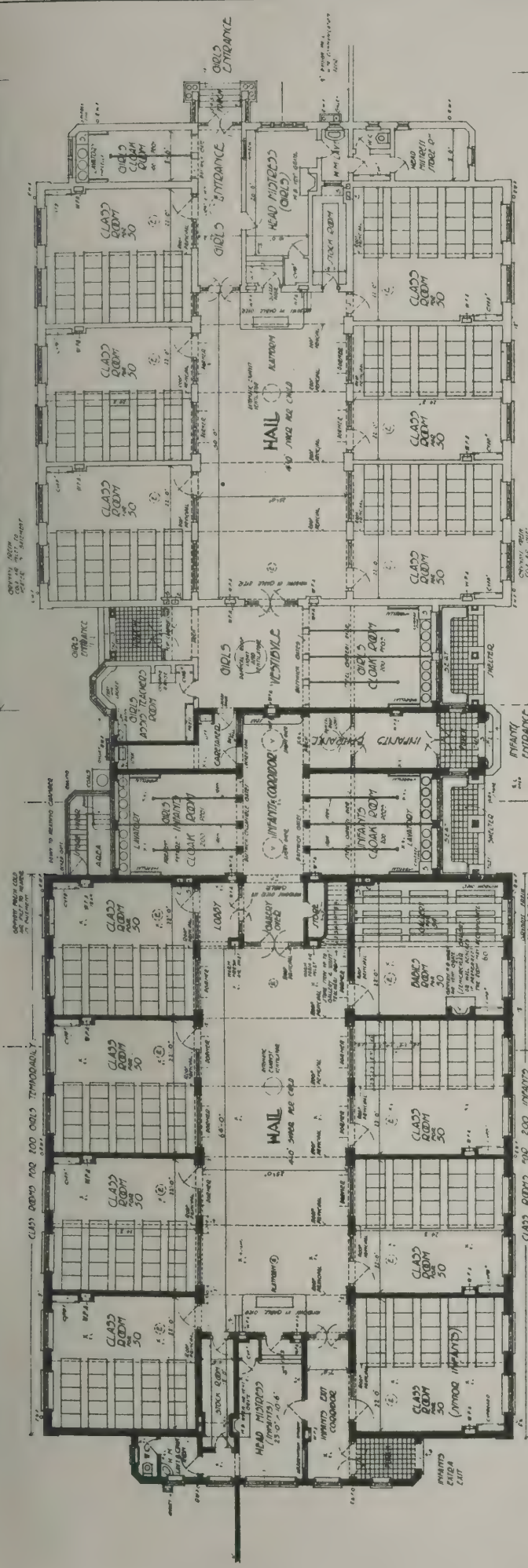
ARTHUR B. PLUMMER, F.R.I.B.A., Architect.

The Architect, Feb y 15th 1907.



BOYS PLAYGROUND

WIDE EXTENSION



INFANTS PLAYGROUND

INFANTS SCHOOL No 400

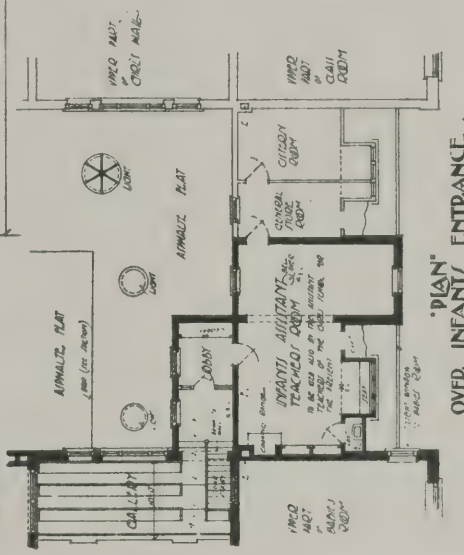
FUTURE EXTENSION

INFANTS SCHOOL No 410
(PRESENT MODIFIED ACCOMMODATION 200 BOYS AND 200 GIRLS)

INFANTS PLAYGROUND

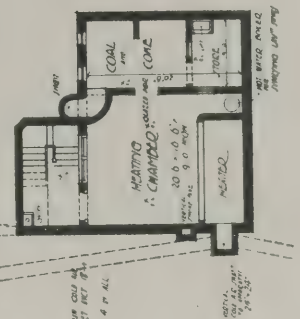
"GROUND PLAN"

SHOWING COMPLETE SCHEME



"PLAN" OVER INFANTS ENTRANCE

INFANTS PLAYGROUND



PLAN OF BASEMENT

TOO WARM AND HEATING APPLIANCES ETC.

NEW COUNCIL SCHOOLS, BEXHILL-ON-SEA.

H. P. BURKE DOWNING, F.R.I.B.A., Architect.

INX PRO-O SPRAGUE & C L 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

The Architect.

THE WEEK.

appeal has been issued by the Duke of DEVON as Chancellor of the University of Cambridge to meet the requirements of the present time. Lordship says in all a capital sum of nearly one million and a half, apart from any question of a pension for professors, might without extravagance be immediately expended on the equipment of and on the provision of staff for the university. Buildings will take a large part of the amount. A sum of 25,000*l.* at once is urgently needed for a new museum of archaeology and ethnology, for the preservation and for the payment for the use of researchers of the valuable collections possessed by the university. A new, or at least a greatly enlarged, museum of zoology has become necessary. About 20,000*l.* is demanded for the completion of the medical school. Lecture-rooms will have to be provided for the teaching of history and also for mathematics. Lord RAYLEIGH is devoting part of the Nobel Prize of 7,700*l.*, which he was awarded, towards the extension of the Cavendish laboratory, and the purchase of scientific books. Additional accommodation is wanted in the departments of literature, engineering and chemistry. As the number of students is increasing—there are at present 3,300 in attendance—delay in providing classrooms and museums will cause much inconvenience.

ALTHOUGH several months have elapsed since the church of St. Michael, in Hamburg, was destroyed, arrangements for its rebuilding remain unsettled. Discussion concerning the style which should be adopted occupied the members of the Berlin Union of Architects at their last sitting. Germany is now making experiments which are taken to be proofs that a new style is a possibility, and, as was to be expected, speakers were generally in favour of avoiding the style which the building presented at the time of the fire. As it was eighteenth-century work it was not of great value, but it was believed to be a reproduction of the style of an earlier time. The authority of the architect, and of WAGNER, the composer, was invoked. The former said that an artist was guilty of a crime when he attempted to produce the work of an earlier time, and he should always adhere to something new of the time in which he lived. WAGNER likewise advised his disciples at Bayreuth to produce nothing that was new; if they acted otherwise the reproach of unproductivity would seize them by the throat and they would become the most miserable of mortals. It was also held that as the church was intended for funeral services Mediaeval planning was inadequate. It was unanimously resolved that the new church should be a living witness of a living age instead of a copy of one that had vanished.

THE case of *The Great Central Railway Co. v. Assessment Committee of Banbury Union* raises a question as to the proper principles of rating a railway, of considerable interest to rating authorities and railway companies. The line in question is a line which runs from Woodford to Banbury, and connects the lines of the Great Central and the Great Western railways. There are no stations or sidings on the line. Its value is as a connecting line, and in the absence of an agreement as to mutual working between the two companies, it would be valueless to either. The Great Western Railway Company had advanced money for the purpose of building the line, and the Great Central Railway Company paid 3½ per cent. interest on the sum so advanced. The question was, whether this interest be taken into account as admissible evidence of rateable value? Or could the rating

authorities only consider as evidence the amount which the line earned per mile in the parish imposing the rate? The Court of Appeal have decided that the interest so paid is admissible evidence of rateable value. It was admitted that the cases decided on the question how far rating authorities could take into account matters arising outside their parish were not altogether consistent. But the true principle seems to be that the rating authorities may take into consideration any evidence which would bear upon the value of the property to a hypothetical tenant, provided, of course, that this evidence is reasonably relevant. Profits of an undertaking are not rateable, but capacity to earn profits is an element which may be taken into account in considering the value of the property. The fact that the Great Central Railway Company had agreed to pay this interest was evidence of what they considered likely to be the profit-earning capacity of this piece of line.

WHEN lands are taken compulsorily by statutory powers, is the former owner of the land entitled to compensation for depreciation in the value of the land retained by him, in consequence of acts done upon land near to, but not formerly belonging to him? Upon this question the authorities are not altogether agreed. On the whole the better opinion seems to be that the former owner, though entitled to compensation for his land taken, and for depreciation in the value of his land retained by reason of the user made of the land taken, is not entitled to compensation for depreciation on his property retained by reason of acts done on the land not formerly his. This would seem to be the effect of the decisions in *REX v. MOUNTFORD* (22 *Law Times Reports*, 752) and *HORTON v. Colwyn Bay Urban District Council* (23 *Law Times Reports*, 75). The case of *London and North-Western Railway v. REDDAWAY*, decided the other day by PHILLIMORE, J., which seems to favour a contrary conclusion, is perhaps to be explained by the peculiar wording of the company's Act under which the claim to compensation arose.

OF late years there appears to be little difficulty in accepting the report of an assessor in an architectural competition. The case of the new schools in connection with Henshaw's Blind Asylum, a Lancashire institution, may therefore be considered as exceptional. The competition was limited to Manchester architects, and Mr. JOHN HOLDEN was appointed as assessor. The Board of Management declined to accept any of the premiated plans, because, having particular knowledge of the requirements of the Institution, they had come to the conclusion that the plans of Messrs. MANGNALL & LITTLEWOODS were best suited to their needs, and the authors were appointed architects at a meeting on Tuesday. It was stated by one of the governors that a difficulty might arise if plans selected by the assessor were not adopted. But the Chairman pointed out that the form of advertisement was a protection against such a contingency. The supporters of the Institution, which is not in too prosperous a condition, may well ask why was it necessary to go to the expense of appointing an assessor or to bestow premiums when it was possible to obtain a design without the machinery of a competition? It is quite certain from what was said by the Chairman that the invitation to compete was drawn up in a guarded manner with a view to save the Board from all kinds of consequences. But it should be asked whether the competitors were able to read between the lines and to realise the possibility, if not the certainty, that the judging of the designs by an architect of experience was no more than a matter of form. The Board may be wise in their selection; but they have not taken the public into their confidence by explaining the reasons which induced them to prefer a design which was not premiated or commended.

WILLIAM III. AND THE ARTS.

THE announcement of the gift by the Emperor of GERMANY of a statue of WILLIAM III., which is to be erected before Kensington Palace where the king died, will give rise to many curious reflections. Although WILLIAM III. was compelled, for the transaction of business, to reside in Kensington, he found so much pleasure in Hampton Court that he went there at least once a week. On one of those occasions his horse stumbled, and the king broke his collar-bone. He died after a short illness. According to Bishop BURNET:—"Some moved for a magnificent funeral, but it seemed not decent to run into unnecessary expense when we were entering on a war that must be maintained at a vast charge, so a private funeral was resolved on. But for the honour of his memory a noble monument and an equestrian statue were ordered. Some years must show whether these things were really intended, or if they were only spoke of to excuse the privacy of his funeral, which was scarce decent, so far as it from being magnificent." It is needless to say that what the courtly bishop hinted became a fact. Parliament did not summon sculptors. The only memorial of the great king to whom the country was so much indebted which was set up in London—and a century was allowed to elapse before an attempt was made—was the statue in St. James's Square, the work of the younger BACON, and completed in 1808.

In 1701, or a year before the king's death, an equestrian statue was erected in Dublin, which was unfortunately the reverse of magnificent. As happens with less obtrusive symbols in that strife-torn city, the statue became the object of aversion to one party, and, as if it were a political idol, in a little time efforts were made to destroy horse and rider. Official inquiries were instituted and rewards were offered, but nobody was punished. For many a year the daubing of the group in the colours of rival politicians was a favourite pursuit, and it was almost impossible to prevent the "glorious, pious and immortal memory" of King WILLIAM from becoming as ridiculous as his metal representative. It would almost seem as if fate had destined the king's features to afford amusement. When DRYDEN had completed his translation of VIRGIL, the publisher, JACOB TONSON, wished to have it dedicated to King WILLIAM. But as DRYDEN was deprived of his laureateship by the monarch, and was given other occasions to become disloyal, he refused. Whereupon TONSON had all the engravings in which the features of ÆNEAS were introduced drawn like the king, with a hook nose. The following was one of the epigrams inspired by the feat:—

Old Jacob, by deep judgment swayed,
To please the wise beholders,
Has placed old Nassau's hook-nosed head
On poor Æneas's shoulders.

To make the parallel hold tack,
Methinks there's little lacking;
One took his father pick-a-pack,
And t'other sent his packing.

It is to be hoped the KAISER's gift will not give rise to sarcastic attacks either in verse or prose.

WILLIAM was one of those men who had to suffer because their manner was disagreeable. Always an invalid, asthmatic and nervous, his harsh voice repelled people and compelled Englishmen to believe he was seeking his own interest alone. His fellow-countrymen loved him and he loved them in return. But as BURNET says:—"The ill-returns he met from the English nation, their jealousies of him and their perverseness towards him had too much soured his mind, and had in a great measure alienated him from them, which he did not care enough to conceal, although he saw the ill-effects this had upon his business." A monarch who stood in such a peculiar position, and who valued strategy and statecraft above everything, was not

adapted to promote literature or art. According to HALDANE his reign was our nadir in all that related to imagination. As became a Dutchman, WILLIAM liked to have a handsome and pleasant dwelling-place, and that account architecture and gardening were the arts of peace in which he took pleasure during intervals of his campaigns. His palace of Looz was evidence of his affection for the national surround which supplied by artifice what nature refused. He was eager to create a similar dwelling for himself of the neglected Hampton Court. The air of Looz was not adapted to his constitution, and on the banks of the Thames he thought he was provided with a site that could be made to recall the low, sandy landscape of the Guelders. WREN was accorded full liberty to create buildings which differed vastly from those of WOOD and GIBBONS was allowed to create flowers and fruit in wood, and VERRIO, who was at first rebellious because he was one of the officials of CHARLES II., painted the walls of the staircase almost before they were ready to receive colour. It was perhaps fortunate for WILLIAM that the queen was permitted to have more share in the planning of the new palace than in the public affairs of the country in which she had a right to rule. When some of the courtiers complained about the absence of height in certain of the parts, which they ascribed to WREN's inability, WILLIAM confessed that all the decisions in question were the results of his own command. With all his greatness, an artist found him to be an obstinate patron.

If the opportunity had been properly used Hampton Court could have served to promote English art. WILLIAM apparently made his own arrangements. He obtained his statues for the grounds from Italy. After the king's death a London merchant named BALL applied for the payment of 600*l.* due to him on account of seven marble statues and a marble head which he imported from Italy by His Majesty's order. The list included an "Autumn with two Satyrs," a "Ceres," a "Venus," an "Apollo," a "Vulcan," a "Satyr," a double statue of "Pan and Orpheus," and an "Athenian Philosopher." They cost the merchant 555*l.* in London and there was 45*l.* for freight and other charges. BALL was informed that he could remove the statues if he wished. Hampton Court was a constant grievance to the economical reformers of the time. VERRIO was in his claim. The king agreed with him that he was to be paid 400*l.* for painting the great bedchamber and he received the money. For the great staircase and the little bedchamber he was to receive 1,800*l.* of that amount was owing to him.

In justice to WILLIAM it must be said that he failed to encourage English art, he was no less indifferent to the work of foreigners. If a merchant BALL offered to paint the walls as well as to provide sculpture he would be likely to receive an order. Affairs which monopolised the king's attention were important to be forgotten for a short time, although he might be acting as a votary of art. In the course of his life he afforded subjects for battle-painters, but he gave no commissions to have them represented. Unlike his great enemy LOUIS XIV., he fought his own battles instead of choosing mottoes for the medals that rewarded them, for, as WALPOLE says, he had no leisure to look over the registers of his fame.

It cannot, however, be asserted that the reign of WILLIAM III. was entirely fruitless. In estimating the influence the state of the country should be considered. London had not completely recovered from the effects of the Great Fire when he ascended the throne. The short reign of JAMES II. had rendered men uncertain about the stability of their property, for it was apprehended that a French invasion was likely to take place with the approval of the English king. The erection of such important mansions as Althorpe and Chiswick, among others, and several residences in London, were indications of the revival of faith in the security of England. The style of building which is ascribed

Queen ANNE has more right to bear the name of brother-in-law, for the imitation of Dutch houses during his reign. The influence of WREN was strong. But with all his classicism he was indisposed to adopt a suggestion from Holland. WILLIAM TALMAN was comptroller of works to WILLIAM III., and Dynham House, Swallowfield, and Ickworth arose in WILLIAM'S time. VANBRUGH did not display his architectural skill before 1702, and therefore belongs to the next reign. But HAWKESWORTH was acting in 1690 as clerk of works in Kensington Palace, which was erected for WILLIAM. The end of the seventeenth century was therefore not entirely deficient in skilled architects.

There were also some painters. When WILLIAM III. came to Hampton Court the cartoons by RAPHAEL, which CROMWELL had secured for the nation, were lying in boxes. The king ordered a gallery to be erected to contain them. He employed HENRY COOK, an Englishman, and a pupil of SALVATOR ROSA, to repair them. JOHN RILEY, who painted the king and queen several times, had the reputation of being an excellent portrait-painter. But it must be owned that the English painters were lost amid the numerous foreigners. Sculpture had no prominent English representative. As it was assumed that a high art picture could only be produced by foreigners, amateurs were convinced that Dutchmen alone were qualified for any commissions that were not given to Italians. GRINLING GIBBONS appears to have been a foreigner, although from the name it might be imagined he was a native of this country. The most that can be said of the Williamite period is that it preceded ANNE'S reign, and that it afforded signs of the decline of foreign art and of the coming of native art. It is not, however, necessary that favour shown to the fine arts should be a qualification for respecting a monarch. WILLIAM earned the gratitude of Englishmen, and we may still have hope that the figure which a kinsman is to set up in Kensington will be worthy of the monarch whose ambition it was "to make England the arbitress of Europe, the tutelary angel of the human race."

THE ASSOCIATION SKETCH-BOOK.*

THE latest volume of the "Association Sketch-Book" manifests that no less interest is taken in architecture by the young architects of to-day than was exhibited by the earlier contributors. The seventy plates in the volume are all evidence of zealous work, and in most of them are signs of a desire to express detail rather than to give slap-dash sketches, which save labour and are supposed to give general effects. It is evident that those who made the drawings are more desirous to increase their knowledge of form and construction than to display their skill as draughtsmen. The plates are therefore significant as evidence of admiration for old work, which is probably the best that could animate a student of architecture. The collection is also interesting as suggesting the inextinguishable wealth of England. Often as Mediæval and Early Renaissance buildings have been represented, it is still possible to find subjects in this country which are the attractiveness of novelty to most people. Many of the plates represent English work. The following examples are taken from Holland, Italy and France. The title-page, by Mr. W. C. GREEN, is an adaptation of the façade of a summer-house which now forms the entrance to the cemetery of the Roman Catholic Missionary College at Drumcondra, co. Dublin. The date is about 1775—a time when CHAMBERS and other English architects obtained commissions in Ireland—and it exemplifies English treatment of Classic elements. The first of the plates is a view of the west front of

Benham Abbey by Mr. W. S. A. GORDON. The lines are very carefully drawn, but the washes of colour have diminished the effect without imparting any advantage. There are five drawings of Canterbury Cathedral: Mr. McLACHLAN represents the very delicate colour decoration of St. Andrew's Chapel. Professor BERESFORD PITE gives one of his Piranesi-like views in the cloisters; while Mr. CHARLES THOMPSON supplies three measured drawings of the cloisters giving details of the groining. It is pointed out that the vaulting ribs are of white Caen stone with chalk filling in between. All the upper portion of the buttresses above parapets and the finials and crockets to the canopies have been destroyed. Mr. THOMPSON suggests restoration after remaining examples. Mr. GARRATT has two drawings from Cirencester. One is a bay in Trinity Chapel, and the other shows parts of the old town hall. Apparently the plates are reproductions of pencil drawings, and if the originals were made on the spot they are admirable examples of skilful plotting. The building is supposed to date from the beginning of the eighteenth century. The tile floor of Prior CRAWDEN'S chapel at Ely is shown by Mr. DRYSDALE. It is pointed out that "the width of the chapel increases from east to west from 13 feet 4 inches to 13 feet 7½ inches. No notice of this is taken in the design of the tiles." Mediæval craftsmen generally acted in a different spirit. The majority of the tiles had circles for ornament. But there were also heraldic lions and other figures arranged in bands. Old stables in Hastings, consisting of a house in the centre and a stable building on either side, the whole forming a continuous line, are drawn by Mr. HALL. The walls are of red brick with purple brick dressings, the roof of red tiles and the cornice of wood. It is probably an eighteenth-century building, and is a curious example of symmetrical arrangement carried to excess. Mr. HALL has discovered an interesting subject in the gate piers to Ickworth Park, Suffolk, which are supposed to have come from Bury St. Edmunds. They were, no doubt, originally intended to flank an approach on the skew, and therefore are out of place in their present position. Each pier is rusticated and has a fluted Tuscan pilaster. It is surmounted by a vase of rather novel form and of elegant design. It is an example of a kind of work which, from being liable to be overlooked, is well deserving of record. The doorway of Kilpeck Church is unlike most of the Norman examples in England in its ornamentation. Around the arch we see the heads, some beaked, which were an usual mode of decoration, mixed with forms which are novel. But on the piers of the doorway there is a strange mixture of serpents long drawn out, and warriors with mail corselets and bare feet who are enveloped with convoluted lines that run from top to bottom. In other words, instead of the "bits" which are often repeated, there is an effort to devise a composition that is adapted to a pier. The drawing is by Mr. JORDAN GREEN, who also supplies a large number of sketches from Lichfield Cathedral—indeed, the plate is overcrowded. Two plates from Muchelney Church, in Somerset, by Mr. F. C. MEARS, not only represent the fine tiles which have survived, but suggest a more orderly arrangement for them than is seen at present. They were relaid as they were found, regardless of the confusion, while it is evident from the plates that they could be grouped in a very effective manner. Mr. W. DATHY QUIRKE furnishes four plates of St. Nicholas Church, Old Shoreham. This is a well-known Süssæ structure, partly Norman, with a fourteenth-century chancel. One peculiarity of it is that the lines are not always laid out at right angles. The windows to the nave are very small, and it therefore rejoices in a dim religious light. The mouldings are simple, and there is comparatively little ornament in stone. The drawings afford a very complete representation of an interesting building. Tourists appear to attach so much importance

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to the carved tie-beam, it is right to mention that it is duly represented. The massive brass lectern in Merton College Chapel, Oxford, appears in a drawing by Mr. W. S. A. GORDON. An interesting pair of drawings of figures from the rood-screen of Ranworth Church are supplied by Mr. W. DAVIDSON. One represents St. GEORGE and the Dragon and the other St. MICHAEL slaying the many-headed Dragon. The armour and costume are represented in a most laborious way, but as usual the dragons cannot excite terror. Mr. McLACHLAN represents the ornament found on some of the robes of saints in the same church, which probably was derived from Venetian or Eastern examples.

Mr. DE GRUCHY has some boldly executed views of Cornwall churches, an oak lectern from York and sketches of metal and woodwork. Sherborne Abbey is the subject of an excellent freehand drawing by Mr. DRYSDALE, as well as the Sherborne conduit or lavatory which once belonged to the abbey. By Mr. MEARS is an oak lectern from Shipdham Church, and Mr. LESLIE WILKINSON shows the roof of St. John's Church, Stamford, which is elaborately decorated in colour. Four drawings by Mr. H. F. TRAYLEN represent Burghley House, Stamford. Photography hardly does justice to so large a building, and it is an onerous task to undertake detailed drawings. One ingenious feature, usually absent from photographs, is the clock, which also serves to represent the arms of the noble owner. The views relate to the exterior. Two large drawings by Mr. J. HAROLD GIBBONS give details of the vaulting of St. Edmund's chapel in Tewkesbury Abbey. The projections are on a large scale and enable its character to be understood. Contours of the mouldings are also given. Although of limited size, the chapel was constructed with great care, and in the fourteenth century must have been a gem of architecture. Mr. MEARS has general views of the tower of Wells Cathedral, a work which is manifestly incomplete. Another, of the small church of St. Botolph, Westwick, showing the chancel screen, and of the Abbey Gate at Burnham Norton, on which it is stated that the window tracery has recently been completely destroyed by local roughs. Three careful drawings by Mr. JOHN SWARBRICK are devoted to the rood-screen from St. John, Bois-le-Duc, now in the South Kensington Museum.

GIOTTO's campanile at Florence is shown on two drawings by Mr. M. J. DAWSON; as one of them is from an elevated point of view, the background of landscape is suggested. The cloisters of San Lorenzo in Florence and the shrine of S. Miniato al Monte have been drawn with care by Mr. W. S. GEORGE. Mr. A. G. MAC-NAUGHTAN has a clever view of a part of the cortile of the hospital at Milan, the sculpture being skilfully rendered. No less effective are his views of the library of Siena Cathedral. Mr. L. ROME GUTHRIE has selected one of the old fonts in Siena Cathedral, which evidently is partly made up from an ancient candelabrum. Some of the rich embroidery in the cathedral has been drawn by Mr. McLACHLAN. The choir stalls of S. Giorgio Maggiore, which are most elaborately carved, were selected by Mr. L. U. GRACE. Mr. GASCOYNE's drawing of the interior of S. Maria dei Miracoli, Venice, excels the usual work of students by the management of light and shade. A valuable series of measured drawings of the building by Mr. PERCY M. LOVELL will perhaps be more appreciated by the majority of architects. The architect of the church—or at least of part—was PIETRO LOMBARDO. The character of the architecture will be judged from the following description on one of the drawings:—"Walls lined with oriental marble, varied with strips of grey African marble; balustrading, wall panelling, cornices, arch-moulds, strings round nave, altar rails, window jambs, &c., of Carrara marble; columns under gallery of Istrian marble; ceiling under gallery and barrel ceiling to nave panelled and gilded, with pictures in every panel." Mr. LOVELL's ten pages have probably never been surpassed for detail in the preceding sketch-books, and such an

effort should be enough to win him credit as a courageous student who is not daunted by size or quantity. Those who know Venice will say that he could have discovered a church more worthy of so much toil, but there may have been special reasons which dictated the choice. Mr. A. G. McLACHLAN gives three drawings from the cortile of the Ducal Palace. There are two views of the fascinating pedestal of the Colleoni statue by Mr. R. W. SCHULTZ. Lastly, Mr. JAMES McLACHLAN attempts to render the beautiful ornament of the Mihrab in the Mosque at Cordova.

The majority of the subjects, it will be observed, are difficult to treat. It is therefore satisfactory to find that the contributors have attained so much success. All are essentially architectural drawings. Volume X. of the third series is able to assert its worth with any of its predecessors. The editors, Messrs. LEWIS and FYFE, are, of course, entitled to a share of praise of which such a collection is worthy.

ARCHITECTURAL JOURNALISM.*

I DO not propose to indulge in personal reminiscences, though perhaps such a paper might pass the hour more interestingly than the precise programme immediately in view. From the Pugin-Barry controversy onwards it has formed part of my business to come into contact with a number of people more or less known to fame in the architectural world, and to hear an array of stories told about architects and professional concerns. Through flux of time, naturally enough, several of the opinions so expressed, and the experiences thus confided, relate to those who have passed away—men reckoned notable personages during the last quarter of the nineteenth century. The disinterested characters and kindly dispositions of some of these reminiscences are delightfully green in one's memory; a few, otherwise distinguished, exist far less pleasantly fresh in our recollections. I must relinquish what I could but think a considerable temptation thus to repeople the stage with old friends and familiar individualities, because we must not overlook susceptibilities likely to be wounded by a recapitulation. Tales, too, told perhaps at the expense of the living, might engender an affront with those whom it most concerns. The safer course, therefore, will be to omit all confabulations of this nature, and so I will commence my subject with an abstract proposition. What is the function of architectural journalism to architecture as a fine art; and is the influence by the professional Press conducive to its progress or not? *A priori*, the answer must depend upon two things, viz. a just understanding of architecture as now practised, and a proper appreciation of the legitimate sphere of journalism. It will, at starting, be incidental to our inquiry if we also briefly indulge in a little introspection. The modern architect has been ever concurrently with the growth of professional journalism the two have developed side by side. They appear inseparable, and certainly act and react each upon the other. We may do well, therefore, to make a note of that circumstance. Moreover, we cannot fail to acknowledge that the best architecture which the world has univ. all recognised was erected ages before the days of newspaper or professional architects, and most of it dates long prior to the invention of the printing press. The very name "architect" does not even appear to have been in use in England anyway till early in the sixteenth century, though it came into vogue rather sooner perhaps in Italy. "magister" was the designation given to King Henry II.'s restorator Mason Alnoth; and in the thirteenth century this title has been applied to others and equally to Pierre de Montreuil, whom records describe as the head of association of workmen engaged in designing and erecting the chapel of the Virgin at Saint-Germain des Prés, in which church he lies buried. An inscription on the south wall of Santa Maria Maggiore, Bergamo, names its designer "Magister" Johannes Campiglio, 1360. These worthy were salaried officials employed by patrons, however, but not appointed, of course, by county councils as functionaries. We have also to remember that the arts flourished in the highest forms unaided by academical displays or popular

* From a paper read before the Northern Architectural Association, Newcastle-on-Tyne, February 20, by Maurice B. de la B. F.R.I.B.A.

allery shows. The noblest triumphs of masterly building and the "supreme of earthly masonry" had grown mellow by age centuries on end before professors of architecture found a vocation or lecturers on art flourished on a syllabus.

We cannot too often repeat that texture distinguishes good architecture from mere building, and the journalist reiterates this fact, adding another as to the need of breadth and repeating the claims of good proportion with an insistence which is liable to be wearisome. But for all this humble endeavour, the petulant party who fancies himself in advance of his fellows turns round on the Press as if it could be held responsible for the inherent shortcomings of architects themselves. The complaint referred to implies that all pictorial prints are inadequate, or something worse; and so the journals are harmful and blameworthy.

It is hardly practicable to define the vocation of an architect with exactitude nowadays. The definition issued by the American Institute led to no little adverse comment, and we have not seen any attempt to fix the limitations of a technical journalist. Sometimes people fancy that he has taken up this kind of work, having failed at all else. The far-reaching influence of a nobly designed building is anyhow beyond reckoning, and the same too may be said of the power of a capable Press. If we assert that the English papers are second to none, it is perhaps no more than facts justify. No one realises the shortcomings of his trade better than the publicist, particularly if he should chance to be an adept in his craft. Whether architecture is recognised as chiefly replete with poetic possibilities, or is treated as a prosaic building business, to be enlivened only by the occasional contentious niceties of professional politics—to which ever side you attribute the most importance you are considerably indebted to the good offices of the journalist. This is sometimes not so fully acknowledged as might be expected, but in any event you will agree that we all owe a debt of gratitude to the enterprising secretaries of our several Societies for annually arranging their professional programmes and discussions, thereby adding to the dissemination of knowledge and the common stock of technical information. Public interest also in architectural matters is augmented in no small degree by these means, largely, I may add, by the help of the journals.

Now and again only, however, does it happen that some more venturesome spirit than the rest, gifted, it may be, with a nimble mind and presenting, perhaps, an attractive personality, propounds some paradoxical revelation, and to this end assumes a truculent air, riding a-tilt at generally accepted conclusions, and thus for the nonce unseats our common complacency and sets people thinking. A welcome ever awaits such an intellectual libertine, either in the press, in the pulpit or on the platform—one who can capably arouse the lethargic quintessence of his fellows and startle their latent powers of combativeness into activity. Nothing can be more dismal than to drone on, treating a daily task as a drudgery. Even the unrestrained prodigality of *L'Art Nouveau* obtained recognition as an attempt to emancipate applied design from antiquated senility. To preach with eripicity belongs not to the many, and to practise with distinction comes only to the few. Their little heaven must be looked to for the leavening of the whole lump. With this purpose the architectural Press stands for a good deal, and by its means the chiefs in the profession for the time being are brought into touch with the unseen countless numbers of inarticulate workers, who are thus influenced for the better. In a sense, of course, the immediate result perhaps is incomparable with the old traditional guidance which has for ever been lost. The patriarchal personal influence and primitive receptivity of the learner, too, are numbered with the past. The merit and variety of the illustrations comprise their chief interest and permanent value. But there exists beyond the scope of the immediate needs of the business of the architect, the surveyor and the builder a much wider question, as you will presently see, involved in the prosperity of the architectural Press. We need not stay to find the least common denominator in determining where the evils resulting from these periodicals commence or where their possible good may end. That knowledge would be of little use even if found. It is far more to the purpose to remember what Professor Armstrong said about the imminence of education:—"Interest is not always to be maintained at bursting point; in school, in the world, uninteresting work must be done sometimes, and in point of fact it is most important to acquire the art of doing uninteresting work in a serious and determined way." It would surpass the wit of man to make every number of any serial publication come up to one

invariable standard of excellence, and only when uniformity of deadly dullness sets in can it be said a just cause for complaint arises. A margin of merit must be conceded. And, further, in criticising the journals, as everybody has a right to do, people so often overlook the fact that things in which they chance to be particularly interested are the very subjects which others care nothing about, and *vice versa*. The best of us are apt to take too restricted a view, curtailing our energies to personal interests, and so overlook much that is going on around us. I doubt if even the most alert prognosticator can foresee or trace with any exactitude the precise goal to which all the educational activity of the present time is tending. Suffice for us to know that trades and manufacturing processes are being revolutionised, and amidst the immense potentialities of technical training are being extended and advanced both at home and abroad, thus influencing the destinies of nations after a fashion and on a scale unknown to previous generations. From whatever standpoint we view these things, they are beyond our control, and we shall do well to waste no time hankering after primitive traditional customs and patriarchal feudalism. The old order has become absolutely incompatible with contemporary economics, Fabian or otherwise. Our immediate concern is as clear as noonday; building workers must be brought into unison. Municipal trading schemes, direct labour undertakings and syndicate combines may do much, but they are not likely to corner the building industry just at present. County councils, like commercial trust syndicates, have, however, journals of their own to promote their own ends. The architect with an eye to coming events cannot afford to ignore the necessity of looking to his bearings, least of all to dispense with the journals of his professional class. His paramount influence as an artist is a very valuable and essential asset, convincing enough up to a certain point; but the only reliable footing upon which he may safely rely as a standby is his function and ability as chief builder and master of the works, qualified as a building expert capable of holding his own in the open market, equal to difficult constructional problems, economic modes of building, and able to protect his client's interests when dealing with enterprising contractors. All this is so well understood, and so mundane, that even a journalist might perhaps blush at such a recapitulation of the obvious. But for all that the architect must learn to wake up, and it is hardly necessary to remind him through you what a stupendous concern the building industry has become, and what a different affair the trade of a builder is now from what it used to be only a few years ago. Remember the multitudinous interests thus embraced and how many of them are individually antagonistic, competing in almost every grade in the stress of stern reality. The architect has the best of reasons for knowing what cutting competitors will do, and the journals are fully acquainted with the everyday struggle for existence. How is all this gradually affecting the architect? Engineers and specialists of every variety, including the so-called Guilds of Art Workers and Crafts, are all uniting in some way or another to wrest the architect's vocation from him and insinuate his end as a mere superfluity. The more affluent members of our profession may think lightly of such inroads, treating them as of no importance. Not so the rank and file, who can plainly see that this process which is being encouraged really means invasion in one direction and then in another, till one's opportunities become smaller by degrees and rapidly less, not only for "designing in beauty and building with truth," but in the meantime the architect's bread-and-cheese chances may be said to stand in jeopardy every hour. I am not a pessimist, but as a journalist attempt to put into plain terms what so many must have in their minds. It may be that what folks in Newcastle are thinking to-day the world will be thinking to-morrow.

Consider the position after a broad view of what is going on in almost every centre of activity with polytechnics, arts and science schools, crafts classes and trades colleges, all crowded like busy hives of industry, creating a throng of either co-operators with architects or competitors against them. No solution whatever will be arrived at by being supercilious, because the architect must become alive to the ultimate problem involved. He cannot afford either to ignore or stand aloof in this movement if he is to secure a hold on the wider issues of our national life. The professional journals constitute a much more intimate factor in this regard than perhaps may have occurred to you before, and it is evident that among the vast concourse of students and teachers comprehended in the higher educa-

tional scheme just alluded to, there exists an untold number of readers for whom the building papers have a very real interest.

Beyond this, again, there is the power of the Press in influencing public judgment, and often it would be impossible to obtain a hearing without the aid of journalists, who are said to hold the ears of king Demos in keeping. Modern intellectual, political and social life differs totally from the conditions prevailing in the days of the Plantagenets, and yet we are continually being lectured about the discrepancy of methods architecturally characteristic of the Middle Ages as compared with those of the reign of King Edward VII. Those who most harp on this string are the inconsistent people who never cease to caustically bemoan what they designate the inanities of the Gothic Revival. These also are the critics, too, who say that the architectural papers only serve to make the cribber's repository replete with an ever-increasing choice of patterns, and mostly bad ones at that, because, forsooth, the aforesaid candid grumblers mostly keep their own precious productions to themselves. Thus, on their own showing, they never give the reader even a rare chance of seeing how things ought to be done. This criticism about cribbing leaves my emotions quite untouched. I have seen too much of it done by every variety of architect, "twixt wind and water," to be moved on that account, and my experience is that those who make the most fuss about giving their brains to other people are the last persons in the world who run any real risk quite in that way. By continually publishing the best contemporary drawings of the most successful buildings, and in illustrating the designs chosen in current competitions, the professional periodicals serve an unquestionable service, to say nothing of the historic examples of all kinds so copiously given as standards for reference. This dissemination is not limited by any means to the cities and big centres of enterprise, seeing that individuals living in the most remote places are reached almost as readily, while architects and subscribers in our Colonies have again and again told us how they look forward to see the journals as the mails arrive.

We, too, at home, by the same means, are made acquainted with what is going on beyond the seas among our fellow workers who are engaged in developing countries in which many of our sons will have to make a home. It has often occurred to me how remarkable it is that equally able individuals should entertain such diametrically contrary opinions about the merits or otherwise of the self-same thing. There is, I suppose, no accounting for people's tastes. What a humdrum pellicle of a place this "valley of tears" would be if we all thought alike. Our journals would be duller than they sometimes are already. Much of their space is necessarily occupied with ephemeral matter answering the fugitive needs of the hour; but you will do well to note that, whatever power the Press may possess, it cannot make insignificance significant. I mean these papers have in the main to be recognised as records of other people's doings, and they reflect the best that is being produced at the time. On the whole this agreeable task is well performed with a catholicity of selection, a regularity and an impartiality which at least commends itself and pleases the majority. There always remains a residuum who would like to have a paper all to themselves, and I dare say think they would do great things. Judged by an academic standard, or looked at through the barnacles of a cult, some of the illustrations are mediocre enough, it is true, unrelieved by freshness or artistic charm; but obviously great designers can be counted on the fingers, and distinguished works of art necessarily are few. An annual magazine might have leisure to collect and pick out the supreme, eliminating everything which does not count as excellent, though I doubt it. Somehow good, bad and indifferent performances gain equal publicity anyhow, and this is precisely the distinguishing characteristic of each Royal Academy show, as in every other exhibition. The work of the most capable man even is unequal, and occasionally most disappointing. Weekly journals are primarily newspapers, and you cannot reasonably compare them with expensive magazines; but no monthly publication can compete with them in the matter of large circulation and thorough representation of up-to-date form. In passing judgment upon the relative value of any illustrations, it is clear that, though the subjects may lack artistic merit, they probably present an interest of another kind, perhaps as a planning scheme or some special kind of building of exceptional value to one class of

reader, but of little use to another. The journals are very much what the profession is capable of making them.

As years come and go, the gigantic growth of serial accumulations is inevitable, and many ingenious subscribers have endeavoured to cope with this vast aggregation by devising indices and file compendiums of their own with a view to classification. Perhaps the index printed with a paper every half-year furnishes, after all, the best means for reference, and when bound in a small folio such indices are easy of access and can be cheaply preserved. Nothing could be more hopelessly unmanageable than a lot of bundles of unbound parts of any periodical. It must be largely composed of inconsequential matter; but, on the other hand, these volumes do contain considerable information which cannot be found elsewhere. The great point is to keep the indices for ready application so as to make the information accessible.

The lecturer, after recording the publication of architectural publications since 1786, said:—With regard to continental publications, it has to be noted that the strict rule of annual subscription mostly obtains, and under this régime individual copies are not supplied to non-subscribers. In England and in America readers have the option of purchasing any particular number or part of the periodical they may fancy. This no doubt is a great advantage to the public, but the publisher has to determine the limit of his editions by the average demand; consequently any issue which happens to prove specially popular speedily runs out of print. Other numbers less in demand lapse into "waste," which results in a loss to the proprietors, beside being the indirect occasion of loss to the readers, and for this reason the output on every periodical necessarily is calculated upon a provision as near as may be to cover the depreciation inevitably accruing under such a system. On the other hand, when the edition of a serial is defined by regular number of annual subscribers, as happens on the continental plan, this loss is obviated, leaving more available capital expenditure on the improvement of the publication itself. The conduct of any journalistic enterprise obviously must be based upon commercial consideration unless, of course, the publication is run to further particular views or ulterior aims of the proprietor. This is not likely to apply to the architectural Press, which, like any other business enterprise, is founded on the principle of supply and demand; but there is this to be said, that those who really value the paper which represents the interests would do well to remember how this aspect of the matter concerns the reader as well as the proprietors—least to this extent, because success in furthering the end for which both the architect and the architectural journal are working must largely depend upon the co-operation of the subscribers to these periodicals, not only by contributing to their pages and, as correspondents, giving ear and information of matters of general interest, but by regular taking in their papers. I make no apology for thus coming to so conclusive a point, which otherwise might not occur to you. Class journals do not appeal to the public in the first instance, though their opinions are constantly quoted in the popular newspapers, thus materially assisting the aims and interests of the community which the architectural journals more immediately represent, and it is primarily on their own constituents that the professional periodicals must rely for support.

EDINBURGH ARCHITECTURAL ASSOCIATION AND HOLYROOD ABBEY.

A MEETING of the Edinburgh Architectural Association was held last week, Mr. Hippolyte J. Blanc, R.S., president, in the chair. The subject to be discussed was the restoration of Holyrood Abbey.

Mr. James Bruce, W.S., moved:—"That looking to the public interest that has been aroused on the question of the repair and restoration of the chapel royal, Holyrood, through the intimation of a legacy of 40,000*l.* for these purposes by the late Earl of Leven and Melville, the Council be remitted to the Council to report upon the following points, viz.:—1. What remains of the structure exist. 2. The condition and capabilities of the parts remaining. 3. Whether the evidence of these parts is sufficient to enable a satisfactory repair and restoration of the structure to be made." Mr. Bruce said that if the Council took up the subject they would be rendering a service not only to the architectural profession, but a great service to Scotland. In a matter of that kind it was right that the subject should be dealt with by those who were trained architects. The subject should

get the best service that it could get, and get it impartially. What they wanted to know was, what is the real state of matters with the old abbey church of Holyrood? Looking at what appeared in the newspapers almost every day, one saw how wide was the interest of the Scottish people in this matter. Holyrood Chapel was one of the most interesting, if not the most interesting remaining building that they had in Edinburgh of that extremely early date. In some respects, both in architecture and in its intimate connection with the royal family of the country and with the history of the country, it occupied in Scotland a position somewhat analogous to that of Westminster Abbey in England. Lord Leven left the great bequest of 40,000*l.* to have the old church put into a certain state of repair and restoration and the parts that were missing completed. He left that money to his trustees, and he directed them to apply to the King for permission to make the repairs. So far as he knew the trustees had not approached the King, and the matter now stood in this way, that Lord Balcarres and Sir John Stirling-Maxwell, who were asked in the will to see to the execution of the work by an architect named by his Lordship, had written to the newspapers saying that they had got a report from Professor Lethaby declaring that restoration and repair was practically impossible at Holyrood. Of course, it might be so. He as a layman could not tell; but he might say this, that when these old walls, which he had looked at so often, were 10 feet thick, it seemed inconceivable that restoration and repair would wreck what yet remained. If interfering with the remains in an attempt at restoration and repair were to bring the whole thing to ruin, he said that no one in Scotland would think of lifting a hand in that direction; but if, on the other hand, it were found that there was a large amount of remains still standing, that these remains were in a fairly satisfactory condition, that what there was of them could show accurately what had been lost, and that it could be made sure that the proposed work would not bring ruin to what now existed, then he thought it should certainly be done. For himself, if he thought the restoration would be a restoration such as the outside of St. Giles's, he should say that it ought not to be done. On the other hand, if it were a restoration such as that of the inside of St. Giles's, then he said it should be done. If a committee presided over by Mr. Blanc said that the thing could not be done, then he was afraid they must just accept with great regret the verdict that came from them. If, on the other hand, the committee thought the thing could be done and done with safety, he was sure their report would be hailed with very great pleasure.

Mr. Daniel Macfie pointed out that at the last meeting of the Association he said that by delay nothing would be lost out time. He now felt that nothing had been lost, because it seemed to him that the interest on the part of the public had increased. The feeling was very widespread that the matter should be examined with thoroughness by those who were expert in that kind of work. He believed the Association would practically efface itself if it declined to do anything in the way of inquiry. The Association existed for purposes of that sort as well as other matters of public interest generally. He did not think that timidity, or any less worthy sentiment, should animate them in discussing the question. The Council would undertake a work of very great responsibility, and if they took it in hand he was certain that some good guidance, some proper leading, would be given to the public.

Mr. H. O. Tarbolton, in supporting the motion, said the attitude of the anti-restorationists had been characterised as nauseous sentimentalism, and it had also been said that all competent architects were entirely in favour of the restoration. With regard to the first point, would they say that it was merely "nauseous sentimentalism" to show hesitancy in patching up an old master, or in protesting against, say, the restoration of the Parthenon? With regard to the opinion of architects, there was, he said, a very wide divergence of opinion in the matter all over the country. He believed that architects who were opposed to restoration were animated by the most sincere motives. They felt that it was their professional duty to maintain and preserve such precious treasure, which through, perhaps, over zeal was in danger of being threatened. There was another point. They should clear the ground entirely from any suspicion of jealousy in the matter. He hated the word, and he could not express his indignation to think that it had been used in regard to an architect of the reputation of Mr. Ross. He believed he was expressing the opinion of every architect in the country when he said that Mr. Ross had their entire

sympathy in that unexpected and unprecedented contretemps.

The President said that the remit had not been brought forward for the purpose of controversy. Nor was the intention one of trying to interfere with Lord Leven's will, nor yet to controvert Professor Lethaby's report. He felt that the public naturally looked to that Association to give them leading and guidance, but whether it were that that leading would be in the direction of recommending that nothing should be done or that something should be done, it would be premature to speak now. The intention was to place before a number of intelligent architects in Edinburgh and in Scotland the circumstances as they existed, and to complete a carefully studied examination, followed by a report. That report would be placed before the Association when matured by the Council. It was their plain duty to inspect the remains and to ask the Council to deal with the matter at the earliest possible time.

The motion was adopted unanimously.

The following communication has been addressed to Lord Balcarres and Sir John Stirling-Maxwell, Bart., by the Scottish Patriotic Association:—At a meeting of Council held on February 15, resolved respectfully to draw the attention of Lord Balcarres and Sir John Stirling-Maxwell, as superintendents of the restoration of Holyrood Chapel under the will of the late Earl of Leven and Melville, to a fact which has hitherto escaped notice. In the report by Professor Lethaby the chief point urged against the restoration was that if restored the chapel would no longer be the fane with which so many historic events have been associated. The Association would point out that the chapel had already been twice destroyed and twice restored before it fell into the ruinous state in which it now lies. It was unroofed, despoiled and thrown down by the English General Somerset after his victory at Pinkie in 1547. The nave was restored as a chapel royal for the marriage of Queen Mary and Lord Darnley in 1565. It was again destroyed by the Earl of Glencairn after Queen Mary's flight from Borthwick Castle in 1567. It was again restored when the modern part of the palace was built for the use of the Duke of York, afterwards VII. and II., in 1679. And it was destroyed once more at the Revolution in 1688. In view of this history the Association would point out that Professor Lethaby's suggestion that restoration would deprive Holyrood Chapel of its character as an ancient monument loses its point. The chapel has been restored several times already. The same argument against restoration would have applied to the cathedrals of Glasgow, St. Giles's, Dunblane and Iona, and the abbey churches of Paisley and Culross. For this reason, and because of the superlative interest which belongs to Holyrood Chapel as the scene of historic events and the tomb of several Scottish kings, the Scottish Patriotic Association respectfully urge Lord Balcarres and Sir John Stirling-Maxwell to reconsider their decision not to proceed with the restoration.

We understand, says the *Scotsman*, that under the provisions of the late Lord Leven's will, the money which he conditionally left for the restoration of Holyrood Chapel falls into his residuary estate, which is directed to be held upon various trusts for Lord Leven's sons, none of whom are yet of age, and their unborn children. This provision, it will be observed, makes it impossible for anything being done in the way of the beneficiaries renouncing claim to the 40,000*l.* in order that it may be used, outside the terms of the will, in rebuilding the choir as a chapel for the Knights of the Thistle.

A Statement has been issued from the Bradford city architect's department showing, in accordance with the instructions of the finance and general purposes committee, the average annual cost of the department and the average annual approximate value of services, calculated upon the basis of professional fees recognised by the Royal Institute of British Architects. The averages for the year are in both cases based on figures for the five years ended March 1906. The statement gives the average annual cost of the department as 1,630*l.* The average annual value of services of the department calculated upon the cost of works actually carried out is stated to be 2,196*l.*, and the annual value of services not yet carried out to be 1,007*l.*, making a total value of 3,203*l.*, and leaving a balance over cost in favour of the department amounting to 1,573*l.*

NOTES AND COMMENTS.

THE Tolbooth of Dundee was erected in 1734 by WILLIAM ADAM, the king's mason, and the father of the three brothers who left their mark on London streets. A building which suited the needs of Dundee at that time is not equal to those of a later period. The population of Dundee is now at least tenfold what it was in 1734. It is therefore proposed to preserve the present building in High Street, but to remove the structures which are contiguous to it, and on their site to erect city offices and a city hall. The estimated expense of erection and site is 140,000/. But a smaller scheme only works out at 60,000/. It is anticipated that people who are or have been connected with the city will be generous in giving donations, and it is also contemplated to let a part of the property. It will be necessary to obtain Parliamentary powers to carry out the project, and as there is no urgent demand for the change the following resolution has been adopted, which does not commit the Town Council to any immediate expenditure:—"That this Council approves in general of the terms of the scheme for a new town hall and council chamber, and remits to the Lord Provost's committee to consider its details, and resolve on what is necessary to be done for its accomplishment after fully considering the whole matter, and after ascertaining to what extent the new town house and council chamber as a public scheme will secure the support of the citizens."

THE question has often been asked why the Académie Jullian was such a success. There are many establishments of the same kind in Paris, but in none of them was it so difficult to obtain a sitting. JULLIAN's somehow had gained a universal reputation, and young fellows from many lands could be seen in the great quaint gallery. RODOLPHE JULLIAN, who was the head of the establishment, has just passed away in his sixty-sixth year. He was a painter, and that perhaps was one of the reasons for its success, for some academies were originally organised by models and other men connected with art, though they could not draw or model. The number of students during the last thirty years would be surprising to a foreigner. Some of them are to be reckoned among the foremost French painters. As in other schools, JULLIAN was able to obtain the aid of men whose slightest word of praise or reproof was treasured, and he was an excellent organiser. But probably the success of the place was mainly derived from the independence allowed to the students.

THE committee seeking contributions for the preservation of the Auld Brig of Ayr have been fortunate in obtaining 9,500/. already, and additional sums are expected. The Town Council fixed the sum required for the works at 10,000/., and the committee have not only guaranteed that amount, but have agreed to pay more if necessary. The bridge is therefore likely to be handed over to the committee without delay, especially as Messrs. SIMPSON & WILSON, the engineers, are desirous to have the works commenced in order to be completed in two years. Mr. JOHN YOUNG, the burgh surveyor, has an onerous task in dealing with enthusiasts who look upon every stone of the structure as sacred, although decay is evident. His report on the proposals is a model of caution. In the course of it he says:—"If the anticipated conditions on which the success of the proposed works are based turn out altogether favourable, the proposals now submitted form a practical scheme for the preservation of the present fabric of the bridge. It is meantime, however, out of my power to definitely assure the Town Council that the proposed works will be entirely successful, or to forecast their effect on the permanent security of the bridge, as so much depends on the manner of carrying out the works and the methods adopted for overcoming the difficulties and problems met with in its execution. I must therefore

ask that, until the works are completed, my definite assurance in regard to the security of the bridge for public traffic may be deferred." There is so earnest a desire to have the old bridge put into a condition which will make it a memorial of BURNS for many a year, the burgh surveyor will, it is to be hoped, find no difficulty in passing the works as secure.

A NEW series of by-laws will shortly come into operation in Manchester. The improvements committee who prepared them sent a draft to the Manchester Society of Architects and the Builders' Association with a request for suggestions. The Society of Architects, having considered the by-laws, made some observations upon them which were adopted as far as possible by the improvements committee. But the members of the Society expressed their regret that in consequence of August being a general holiday period they had not had time to go fully into the matter, and if further time could be granted they would go into the subject again in detail. No other opportunity was given for further consideration, although it appeared to be a general opinion that the by-laws had been approved by the Society. The chairman of the improvements committee said that while they were desirous to work harmoniously with the Society, it could not be accepted as a court of appeal, and he considered that the time allowed for the architects or any other person to offer suggestions was ample. As architects will have to carry out the by-laws, it is to be regretted that there was not co-operation between the Society and the Corporation.

SOUTH KENSINGTON is likely to be soon enriched by the erection of a Technological College on a scale which will correspond with the requirements of the present time. We have already explained the proposals, which were the result of the investigations of a special departmental committee. The London University, it was suggested, should accept responsibility for the educational arrangements. It was also recommended that there should be a governing body of forty members, six of whom would be appointed by the Crown, four by the Board of Education, five each by the University of London, the London County Council and the Council of the City and Guilds of London Institute, four by the teaching staff of the new institution, two by the Exhibition Commissioners, one each by the Royal Society, the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Institution of Electric Engineers, the Iron and Steel Institute, the Institution of Naval Architects, the Society of Chemical Industries, the Federated Institution of Mining Engineers and the Institution of Mining and Metallurgy. It is now understood that the President of the Board of Education will introduce a Bill in the present Session by which power will be sought for the creation of the college.

ILLUSTRATIONS.

48-49 JERMYN STREET, S.W.

CATHEDRAL SERIES.—CARLISLE: VIEW OF CHOIR, LOOKING E.T.

THE NEW WAR OFFICE, WHITEHALL.—ENTRANCE HALL, FROM QUADRANGLE.

LEYTON LIBRARY.

THERE can be no question about the revival of artistic joinery in England. Mr. CARNEGIE can claim that he was one of the inspirers. In the oldest libraries, work of the kind was considered to be indispensable, and it cannot be superseded by any modern invention in recent institutions. The extensive scheme which Messrs. NEWMAN & JACQUES have made of joinery in the library at Leyton imparts a character to the interior which is satisfactory. In carrying out their design, Messrs. ELLIOTT, of Newbury, have loyally co-operated with the architects, with the result that the rooms have lost that coldness which deters students and readers, and have acquired warmth and homeliness.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. Leonard Stokes, vice-president, in the chair.

Mr. ALEXANDER GRAHAM (hon. secretary) announced the decease of Sydney Fowler, elected Associate 1882; William Angelo Waddington, elected Associate 1882 and Fellow 1903; W. A. Large, Fellow, elected 1904, district surveyor of the Belgravia district of Pimlico and St. George's, Grosvenor Square; and A. Maryon Watson, elected Associate 1899, who was the Institute essay medallist in 1901. Mr. Watson was the only son of Thomas Henry Watson, and had taken an active part in the work of the Institute, being for some years one of the hon. secretaries of the literature standing committee; the deceased had also been one of the hon. secretaries of the Architectural Association. Papers were read by Sir CHARLES NICHOLSON and Mr. C. CORLETTE ON

Modern Church Design.

Sir CHARLES NICHOLSON, in opening, acknowledged our indebtedness to recent writers and lecturers on modern church building. Just as Pugin and Beresford Hope in the middle of the last century were instrumental in killing the Gothic style of the Peel churches, so later critics have put an end to the fashion of imitating the eccentricities of men like Butterfield or Burges in buildings which lack the grace and sense of proportion which give distinction to the works of those masters.

Touching the smaller and simpler types of churches, a factor which the architect should bear in mind when designing such buildings is the necessity for restraint and simplicity. Generally the builder of a small church is only justified in aiming at that kind of dignity which can be obtained by simple outlines and good proportions. Delicate ornament and bright colours are not out of place in such buildings; but an undue multiplication of parts, an excessive parsimony of material, or the use of meretricious ornament can only result in disappointment. A refined sense of proportion or detail cannot be equally attained by all; but we can at any rate build simply and without offence, and refrain from aping the features of a cathedral upon the scale of a chapel.

The importance of a simple plan cannot be over-estimated in our smaller churches, and in such buildings it is not always necessary or desirable to sacrifice too much for symmetry. Thus, under certain conditions, good results can be obtained by planning a moderate-sized church with a nave flanked by an aisle of fair width on one side only. Proponents of church-building schemes are apt to make a fetish of an unobstructed area full of pews in front of the chancel and altar. There is no real necessity to place the altar and chancel in full view of all the worshippers, especially when everybody possesses a Prayer-book and can read it. The question of placing the pulpit in a conspicuous position, and of making the preacher audible to the congregation, can generally be solved in a church divided up into bays of reasonable width, and carried upon fairly light piers, especially if the continental and old English plan adopted of placing the pulpit about a third of the way down the nave, so arranging the seats that those placed east of the pulpit should be capable of being turned round during the sermon.

Although the passage-aisle type of church is capable of producing imposing architectural effects, these are only possible where the height is ample; the plan is therefore mostly one, and unless ample funds are available it is better to adhere to a more economical type of design. The effect of internal spaciousness can be best attained by dividing up a church into two or three spans of fair width and height, rather than by exaggerating the dimensions of a central avenue and tacking on a pair of aisles like stage sculleries.

Speaking of the value to the architect of a true sense of scale, the author referred to the many Renaissance buildings, like St. Peter's at Rome and the Isaac Church at Petersburg, which suffer from the exaggeration of their details. Our own besetting sin is in the reverse direction, for we are apt to destroy the dignity of a whole by supposing it of a collection of features so small as to be lost in themselves. The work of men like Street and Butterfield is generally marked by a fine sense of scale in individual parts. Some of the best effects in modern church work have been produced in simple buildings by the use of thick walls, ranges of large windows, full arcades and plain roof lines.

A problem often presented to modern architects is the production of cheap town churches of good size, seating up to a thousand people or so. By exercising great care and economy it is still possible to build substantial churches fairly cheaply; but in such buildings it is only possible to attain simple effects which do not commend themselves to public taste, and it is only by the exercise of some diplomacy that an architect compelled to build cheaply is excused from the obligation to disfigure his work with poor ornament. Under these conditions it is advisable to aim at actual bulk rather than at architectural refinements or luxuries; and such unessential features as chancel arches, clerestories, broken-up roofs and an undue multiplication of parts should be dispensed with.

The one difficulty which cannot be dispensed with in these plain churches is that of sufficient solidity. In cheap modern churches, when the construction is starved until the verge of stability has been nearly attained, one cannot but feel a most painful sense of pretension and inappropriateness. If we have to build cheaply, let us, at any rate, build solidly, and not waste money upon moulded dressings of Bath stone or even baser materials.

As regards external design we should be content with the simplest possible outlines and with the severest of detail. One source of dignity is within the reach of every church builder, viz. a long, unbroken roof line. It is hardly possible to over-estimate the value of this; but it requires a certain amount of courage in the architect to compass the building of such a roof. What is true of a roof line applies also to a parapet, whether plain, pierced, embattled, or pinnaced.

The author referred to the mistake, so often made by church building committees, of under-estimating the possible requirements of their localities. Instead of laying-out a sufficiently large scheme at the outset they aim at getting a church finished quickly to hold six or seven hundred people, trusting to supply future needs by the erection of mission or district churches as the population grows. This is a great mistake. The organisation of a single large church is generally more efficient and less costly than that of a number of smaller ones. In a large town church, well equipped and well staffed, it is possible to maintain a constant succession of services with the same expenditure of labour that is now dissipated in the simultaneous performance of services in half a dozen small churches. Architecturally, it is evident that one good building is worth any number of indifferent ones. It is bad economy that some dozen churches within a radius of a mile should have exactly the same service going on in them at eleven o'clock every Sunday morning; the clergy are overworked and underpaid, sermons are only half-prepared, churches are half empty, and church music is often of a vulgar and sensational character. The author thought this condition of things might be remedied by imitating the generous ideas prevailing in some of the continental towns, where modern churches are built, cross-planned and vaulted throughout, varying from 180 to 200 feet in length and from 60 to 80 feet in internal height.

As regards the style of our churches, the author referred to the fashion of deriding modern Gothic. Our Gothic school, he said, is by no means seeking merely to reproduce the effects which it was only possible to obtain under conditions which no longer exist. Perhaps it is because the conditions under which later Gothic work was done were more nearly approximate to those of our own time than the conditions which obtained during and before the thirteenth century, that the most successful modern Gothic work is based upon late rather than upon early examples. But it will be conceded that the type of work which has been developed from the late Gothic models has grown up into a fairly well-understood manner of architectural expression, which is both modern and English and church-like. This being so, asked the author, is it worth while to cull Byzantine or Classic details for the sake of mere novelty, or to imitate or invent features which are merely picturesque, quaint or even grotesque? Surely it is wiser to recollect that fashions which are merely odd are bound to change rapidly, and to devote our superfluous energy to the perfecting of planning and the development of construction. The secret of Bentley's success at Westminster lies in its solution of such problems as the construction of a fireproof roof system and the possibilities of vaulting a large building in concrete, and not in the clever compromises between Classic and Byzantine detail with which his work is adorned. And the wholesomest fruit of the Gothic revival is to be found in the series of vaults which Pearson poised

with consummate skill over many of his churches, rather than in the miles of correct thirteenth-century Lincolnshire mouldings with which he covered his cathedral at Truro. Under the influence of the Church of England the Gothic style can scarcely be said to have been entirely disused at any period in this country.

The spirit of the Church is distinctly conservative and traditional, and in a sense still Mediæval, and it is not unnatural that our church architecture should reflect this tendency. Moreover, churches like St. Michael's at Coventry and St. Nicholas's at King's Lynn, and scores of others, form models for town churches which would fulfil every requirement of the present day, for they are the best compromise that has yet been evolved between the conflicting requirements of ample accommodation, good acoustics, practical comfort and architectural dignity.

Mr. HUBERT C. CORLETTE, treating of the practical requirements of a church which should be satisfactory both ecclesiastically and architecturally, said that first the building must be suitable for the locality in which it is to rise. It should be quiet and dignified, and it can be both of these without being mean and bare, even though no mouldings, carving or other decorations are possible. The levels of the site, the course in which the drains may fall, the nature of the subsoil and the foundation with which it will be necessary to deal are elementary matters which cannot be overlooked. But if the work is to be part of the locality in which it is to be built, the characteristic type of work which has been the pride of the neighbourhood for centuries, the local materials available and the capacities of local craftsmen should be considered as well. To use the bricks, tiles or slates, the stones, the sand, or any other materials which are parts of the surrounding hills and valleys is but to make the work a distinct portion of the soil upon which it is to stand. The local types should also be studied so as to get a distinct idea of the way in which one may best work in touch with tradition.

Dealing with the question of accommodation, the author subdivided his subject into (1) The sanctuary:—*a*, altar; *b*, reredos; *c*, steps; *d*, altar-rails; *e*, sedilia; *f*, piscina and credence; *g*, altar and sanctuary lights; (2) The choir:—*a*, reading-desk; *b*, choir-seats; *c*, lectern; *d*, steps; *e*, screens; *f*, organ; (3) The nave:—*a*, seating; *b*, aisles or passages; *c*, porches; *d*, narthex; *e*, font; *f*, pulpit; *g*, litany-desk; *h*, floor levels; (4) The side chapel; (5) The vestries, sacristy, cleaner's room; (6) Lighting, heating, ventilation, drainage, roofs, musical considerations.

Experience has shown that the mensa, or slab, the table-top, which is the altar itself, apart from its supports, should not be less than 7 feet by 1 foot 8 inches. But 8 feet is better as a minimum length; and the top of the altar-stone should not be less than 3 feet 3 inches, nor more than 3 feet 6 inches, high above the foot-pace or platform upon which it stands. The altar should be so placed in the sanctuary that the length of it is north and south, with the long sides towards the east and the west. The altar need not be so placed as to be in full view of the whole congregation. But it is not desirable that it should be altogether hidden and screened, as seeming to exclude the worshippers who are present to take part in the service of the Church. The altar should be raised above the level of the nave floor. In a long and generally large church it may with advantage be higher than in a small and short one. There should be one step, and one only, at the entrance to the sanctuary from the choir.

The reredos gives opportunity for the use of some of the highest forms of artistic expression in colour or form. In it the architect, painter and sculptor, the carver and worker in metals, may use all their best faculties and ideals in producing a work of admirable architectural beauty. In its simpler forms, the dorsal or hanging with side curtains may be used.

If there is unlimited room, and a really fine sanctuary may be had, let it be large. Then the altar and platform may be well detached from the east wall and stand forward with advantage. There may be the steps close to the platform, returned round it, with a wide space between the lowest of these and one or two carried across the entire sanctuary. On the other hand, if the site is in a town, it may be confined, and a limit placed upon the space available for a sanctuary. If this is so, everything should be done that is possible to make the sanctuary worthy of the object for which it is used. But it must be convenient, useful first, and dignified. All actually unnecessary steps should be discarded.

The true place for any distinction between one division

of the church and another is at the entrance to the sanctuary not at the entrance to the choir. If anything in the nature of a chancel arch is used, let it be placed above the entrance to the sanctuary. The screen might then be placed there on a step above the choir floor, and the altar rail at a convenient distance 5 or 6 feet eastward of this. This would be a suitable position for the rood-screen in a moderate church with a choir of laity.

The custom of placing the lay singers in the chancel between the nave and the sanctuary is an innovation. But as it has so largely been accepted, architects must deal with it as well as they can; and one thing necessary will be to arrange that the benches and desks for the choristers should not be too obtrusive. The long lines of them are valuable architecturally to lead the eye on to the altar. But it is wise that they should not appear as a too prominent break between the nave and the sanctuary. The best way to avoid this is to keep them lower than they are sometimes designed.

If the choir is to be raised at all above the nave floor level, it will undoubtedly be best that all the steps should be collected together at the entrance to the choir from the central passage of the nave. It is not, however, necessary that the choir should be raised. But when it is lifted up from one to three steps of 6 inches rise and 12 inches tread will be quite sufficient.

Discussing musical requirements, the author advises that the organ should not be enclosed within a brick or stone box of building materials, even though one might make it an excuse for introducing a tower. The organ in the church for practical reasons, and should be placed where it can be used. It should also bear a distinct relation to the size of the building, and not be too large for the church in which it is placed.

As regards seating there are well-defined and generally accepted rules which need not be departed from. In setting out the area for seating the simplest method is to allow 3 feet from back to back either of benches or chairs. The author favoured chairs as the best solution of the difficulty of disposal of hats. If the back legs of the chairs are well planned a convenient place for hats is to be found between each chair. The hats can be shelved upon the bottom rungs of the two chairs, or upon a flat piece of board screwed to the rungs to receive them.

In even a small church the central passage of the nave ought to be no less than 4 feet wide; it is better to be at least 5 feet or 6 feet. Side passages should not be less than 3 feet in width, however small the church may be. If the side passages are in aisles in which there is seating other than that properly in the nave, it will be necessary to make them 4 feet wide. The cross passage between the seats in the nave and the western limit of the choir may be 4 feet across, if it is not likely to be used extensively. But if the choristers approach the entrance to the choir from the vestry by this passage it should not be less than 5 feet or 6 feet wide. The cross passage at the west end of the church should be regarded more as a narthex, or internal western porch, than otherwise. And it might be screened from the nave, even only by curtains above the backs of the last rows of seats.

If ample space is allowed at the west end there will be room not only for ingress and egress, and the placing of the font as an important essential of the plan, but it would also, perhaps, make it possible to provide some convenient receptacle where umbrellas, sticks and superfluous coats, wet or dry, might be deposited.

In allowing for the pulpit in the plan the first requirement is that it shall be so placed that the speaker may be heard well in any part of the building. It is in England usually found on the north side, not far from the entrance to the choir; but in a large church it might with advantage be somewhere near the centre of the nave, on the north or south side, close to the wall or arcade of the church. It will be sufficient if the floor of the pulpit be raised no more than 3 feet above the nave level in a church of moderate dimensions, but it may often with advantage be higher than this, especially if it is to be used for speaking to a large congregation. In this case a sounding-board above the pulpit is an advantage. The steps up to the pulpit are better hidden behind it than shown too much, and in no case ought they to be awkwardly arranged with any twist.

In nearly all well-equipped churches it is considered necessary to provide a small side chapel. It is used principally for the small congregations which attend the weekday services, and need not be a distinct portion of the building, but be separated by a screen from the body of the church.

Generally two vestries will suffice—one for the clergy and one for the choristers. They should be close together. And it is often convenient if the two may be thrown into one for the accommodation of any meeting or classes connected with the affairs of the church.

As regards the heating and ventilating of churches, each building will need special consideration, but the architect and signer of the whole work must control the installation and arrange for it, otherwise the architecture must suffer.

The author entered into the question of the cost of building churches, and showed that cheap churches are possible provided simplicity in design is followed.

Having considered the more practical matters of church building, the author recurred to a suggestion he had made earlier in his paper, that the various forms and furniture, and the disposition of the main parts found in use in a modern church, are not arbitrary customs or conventions. These forms, ceremonies and rites are all vital things. They have a meaning, a reason for their being and a history. They are formalities only when in the use of hypocrites, and they are neither based upon dead traditions nor the conventions of any real or supposed Mediæval empiricism. At the same time, though they do not owe their continued existence and use to a conservatism which will not advance, we must not allow them to be lost through any desire for progress which is neither reformation nor restoration, but rather revolution. There are, then, evidently guiding principles in church planning and arrangement, as there are guiding principles in building which we must remember." The author went on to recapitulate the principles underlying the traditional methods of church planning, briefly outlining the practice in England since early Christian times.

Concluding, he said that it was too much assumed that anything would be suitable as a design for church work in England now unless it had the sanction of English tradition manifest in its every feature and detail. Had not, however, certain types of design been made English by use? Had not some of the now essential elements of English design just been imported and then by the work of some generations of designers made ours by numberless experiments in the course of centuries? It appeared to be thought that it was "incorrect" to mingle Eastern with Western ideas of construction as a foundation of architectural design. But the Mediæval builders were hampered by no such absurd respect. In the South of France and in Spain the designers, though revelling in the same magnificence that height gave them, enclosed their whole floor area with one enormous vault. The grandeur of one large open space appealed to them in the clearer southern light as the broken mysteries of numberless supports satisfied in other ways a northern imagination. Because the domical experiment was not tried in England before the close of the fifteenth century, we were to be for ever debarred from using it in a design coupled with more ordinarily Gothic principles of structure? Or nearly two centuries the round arch and no tracery was essentially, if inevitably, a strong and beautiful element of our English Gothic art.

Mr. G. H. FELLOWES PRYNNE, proposing a vote of thanks to the authors of the two papers, said he was so in sympathy with the whole tone of their remarks that he found little to say in criticism. Sir Charles Nicholson had mentioned the difficulties he so often experienced with the clergy, and he (Mr. Prynne) thought all church architects had similar trials, and the clergy would be the first to acknowledge the fact. In the forties and fifties there was a great desire on the part of the clergy and students to enter into the study of architecture, especially Gothic work, but in the present day many of the younger members of the clergy were quite ignorant of the service of the arts. There were small matters of ritual with which they were conversant, but in studying them many of the younger members of the clergy had lost sight of the principles of church architecture. There was a tendency growing up among the clergy for a better knowledge of building, and that was an inclination which could be fostered by architects. But it was not only the clergy they had to deal with—there were church-building committees, bodies of people who generally had no knowledge of building and who seemed desirous of obstructing the architect in his work. Referring to the requirements of the day, Mr. Prynne said they had magnificent examples of old churches of what modern work should be. St. Michael's, Coventry, and others were models of the type of church they desired to see in towns. The cost of building was next referred to, and Mr. Prynne said they could not properly build a church under 12*l.* a sitting. It was in this matter of cost that the architect was so often hampered in

his design. Some people believed they were clever when they had driven the architect down to a small price; they overlooked the fact that the architect, to bring his work within the limitation imposed, had to eliminate the main features of his design.

Mr. H. H. STATHAM, who seconded the vote of thanks, suggested that the main point in the erection of a church was not to shelter a congregation, but to uplift their souls, and for that purpose they must be taken away from the common associations of building. Mr. Statham advocated a large organ in a church unless it was wished to have only choir singing. Congregational singing needed something that would give harmony and base to it.

Mr. MAURICE B. ADAMS and Mr. E. PRIOLEAU WARREN supported the vote of thanks.

GUSTAVO GIOVANNONI AND CURVES IN PLAN IN THE TEMPLE AT CORI.*

By WILLIAM A. GOODYEAR.

(Continued from page 95.)

THE mental corrections of optical appearances which are described by Professor Hauck have a curious analogy in the experience of Mr. John W. Beatty, M.A., director of fine arts in the Carnegie Institute at Pittsburgh, Pennsylvania. The following extract from his letter to me on this subject is published by his permission:—

"Briefly put, my experience was this. When I first put on glasses for astigmatism, perpendicular lines appeared not parallel, being wide at top; in the size of a newspaper page about $1\frac{1}{2}$ inch wider than normal. When I had worn the glasses for several months lines seemed again parallel. Now, when I take the glasses off, lines are again not parallel, but wider at the bottom. Dr. Lippincott's theory was that I had always made mental correction, and lines recorded on the retina out of parallel were made to appear parallel by virtue of mental correction. This seems to be absolutely proven by the history of the case, as above briefly outlined. When I take the glasses off now, I see lines imperfectly at the instant of time, because the brain is not given time to correct the defect. The fact that the greater width is now at the bottom without glasses, whereas it was at the top with glasses when they were first used, is significant. You will find the reference to my case in the 'Archives of Ophthalmology,' vol. xviii. (1889), p. 18, and more particularly p. 28."

All these facts assist us to understand why lines which are optically seen as curves are not generally recognised as curves by the everyday human being. They also enable us to understand that the perception of the curves which are optically present in the facts of vision varies according to temperament and according to training. As a matter of fact there is no perspective which is not curvilinear, but as these perspective curves are too delicate to be generally represented in the dimensions of pictures, instruction in perspective, as regards draughtsmen and painters, generally ignores them, and hence does not tend to counteract the average human indifference to their existence which is due to mental correction.

All these points bear on the popular error that there is a natural sagging effect in architectural horizontal lines above the level of the eye, and it is now our mission to point out that no optical expert who has made a special study of the Greek curves has ever suggested that such a general sagging effect exists.

Thus the first investigator who made publication on the subject supposed that the Parthenon curves were intended to accent and increase perspective effect, because they develop and accent a form of curve which already exists in the normal optical appearance. This investigator was Hoffer, whose observations, measurements and publications were made in 1838, and thus anticipated the earliest observations of Penrose by seven years and anticipated his publication by eleven years.

Hoffer's publications were made in the "Wiener Bauzeitung" for 1838, whereas Penrose did not visit Athens till 1845, and did not publish his "Principles of Athenian Architecture" until 1851. The discovery of the Parthenon curves by Pennethorne in 1837 is generally supposed to have preceded the observations of Hoffer, but the publication of Hoffer long preceded that of Pennethorne, which appeared in 1878.

* A paper read before the Archæological Institute of America at Washington, January 2.

It will be observed that I am not advocating at present the explanation of Hoffer; I am simply pointing out that he was the first expert who made a special publication on the Greek curves, and that, so far from suggesting that these curves were intended to correct an effect of sagging, he supposed that they were intended to enhance and exaggerate a curve of exactly contrary character, and that this curve was mentioned by him as the ordinary optical appearance due to perspective.

The popular impression that the rising curves were intended to correct an effect of sagging, popularly said to be inherent in horizontal lines generally, is probably simply a misapprehension of the theory of Penrose, who never, however, suggested any such appearance in horizontal lines as a general rule. Penrose rested his theory of correction on the optical tendency of a horizontal cornice to curve downward under a gable, because the angles of the gable tend to appear wider than they actually are; therefore the bottom line is depressed, and as the depression gradually decreases according to distance from the angles, therefore the depressed line appears as a downward curve. According to Penrose, the rising curve under the gable was to correct this effect. But so far as the flanks are concerned, Penrose supposed the curves to be explained by the sentiment of beauty and the appearance of strength, but to have been originally suggested by the application of the curve as an optical correction under the gable. Thus we are led next to ascertain the present standing of the gable theory of Penrose, which appears to be the original form of the debated popular impression, although it is really a wholly distinct proposition.

This leads us to consider what other authorities later than Penrose have had to say about his gable theory. This gable theory has never, to my knowledge, been accepted or even favourably mentioned by any German authority. On the contrary, it has been vigorously and successfully contested by both of the two greatest German authorities who have subsequently debated the curves from the standpoint of the experts in optics. First, Thiersch* added to a variety of solid arguments one which must appeal to every understanding, whether that of an expert or otherwise. The argument is mainly this:—If Penrose was correct in believing that the curves of the entablature and cornice, at the ends of the temple, were intended as an optical correction under the gable, and to make the lines appear straight, how does it then happen that the stylobate is curved also where no such gable effect occurs? This argument is unanswerable. The only objection to it is that it is so simple, so conclusive, and must be so briefly stated, that it falls short of effect from sheer simplicity. It is, however, gilding the lily to elaborate this argument. It is not necessary here to rehearse the alternative suggestion of Thiersch who thus and otherwise contested the gable theory of Penrose, because it has also been thrown out of court by two subsequent events. One of these events was the argument of Guido Hauck.†

Although Hauck abandoned the new explanation of Thiersch, he approved and rehearsed and elaborated the arguments which led Thiersch to reject the theory of Penrose, especially dwelling on the point that the stylobate need not have been curved if the object of the curve was to correct a deflection under the gable. Both Thiersch and Hauck also urge the sensible view that to consider the curves of the entablature on the flanks of a temple as purely an afterthought is a far-fetched and wholly unsupported hypothesis. Let it be also observed that the theories of Thiersch and Hauck which proposed to supplant the theory of Penrose make no reference to a general sagging effect in horizontal lines, and Hauck expressly develops the fact that horizontal lines above the level of the eve tend to curve downward toward the extremities instead of curving upward toward the extremities, as they would if they had a sagging effect. Thiersch alludes to the same fact.

The publication of Hauck is undoubtedly the most valuable and far-reaching contribution to the optics of rising curves in elevation which has ever been made. But as an explanation of the subject of curvilinear refinements, viewed as a whole, it has also been thrown out of court. Therefore I need not describe the theory of Hauck. It is sufficient to say that it is based, like the theory of Thiersch,

on the form of the Greek temple and on the idea that the curves were invented by the Greeks and that these curves were always rising curves in elevation.

(To be continued.)

ROYAL ACADEMY LECTURES.

THE first of a course of four lectures, to be given before the Academy students on successive Thursday and Monday afternoons, was delivered yesterday (Thursday) at Burlington House by Mr. Reginald T. Blomfield, A.R.A., the Professor of Architecture. The subject of this preliminary lecture was "The Study of Architecture."

In his introductory remarks the lecturer pointed out that architecture required a faculty of hard thinking peculiar to itself, and that, whereas the painter and sculptor had their means of expression ready to hand, the architect had to make his appeal by scarcely trusted æsthetic methods, and had to think out the full logical intentions of the methods he employed, for there was no such thing as impressionism in architecture. Therefore, to arrive at this difficult art, unceasing study was necessary. It was not enough to struggle through an apprenticeship content with picking up an approximate version of the fashionable manner of the time—the student must think for himself. He must make his aim the technique of his art. The idea then, with which the student must start is that he has to master architecture in the same spirit, and with the same tenacity of purpose, as that of the student of sculpture when he studies anatomy and modelling. Matters of purely sentimental interest were outside his purpose. The moral of the builders, the age of the building, were irrelevant to this search for technique. The student must concentrate his attention on the facts of the building. He should try to understand what a building was there to do, what the architect aimed at and how he reached his solution. In order to do this the point of view must be sympathetic. Criticism that assumed an intention which never existed in the designer's mind was worse than useless. For example, it would be wrong to criticise a Mediaeval architect for indifference to mass and outline when it was of his accepted tradition to show all his construction; and this known, was absurd to abuse Renaissance architecture for not calling emphatic attention to its construction when it never set out to do anything of the sort. Dogmatic first principles were, therefore, a delusion and a snare. There was on one first principle which an architect failed to observe his peril, and was that his building must stand firm and answer its purpose. When, therefore, writers invoked religious or moral sanctions for the architecture they preferred the student should be on his guard, the truth being that good and bad architecture is to be found in every manner that has been practised within the range of civilisation, and that the open mind and the sympathetic mind are the first conditions of the profitable theory of architecture. Further, in order that the student may discriminate between good and evil in his enthusiasms, some knowledge of what has been done in the past is necessary. Tradition in modern architecture has passed out of sight, and it is necessary that the student should acquaint himself with the history of the past in order to acquire his standard of practice. Skill in architecture cannot, however, be learnt from books; the proper study of the architect must be buildings themselves. The student should saturate his mind with what has actually been done, not with the idea of imitation, but in order to perfect himself in the process of architectural expression. He should beware of sketching indiscriminately. A student might sketch every bluff carving in St. Paul's, and yet leave the building perfectly ignorant of its architectural meaning. This was not the way to set to work. The student should make a systematic analysis of the plan and construction of the building he studied—possibly sketching might take a merely subordinate place in this process; but in so doing he would be following the practice of the great architects of the Renaissance. Mr. Blomfield proceeded to illustrate his remarks with reference to St. Stephen's, Walbrook, and St. Paul's Cathedral, and pointed out how the student should proceed in his study of those buildings. There were, of course, many other points of view from which architecture should be studied—e.g. its historical development, its relation to the personal temperament of the designer; but the lecturer laid special stress on the importance of accumulating knowledge from the systematic study of the best models. Such knowledge was of far greater importance than was generally realised, and it would bring its reward with the student in later years.

* "Optische Täuschungen auf dem Gebiete der Architektur," *Zeitschrift für Bauwesen* (vol. xxiii. Ernst und Korn, Berlin, 1873).

† *Die Subjective Perspektive und die horizontalen Curvaturen des Dorischen Stils.* Dr. Guido Hauck, Stuttgart, (Conrad Wittwer, 1879.)

SCOTTISH ECCLESIOLOGICAL SOCIETY.

AT the meeting of the Glasgow branch of the Scottish Ecclesiological Society on the 19th inst., the Rev. Professor Cooper, D.D., in the chair, the Rev. T. N. Adamson, Broughty Ferry, read a paper on "Drontheim Cathedral and the Coronation of the King and Queen of Norway." Thereafter a paper by Dr. John Honeyman, R.S.A., was read on "The Old Arrangements in the Transept of Glasgow Cathedral," in which he referred more particularly to two blocks of masonry of unequal size in front of the rood-screen at either side of the entrance to the choir. These have a series of figures with scrolls on their fronts and the arms of Archbishop Blackadder on their ends, and Mr. Blore, who restored that part of the cathedral about 1841, seems to have come to the conclusion that they were the altars erected by the archbishop on the west side of the rood-screen. He accordingly finished them as altars. Since then these have always been spoken of and written about as such. Dr. Honeyman brought forward convincing evidence to show that they had never been altars, but only the decorated abutments of ribs spanning part of the wide stairs to the crypt, carrying a broad platform or gangway north and south to the galleries over the porches at each end of the transept. It was on this raised platform that the altars erected by Blackadder stood, which, like all others in the church, were destroyed after the Reformation. Dr. Honeyman pointed out that Mr. Blore's mistake was inexcusable, as he had a considerable part of this old structure before him as shown by Mr. Collie's drawings in 1833 and Billings's views later. Dr. Honeyman pointed out that the clumsy way in which this structure had been stuck on in front of the screen sufficiently proved that the latter was not erected by Blackadder, but was of older date (probably about 1430). He explained that one of the pedestals was larger than the other because the south aisle of the nave is fully a foot wider than the north aisle, and as the insides of the transept gables are flush with the aisle walls there is more space on the south side of the crossing than on the north side. Attention was also called to the fact that the beautiful little porches at each end of the transept, half-way down to the crypt, had been originally constructed with three bays open towards the centre. The effect of this symmetrical design has been greatly marred by the westmost bay on each side being built up and entirely covered by a clumsy flight of steps going up to the galleries, where they are quite unnecessary as these are also reached by flights of steps in the aisles. He advised that these should be removed and the porches restored as originally designed.

THE ROYAL OBSERVATORY, GREENWICH.

IN *The Architect* of last week the report of the highways committee of the London County Council relating to the chimneys of the generating station at Greenwich was published. The report of the committee appointed to inquire into the working of the London County Council generating station at Greenwich in its relation to the Royal Observatory was issued on Tuesday. Lord Rosse, representing the Royal Observatory, Sir Benjamin Baker, representing the London County Council, and Mr. J. A. Ewing, representing the Admiralty, the members of the committee, state they have clear evidence that the working of the engines in the generating station does give rise to vibrations of the ground which are felt at the Observatory. The vibrations are of a different character from tremors due to a passing train or to road traffic. The chimneys and chimney gases are next dealt with by the committee, who recommend that the two chimneys at present unfinished should not be built beyond a certain height, and that the gases discharged should in no circumstances be materially hotter than those now discharged from existing chimneys. The committee further offer the following recommendations:—"We are strongly of opinion that there should be no further extension on the present site. In our judgment the station should not have been placed there at all. The matter has gone so far that to remove the station now or to stop the completion of a second portion would involve a much greater expense than the circumstances warrant. There can, however, be no justification for any further enlargement. Whatever care be taken to avoid vibration, the discharge of large volumes of smoke or hot air into the atmosphere constitutes a danger to the work of the Observatory which must necessarily increase with any further augmentation of the power. Hot air, smoke and tremors of the ground are more or less unavoidable in a

town, and an observatory in one has, in the ordinary way, to take its chances. But a site near the Greenwich Observatory is the last place that should be chosen for the exceptional development of heat and power required in carrying out a scheme of distribution over the metropolitan area. Instead of further enlargement on this site a suitable site should be selected elsewhere for any extension that may be required, about which there should be no great difficulty, and the possible ultimate removal to it of the existing plant should be kept in view."

DECORATION OF THE PALACE OF WESTMINSTER.

THE following is the continuation from page 102 of the evidence of the President of the Royal Academy given before the Select Committee of the House of Lords:—

Earl of Carlisle.

As a practical question, would it not be thought that tapestries would secrete dirt very much?—Tapestries could be cleaned.

Chairman.

Is that not one of the recommendations of tapestry, that it could be cleaned?—Yes, that was what I was thinking. Tapestry can be taken down and cleaned.

Earl of Carlisle.

Does it injure the tapestry at all to clean it?—I should think not if it is properly done. I do not think that is an objection. If the tapestry is made with sound colours, I do not see that the cleaning should injure it; it might do so perhaps in the course of very many years.

There is another very important point upon which I should like to have your opinion and advice, namely, as to what are the methods of painting best calculated to secure the permanence of what is painted?—That is an important question. Fresco no doubt lends itself to the highest class of decoration; but fresco has been tried in the Houses of Parliament and it has been found to fail. But against that may be put this point: that there is one fresco—one of Mr. Armitage's, I think—in the hall upstairs which is absolutely sound. That fact shows that fresco can be safely used if it is done by someone who understands how to use it. If one fresco can be made permanent any fresco can be made permanent. At the same time fresco is discredited to such an extent that I doubt whether it could ever be recommended again; and it depends so very much upon the artist knowing exactly how to treat it. Mr. Armitage had studied in Paris, and I fancy I have heard that he was one of the students that assisted Delaroche in his painting at the Beaux-Arts; and he may have had some experience in painting frescoes which enabled him to use the method with more skill than other painters who had never tried it.

Earl of Plymouth.

Do you refer to the fresco in the upper lobby which remains?—Yes, the one which remains; that is, I believe, in a perfect condition. Of course, the enemy in London is sulphurous acid; there is no doubt that that attacks certain colours. There are two colours which have been very largely used in all such work, which were strongly recommended by the old painters, namely, terre-verte and yellow ochre. It is quite certain that yellow ochre is affected by the sulphurous acid in the atmosphere, and it disintegrates and falls away. If yellow ochre is used largely mixed with other colours, it would help to disintegrate the whole of the rest. Terre-verte is dangerous to use for other reasons. I believe that terre-verte combines with the intonaco of the fresco—the surface which is fresh laid on which the painter works more rapidly than other colours, and when used, as it often has been, as an underpainting, the colours that are laid over it do not bind with the intonaco and ultimately become detached and flake off. In the case of some of Mr. Watts's frescoes in particular, the result has been most disastrous because of his free use of terre-verte. The old painters used it, and the ancient writers on frescoes recommended it, and I have no doubt Mr. Watts acted on their advice and used it very largely to underpaint his frescoes, and the result has been that the whole surface has flaked off. His frescoes have suffered more than anybody's, I believe, in that way. I had an interesting experience myself, which I may perhaps mention. I was commissioned to paint a fresco in a church at Dulwich, and I went to see Mr. Watts and asked him about colours. I had been told that terre-verte was not a

safe colour to use; I think, in fact, before the committee that was appointed to inquire into the state of the paintings in the Houses of Parliament evidence was given (not by Professor Church, for it was before his time—I forget by whom it was given) that terre-verte was dangerous. I therefore asked Mr. Watts whether he had not used terre-verte and how he found it work. He said, "Yes, I have used it and it is perfectly sound and good to use, as I will show you; I have a panel here which I painted as an experiment; it is done with terre-verte." And he uncovered a panel which he brought out from behind a number of canvases; he had not seen it for many years, and he believed it to be in perfectly good condition, but when he uncovered it the whole painting had practically disappeared. I mention that by the way. But I believe that with a proper choice of colours and with a proper method of painting fresco would stand quite well, but the process appears to be so uncertain that I think it would be rather dangerous to make experiments. Then there is water-glass, which I think Mr. Maclise used for his large pictures, and Mr. Herbert also, I believe, used it for one of his pictures. Mr. Maclise's pictures suffered from an efflorescence which has never been entirely removed. The efflorescence has been taken off, but it has always appeared again. It depends very much upon the way in which the water-glass is used as to whether it is permanent or not. Then there is spirit painting, which Leighton used at South Kensington in his large paintings there. I have never used it, and do not know for certain, but I believe the method is pretty permanent. I think they have got very dirty. Whether they can be cleaned I do not know. Speaking for myself, I have only painted one wall decoration in fresco. All my other designs have been rendered in mosaic, so that I know nothing of these other mediums. Then tempera is as sound a medium as you can have if it is properly used; but that, again, is very difficult of use—it requires great practice and great skill. Then there is another mode which has often been used; painting in oil on canvas afterwards affixed to the wall. There is a method of painting in oil which will render the surface quite dead, which is, of course, one most important point. All wall-painting ought to have a dead surface. In the committee-room where Mr. Herbert's pictures are, the one that is painted in water-glass has a dead surface. The other is painted in oil on canvas fixed on the wall, and the paint not being properly "flatted," it shows shiny patches which spoil the whole effect of the picture. But this oil-painting on canvas has the advantage of being quite permanent; moreover, all painters know perfectly well what they are dealing with when they are painting in oil, whereas they do not know so well how to deal with tempera or water-glass or spirit-painting.

Earl of Carlisle.

Do you know about the pictures at the Royal Exchange?—I do not know how far they have got.

I believe a spirit medium—spike oil—was used there?—I believe that is the method. I do not know for certain what was used.

Do you know how the decorations by M. Puvis de Chavannes in Paris are done; I believe they are done in the same way, are they not?—I do not know.

Spike oil is used, is it not?—Yes, and I believe it is treated as a water-colour. I have never used it myself.

Earl of Plymouth.

Do you recommend either of these four methods which you have referred to specially? Do you think that in London, in our climate here, one should have a distinct preference?—I do not know enough about it to say, not having used all the materials. As I said, frescoes evidently can be made permanent because there is one fresco which remains uninjured. Mr. Herbert's picture in water-glass is also in a perfect condition; there is no injury apparent. I do not know whether it has been restored, but when I was looking at it yesterday it seemed to be in perfect condition.

Earl of Carlisle.

Apparently the Royal Exchange is the last experiment in England on a large scale; could you suggest who would be the best person to give us information as to the success of that method?—My impression is that Professor Church would be able to tell you more on this subject than anyone, because he has experience in all these methods and has had the task of restoring and refreshing the paintings here, and he knows, I think, thoroughly the character of the mediums employed; how far they can be made permanent,

how far they attract dirt, and how far they can be cleaned; those are important points.

Would you suggest that it would be desirable for us to have as well as Professor Church's opinion the opinion of a painter?—I think some of the painters who have worked in the Royal Exchange would know how far their own pictures are preserved. I have not been there recently, and I do not know what state the pictures are in; I think it would be desirable to have the evidence of some painters who have employed the spirit medium. It appears easy of practice, which I think is an important point, and does not involve the difficulty that is involved with tempera or fresco or apparently water-glass.

You use it on a dry wall, do you not?—Yes, it is used on a dry wall. If you ask me definitely what I should recommend, I think if I were asked to do anything of the kind I should try the spirit medium myself. I think there is a disadvantage (not as regards the permanency of the paintings or the decorations in the building) in having the picture painted in oil on the canvas and put on to the wall afterwards, that the decorative spirit may be lost in this way: that the man is working in his own studio and he has not got so distinctly in his mind what is desirable for the decoration of the building. I think it is fine practice, for young artists especially, to do their work on the walls, and, in fact, it would develop a high school of decorative art.

Lord Denman.

Do you know what medium the paintings in the Royal Gallery are done in?—I think they are in water-glass. I have always heard so. Unless they are done by a man who understands the method which he is using it appears to be subject to efflorescence, which makes dull, whitish blotches on the surface.

Chairman.

The efflorescence appeared on both the pictures, did it not?—Yes, but more on the "Waterloo" than on the other, because Mr. Maclise had gained some experience in painting the "Waterloo," and I think the other one was more successful.

Lord Denman.

For the Royal Gallery itself, would you recommend anything different from what has already been done?—If spirit medium were used I do not think you would be able to detect any difference from the water-glass medium. As regards any painting that dries in with a dead surface you would not know without examination what medium it is painted in.

Chairman.

Can you suggest to us anything which would in your opinion contribute to our finding the best method for securing the competent execution of any works designed? To give you an idea of what I mean, I may say, speaking my own personal opinion, not the opinion of the committee, it seems to me that the ordinary process of the formation of a committee for such a purpose is a very unsatisfactory method of securing the best result?—I see what your lordship means; I have not looked at the question exactly from that point of view; only as regards the employment of the artists.

I mean both points?—The best and most obvious method is to employ men who are artists of note, and who are known as eminent in the sort of painting required for the purpose, or whatever the particular art may be—mosaic if it be mosaic, or tapestry if it be tapestry. That is the first point, and is obvious, I think. But in working on a building like this, one of the principal objects should be the formation of a school for a high form of art, and for that you would have to find out and bring forward the younger painters and the only way to do that, so far as I can see, is by competition. As to whether it should be a general competition, like the original competition of cartoons, for prizes which would merely bring forward to the notice of the public those who are the best and most suitable artists, or whether it should be competition for the special works for which the subjects are determined, I am not sure. I should think probably the latter. When the subject was decided you might have competition, limited or unlimited, among artists to make designs for it and then choose which is the best. That is a very simple method of proceeding. In that way you would find out who were the younger men who were most competent to do the work. I think the great advantage of carrying on the decorative work of this building is the opportunity which it gives for the establishment of a higher school of painting that

is likely to arise from painting for exhibitions or for the market. The subjects suitable for such a work, whether historical or heroic or biblical, are such as to stimulate thought and effort. The modern tendency, which probably arises from always painting for exhibitions, is to consider that the study of nature is the end of art, instead of being merely the means for producing imaginative work.

Earl of Carlisle.

That almost answers the question I was going to put to you, which is, Are you of opinion that the present state of painting in England is prejudicially affected by the fact that there is very little public decorative work in this country?—That is precisely what I feel. The mere fact that the artist is painting for a great palace, the National Assembly, and that his pictures will occupy a permanent position in a building which will be open to the public, is in itself a great stimulus to imaginative effort, and is calculated to bring forth all his best energies. Then there is another thing: if there are a number of artists engaged in the work at the same time there is a sort of healthy rivalry which will induce each man to do his best, and that will certainly tend to produce a higher form of work than I think is prevalent at the present day, when painters depend upon independent patrons, or, worse still, upon dealers who cater simply for the market. The result of that is, not necessarily, but I think very probably, that painters paint down to the level of what is required from them rather than attempt to produce a more elevated form of work in composition and style. I think the carrying on of this work would be of the highest value to national art.

You therefore think that this question of completing the decoration of the building should not be looked at merely from the point of view of the decoration of the building, but also of the effect it may be supposed and hoped to produce on the school of painting educationally?—That is just what I feel very strongly.

Chairman.

Is there any other point to which you would like to invite our attention?—I think I have said pretty well all I have to say on the subject. It is impossible to go into details as to what should be done. I can only give a general idea of what I should propose to do if the thing were in my hands.

Earl of Plymouth.

May I ask you a question on one point? The nature of these buildings as a whole has not concerned itself with giving the best of light to wall spaces, has it?—No.

The only point I wanted to put was as to whether you had considered that particular point of the absence of light or of a particular kind of light in a good many parts of this building, with regard to the suggestion which you made to us?—Of course, where a place is very dark it seems rather a waste to put a painting there; in that case some simple form of architectural decoration would probably be best.

Chairman.

Could not something be done to improve the lighting in the building; for instance, in this room would not a lighter ceiling than this have the effect of making the room lighter?—It might in a low room, but I do not think it would have very much effect in a high room like this; but that is a question rather for an architect than for me—I give it merely as an opinion. Of course, the whole room would look lighter if it had a lighter ceiling, but I do not think it would throw much light on a painting on the wall. It would no doubt look lighter if the panels were light instead of dark wood, but I do not think it would make very much difference as regards a painting on the wall.

I was not suggesting covering the whole room with whitewash, but would not the white ceiling absorb less light, and therefore leave more light for a painting on the wall?—It might, but not to an appreciable extent, I think, so far as seeing the painting is concerned. It would make a lighter decorative effect, no doubt, but the ceiling does not receive very much light in a room like this, and I do not think it would make much difference as to lighting the paintings on the wall. No doubt the whole effect would be more agreeable.

An Appeal is being made throughout Buckinghamshire by the Archaeological Society for 3,000*l.* for the acquisition of the old grammar school buildings at Aylesbury for conversion into a county museum.

GLASTONBURY ABBEY.

THE committee of the Exeter Diocesan Architectural Society in their annual report state that they had passed a resolution with regard to Glastonbury Abbey, with the hope that immediate steps would be taken to purchase it for the Church, as it was advertised for sale. The committee, however, could not report progress in the matter, and it would be a standing disgrace to churchmen if the site of the cradle of Christianity in our islands should be secured by outsiders. The remains of this magnificent church, which must have been one of the largest in England, were of exceptional interest, as was also the ruin of the abbey kitchen. The committee asked the members to do all they could to stir up wealthy churchmen to do their duty and purchase the ruins.

NATIONAL PORTRAIT GALLERY.

THE following acquisitions have recently been made by the trustees of the National Portrait Gallery:—

The trustees have received by bequest from the late Rev. Arthur Bell Nicholls the portrait of his first wife, Charlotte Brontë, the famous novelist, drawn in 1850 by George Richmond, R.A.

With reference to the small portrait of Charlotte Brontë, painted in water-colours and signed "Paul Héger, 1850," recently purchased by the trustees, the authenticity of which has been called into question, the trustees have caused a searching investigation to be made into the history of the portrait, and have submitted it to severe expert examination. The trustees have satisfied themselves that the drawing is a genuine work of the date specified, and that the portrait is an authentic likeness of Charlotte Brontë. The question of the authorship of the drawing still remains under investigation.

The trustees have accepted as a gift from his Excellency the Earl of Selborne a portrait of his father, the late Earl of Selborne, Lord Chancellor, being a copy by Malcolm Stewart from the portrait by Miss Busk at Trinity College, Oxford.

The trustees have received and accepted as a gift from the committee of the Garrick Club a portrait of the late Sir Henry Irving, being a copy by H. Allen from the portrait by Sir J. E. Millais, P.R.A., in the possession of the Garrick Club.

The following portraits have also been accepted as gifts:—

Gathorne Gathorne-Hardy, first Earl of Cranbrook, G.C.S.I. (1814-1906), statesman, drawn by George Richmond, R.A., presented by his son John, second Earl of Cranbrook.

Sir Patrick Grant, G.C.B., G.C.M.G. (1804-95), Field-Marshal, a small oil-painting by E. J. Turner, presented by Colonel H. G. Grant, C.B., on behalf of the members of his family.

William Thomas Best (1826-97), organist and musical editor, a bronze cast from the medallion by C. Prætorius, presented by J. M. Levien, Esq.

A series of portrait-studies of artists and two caricature sketches of Lord Brougham (1778-1868), drawn by Charles H. Lear, presented by John Elliot, Esq., of Hoylake.

The following portraits have been acquired by purchase:—

Michael William Balfe (1808-70), musical composer, painted probably by Richard Rothwell, R.H.A.

Matthew Boulton, F.R.S. (1728-1809), the eminent engineer, medallion executed in 1807 by S. Brown.

John Constable, R.A. (1776-1837), the eminent landscape painter, drawn by Daniel Maclise, R.A.

Sir Thomas Foley, G.C.B. (1775-1833), admiral and flag-captain to Nelson at Copenhagen, drawn by H. Edridge, A.R.A.

Sir Charles Napier, K.C.B. (1786-1860), admiral and naval commander at Portugal and Syria, a small oil-painting by E. W. Gill.

The Glasgow Corporation have received a letter from the Royal Glasgow Institute of the Fine Arts asking for their assistance in connection with the jubilee of the Institute to be celebrated in 1911. It has been remitted to the sub-committee on art galleries and museums, &c., to confer with the Council of the Institute in regard to the extent of accommodation in the Kelvingrove Galleries that would be required by the Institute.



Temple of Athene at Sunium.

SIR,—I notice in your remarks on the "whiteness" of the columns of the Temple of Athene at Sunium that Dodwell, the English traveller, attributes it to the effects of salt sea air. You are probably aware that there are four drums from this Temple in the gardens at Chatsworth, Derbyshire, where they were placed by the sixth Duke of Devonshire eighty years ago. I examined them yesterday and found them quite white and not a particle of stain or lichen upon them even in the flutings, nor were they much weathered, whereas the plinth, composed of ordinary white marble, was green and so weathered that it is difficult to read the inscription, attributed to Lord Spencer, a copy of which I enclose. There is no doubt that marble such as this would be of great service anywhere and would I think retain its whiteness even in London.

Copy of lines attributed to Lord Spencer, engraved on plinth of column from Minerva's (Athene's) Temple at Sunium, in Chatsworth Gardens, Derbyshire.

These fragments stood on Sunium's airy steep,
They reared aloft Minerva's guardian shrine,
Beneath them rolled the blue Ægean deep,
And the Greek pilot hailed them as divine.

Such were then their look of calm repose,
As wafted round them came the sounds of fight,
When the glad shout of conquering Athens rose
O'er the long track of Persia's broken flight.

Tho' clasped by prostrate worshippers no more,
They yet shall breathe a thrilling lesson here;
Tho' distant from their own immortal shore,
The spot they grace is still to freedom dear.

—I am, sir, your obedient servant,

F. HOULTON WRENCH,
Assoc. M. Inst. C.E.

Sheffield: February 19, 1907.

The Chartered Surveyors' Golfing Society.

SIR,—At a meeting held at the Surveyors' Institution last night, the rules and regulations drawn up at the inaugural meeting were formally approved, and the following officers were elected for the year:—President of the Society, Mr. George Langridge (president of the Surveyors' Institution); captain, Mr. S. James Chesterton; secretary, Mr. Sydney A. Smith; committee, Mr. Ben C. Apps, Mr. A. Burnett Brown, Mr. Phillip Chasemore, Mr. R. Parry, Mr. Cuthbert Smith and Mr. S. F. Monier Williams.—I am, Sir, yours faithfully,

S. JAMES CHESTERTON.

February 15, 1907.

GENERAL.

Sir Aston Webb, R.A., has been appointed by the Vice-Chancellor of Cambridge University to the office of reader on Sir Robert Rede's Foundation for the present year. The lecture will be given in the Senate House on Saturday, June 8.

Sir James Guthrie, P.R.S.A., has left for a tour in the East. One of his travelling companions is Mr. E. A. Walton, R.S.A. He hopes to return to Edinburgh in May restored in health.

An International Exhibition of Arts and Crafts will be held in the Palais du Cinquantenaire, Brussels, from August to November 1907, under the patronage of King Leopold, the Comtesse de Flandre and Princesse Clémentine.

Representatives of the Kilwinning Town Council, Parish Council, and Irvine and District Water Board have agreed to instruct an architect to prepare sketch plans of the accommodation required by the different bodies in joint offices and a town hall, these plans to be submitted to a future joint meeting.

The Art Gallery Committee of the Manchester Corporation propose to hold an exhibition of the late Mr. Charles's collected works in the City Art Gallery during the coming months of March and April, and will be obliged if owners of such works, who are willing to lend the same for this exhibition, will communicate with Mr. William Stanfield, the curator. The exhibition will not be a profit-bearing one, and the committee are anxious to make it as complete and as widely known as possible.

Mr. A. Butler will read a paper at the Auctioneers' Institute, on March 6, upon "Antique English Silver." Mr. H. D. Buckland, the president, will be chairman.

The Establishment Committee of the London County Council anticipate that the conditions, plans, &c., for the County Hall will be all ready for issue to intending competitors by February 27. Taking that day as the date when the competition is publicly announced by advertisements, the designs for the first stage should be delivered six months later, that is, by noon on August 27.

The King recently appointed Mr. Harcourt, M.P. (First Commissioner of Works), the Earl of Plymouth and Sir Aston Webb, R.A., as a committee to advise His Majesty as to a site for the statue of William III. of Orange which is to be presented to His Majesty for the nation by the German Emperor. The King on Saturday inspected and approved the suggested site, which is on the south front of Kensington Palace, facing down the avenue to Kensington Gore.

The Finance Committee of Glasgow Corporation have remitted to the city engineer, Mr. A. B. M'Donald, to prepare a preliminary report on the designs sent in for the laying out of the Riddrie estate.

Sir Archibald Geikie has been elected president of the Geological Society of London, and Dr. J. E. Marr, Professor W. J. Sollas, Dr. Aubrey Strahan and Dr. J. J. H. Teall have been chosen vice-presidents. The secretaries are Professor E. J. Garwood and Professor W. W. Watts; the foreign secretary is Sir John Evans, and the treasurer, Mr. Horace W. Monckton.

A Tablet was unveiled on Monday in the porch of the church of St. Lawrence Jewry to the memory of Mr. George Low, F.R.I.B.A., a former churchwarden of St. Michael Bassishaw, and for many years the hon. secretary of the Bassishaw Friendly Association. A short memorial service in the church preceded the unveiling ceremony.

The Congress of Prehistoric Anthropology and Archaeology has accepted the invitation of the Irish Department of Agriculture and Technical Instruction to hold the next session of the International Congress at Dublin in 1909. In consultation with the Royal Irish Academy, the Department has arranged for a small local committee to take the necessary local action when the time arrives. An early preliminary notice is, however, desirable to enable papers to be prepared by intending contributors to the meetings. The importance of a meeting at Dublin to students of the early race problems of Ireland and of prehistoric archaeology will be generally recognised. Sessions of the Congress, which take place at intervals of a few years, have been held in many of the chief European centres, such as Paris, Stockholm, Copenhagen, Lisbon, Budapesth, Moscow, &c., and the many columns of the illustrated reports of the Congress form a recognised authority on prehistoric subjects.

Messrs. A. & J. Soutar, architects, London, have been awarded the first premium of 100*l.* in an open competition for the planning of a model village for the Brodsworth Main Colliery Company, Ltd., near Doncaster. The drawings required by the promoters included the laying out of 70 acres of land for 500 cottages, together with plans and elevations of various types of cottages, shops, village club, &c. Seventy sets in all were submitted.

The American Society of Landscape Architects held its annual meeting and dinner last month in New York. An attempt to give an impetus to the art of landscape gardening will be made soon by the publication of several foreign books dealing with the art as it existed in Europe a century ago. The first to be published are Humphrey Repton's "Art of Landscape Gardening," Thomas Whately's "Theory and Practice of Landscape Gardening," edited by Frederick Law Olmsted, jun., and the work of Fürst Pückler von Muskau, on his own park in Germany, edited and translated by Samuel Parsons, jun., landscape architect of the Department of Public Parks of New York. These are all old works and for many years out of print. They will probably appear in May.

Designs were recently submitted in limited competition for artisans' dwellings at Child's Hill, Middlesex, for the Hendon District Council. The design by Mr. George Hornblower, F.R.I.B.A., was placed first, and those by Messrs. Stanley, Barrett & Driver, and Mr. John Hudson, F.R.I.B.A., second and third respectively. The contemplated outlay, exclusive of road formation and sewers, is 32,600*l.*

Mr. F. Hamilton Jackson will commence a course of three Cantor lectures on "Romanesque Ornament" at the Society of Arts next Monday evening.



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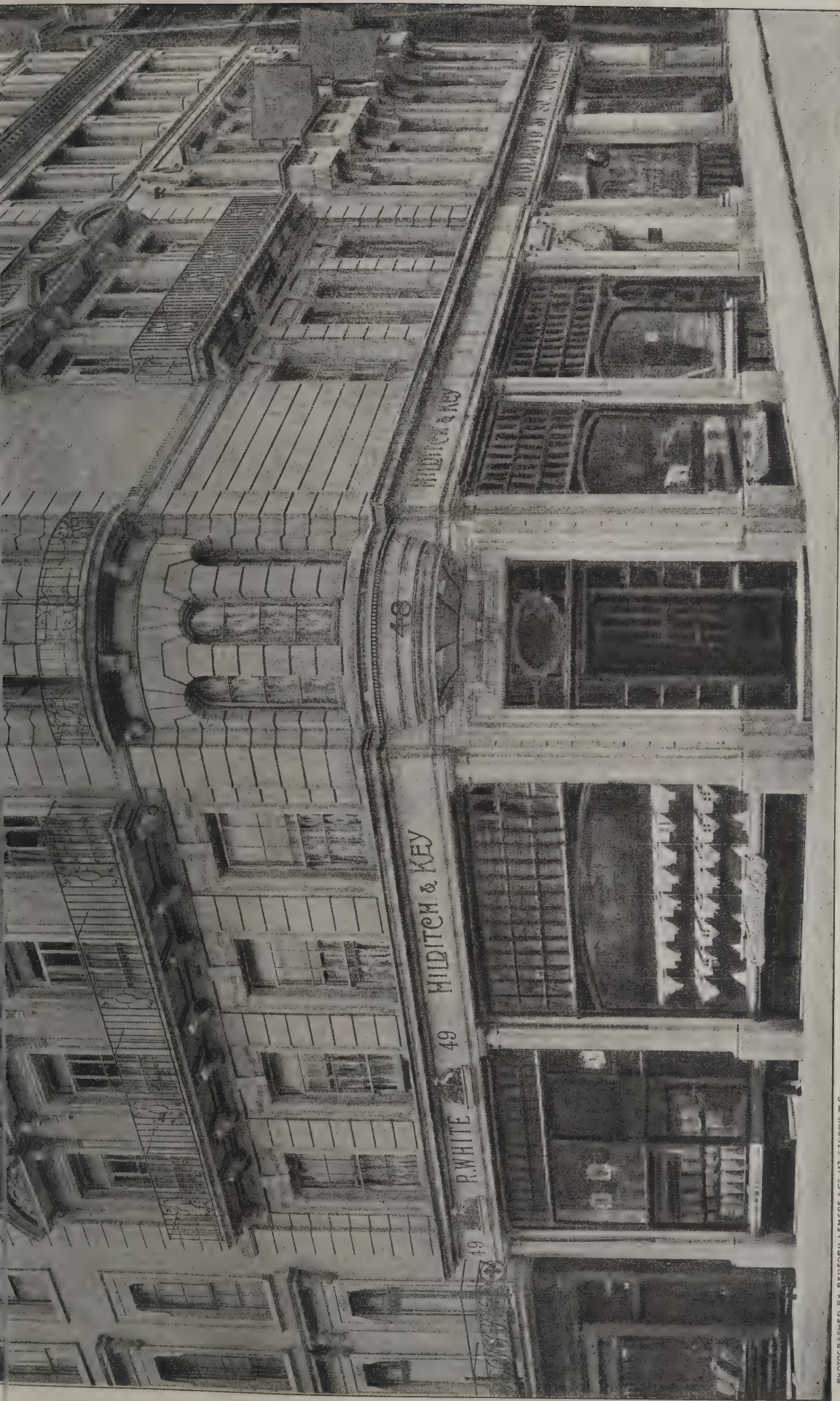


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48-49 JERMYN STREET, S.W.
WILLIAM WOODWARD, Architect.



PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

THE NEW WAR OFFICE, WHITEHALL.

The late V. L. L.

Carried out by CLYDE YOUNG, with the

1907.



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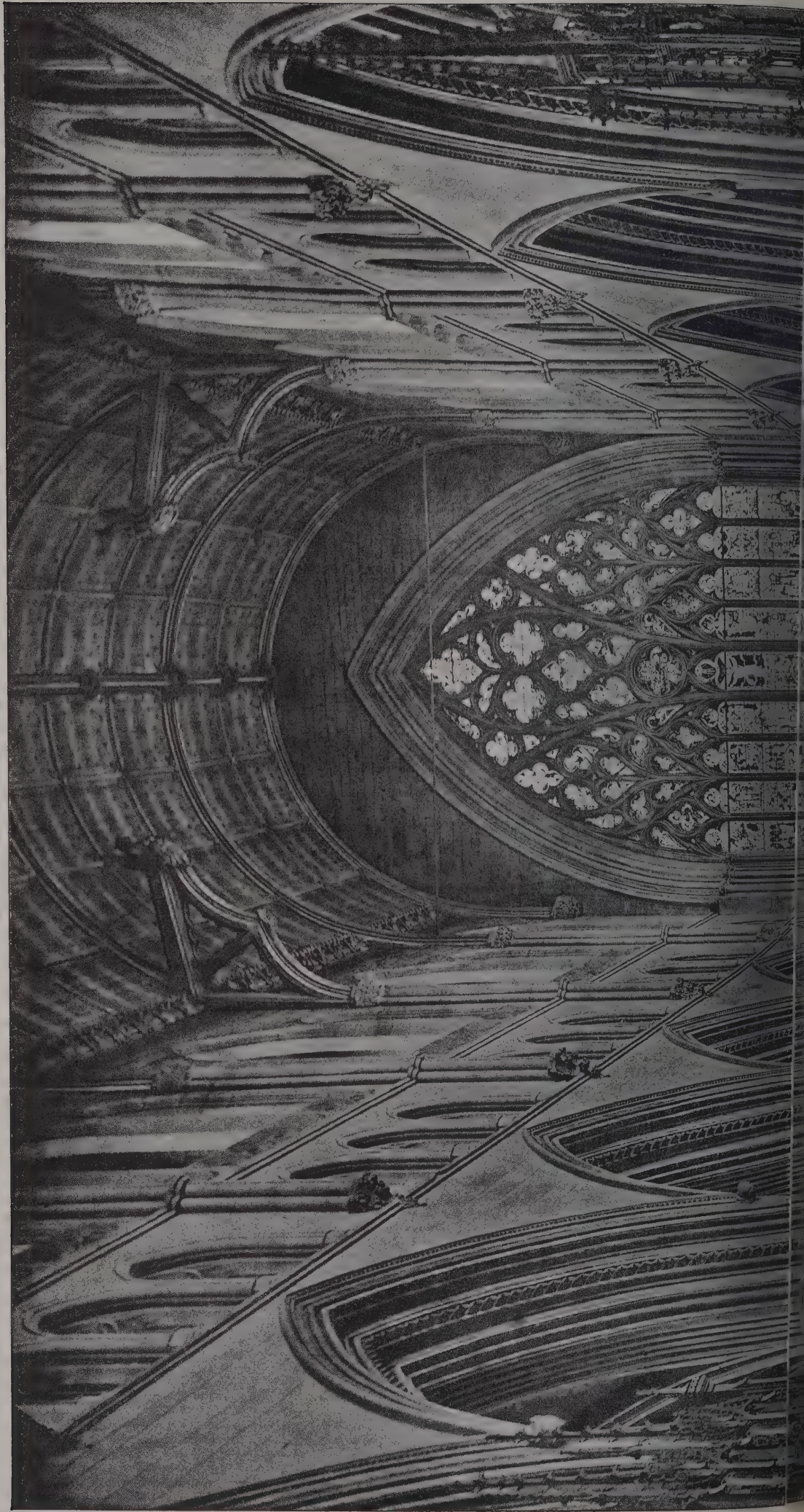
NE HALL, FROM QUADRANGLE.

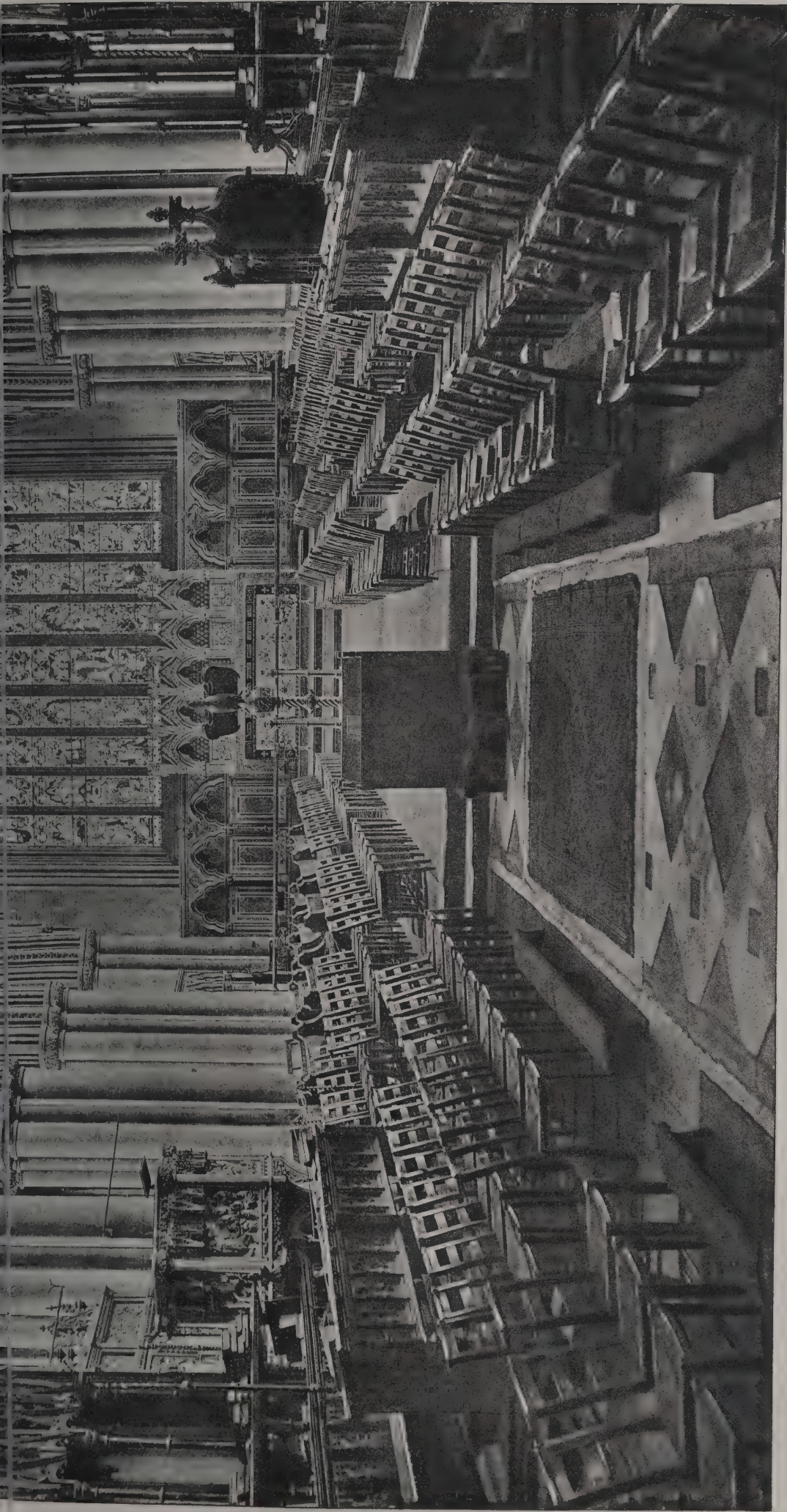
itect.

of Sir JOHN TAYLOR, K.C.B.

LIBRARY
OF THE
UNIVERSITY of ILLINOIS

The Architect, Feb. 22nd 1907.





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CATHEDRAL SERIES, No. 594.—CARLISLE: VIEW OF CHOIR, LOOKING EAST.

The Architect.

THE WEEK.

WE lately referred to the difference between the architects of Dundee and the committee of the Technical Institute about the competition for the new buildings. At first it was proposed to organise an open competition. But eventually it was agreed that the contest should be confined to local architects. An effort was made to fix the percentage at 4 per cent., but it had to be abandoned. Scottish authorities are more satisfied about their own confidence to deal with every subject connected with their administration than even English authorities. To ask for the appointment of a professional assessor to adjudicate upon the merits of the designs was therefore taken by the committee to be an equivalent to the abandonment of their privileges. And on that point there has been no yielding. The time spent in negotiations has had the effect of leaving only sixteen days for the preparation of plans. As the committee are equally stubborn on that point also, the Dundee architects have wisely resolved to take no part in the competition. Their decision will be approved by architects throughout Great Britain.

THE Select Committee on the Housing of the Working Classes Acts Amendment Bill made the unduly high rate of interest charged by the Treasury for loans the climax of the report. It was found that $4\frac{1}{4}$ per cent. was paid on loans which were to be repaid in twenty years, and the difference between that rate and 2 per cent., which was the statutory minimum, was equivalent to 3 $\frac{1}{2}$ per cent. a year in rent or 60 per cent. in capital. It was recommended that the 150 millions sterling deposited in the Post Office Savings Bank should be lent at the same interest allowed on it, or $2\frac{1}{2}$ per cent. A few days ago the Chancellor of the Exchequer was asked whether any steps had been taken to carry out the recommendations. The reply given was that the subject was receiving careful consideration and that a Bill could shortly be introduced to deal with the subject. It was stated that the Treasury does not make any profit out of the difference between the $2\frac{1}{2}$ per cent. paid on deposits and the $2\frac{3}{4}$ or higher rate which may be charged for loans. The surplus income each year is carried to a surplus income account of the Local Loans Fund, which, under the Public Works Loans Act, 1904, is liable to make good any deficiency on the capital account of the fund caused by the issue of stock at a discount.

It might be supposed that when designing a lunatic asylum, or, in fact, a hospital of any kind, the architect and his advisers, who generally form a committee, should be allowed to adopt the course considered to be most salutary for the patients. But in Scotland at least an improved plan is likely to entail increased taxation. The Lunacy Board of the city of Aberdeen lately erected an asylum at a cost of 119,200*l.* It contains 100 beds. The valuation for taxation was put down at 150*l.* There is a decision of the Scottish courts in what is known as the WOODILEE case that 4*l.* per bed was a reasonable valuation, and at that rate the valuation of the new asylum should be 1,916*l.* instead of 150*l.* It was necessary to bring the case into a higher court. One of the judges said he considered that 4*l.* per bed would have been reasonable, as there was no profit derived from the patients if the asylum had been erected on the ordinary plan; but the villa system was more expensive to realise, and his Lordship therefore decided that the valuation should amount to 2,400*l.*, or 24*l.* per bed. This opinion was adopted by the second judge. It may therefore be taken for granted that improved planning is hazardous, as it will increase the taxation 25 per cent. beyond the amount payable on a prison-like structure.

A NEW series of by-laws relating to offensive trades is about to be issued by the London County Council. Any person who desires to obtain licenses will have to send in with the application a plan of the premises and plans and sections of the buildings in which it is proposed to carry on such business, such plans and sections being drawn to a scale of a quarter of an inch to one foot, and showing the provision made, or proposed to be made, for the drainage, lighting, ventilation and water supply of such premises, and shall also furnish particulars of the number, position and size of the apparatus proposed to be used, and the method of disposing of any offensive or noxious effluvia, vapour or gas emitted in the conduct of the business, and shall also furnish a key plan of the locality showing the buildings and streets within 100 yards of the premises, drawn to the scale of five feet to one mile. The walls of the chamber or chambers in which operations are to be carried on will have to be covered on the interior with hard, smooth and impervious material, and the floors to be covered with concrete, asphalt, or other jointless impervious material laid upon cement concrete. The penalty for offending against the by-laws is 5*s.*, and if the offence is continued a further penalty of 40*s.* a day. There can be little doubt that the by-laws will have the effect of diminishing, if not overcoming, a nuisance that is disagreeable and dangerous.

THE flat arch which the younger BRUNEL erected in order to suggest the tenacity of brickwork was, it appears, anticipated in India. According to a correspondent of *Indian Engineering*, Colonel DE HAVILLAND, of the Madras Engineers, while in Seringapatam about 1808, proposed to erect a bridge across the Cauvery river, consisting of five spans of 110 feet, with a rise of only 11 feet. The project was received with derision, and in order to convince sceptics about its practicability he built in his garden at Seringapatam an experimental brick arch, having a span of 112 feet, rise of 11 feet, the breadth being 4 feet, thickness at the crown 3 feet 10 inches and at the springing 5 feet. Common country bricks and mortar were used in its construction, and this arch remains still standing. The arch or curved brick beam was not of uniform thickness, for it was thickened towards the haunches. A large block of masonry was erected at each end to resist the thrust. Colonel DE HAVILLAND died in 1866 at the age of ninety, and his brick arch is enough to prove that in construction he was in advance of the civil as well as the military engineers of his time.

WHEN the stately mansions were first built that seemed to enclose the Arc de l'Etoile in Paris, the majority of those who enjoyed the view from the Champs Elysées towards the Bois de Boulogne were annoyed. It seemed as if one of the best landscapes had been blotted out. But after a time people got used to the change, and it had to be owned that the new buildings were far superior to those which used to be found thereabouts and a few survivors of which were to be discovered quite recently. For various reasons that quarter of the city finds favour with English residents, and of late years English visitors have shown a preference for it. As a consequence some big hotels have been erected, and it is supposed that others which will be far higher are about to be placed there. The only sites available are behind the mansions built about a quarter of a century ago. What little remained of the landscape is now being blotted out; and, what is no less annoying to a Parisian, the noble Arc de l'Etoile is losing scale through its environment and is not as impressive as formerly. People in England suppose that the municipal authorities of Paris have despotic power and will not allow anything to appear likely to disturb the amenity of the city. But in Paris as elsewhere speculation is becoming dominant, and beauty has to succumb to the least possibility of profit.

THE GREENWICH VIBRATIONS.

AT one time it was not uncommon for the strong man in a travelling circus to amaze rustic spectators by lying on his back and allowing a heavy anvil to be placed upon his chest. A couple of men would then be invited, smiths having the preference, to try their strength by striking the anvil with sledge-hammers. Under the novel conditions they were quickly tired out, then, the anvil being removed, the performer arose and retired uninjured amid applause. The anvil was supposed to increase the danger of the man who supported it, while in reality it acted as a very thick piece of armour or cuirass, which served to protect him from a fatal accident. When in the early days of railways a Royal Commission was appointed to inquire into the risks which might arise from the employment of cast-iron bridges, the elaborate experiments were a confirmation on a large scale of the humble circus feat. It was ascertained that the power of resisting impact increased with the permanent load upon a bridge or beam, and the greater the weight at rest upon the beam the greater must be the momentum of a striking or falling body in order to break that beam.

An illustration of the principle was to be seen in the introduction of machinery into buildings without any special preparation having been made to resist the vibration which might easily be imagined to be an accompaniment of all kinds of motive-power when in action. No doubt men instinctively preferred to place machinery in the basement of buildings in order that if a collapse happened the fall would be diminished. But in London, and in most of the large towns of England, machinery will be found on other floors. The noise may become a nuisance to the occupiers of adjoining premises, and nervous people, when they hear the regular thuds, readily conclude there is a likelihood of a structural accident in which they might be involved. But the cases are rare in which walls or floors collapse. If a floor can sustain the dead-weight of a machine its action will not much increase the strains on the support unless under very peculiar circumstances. There is, of course, the possibility of a machine getting out of order, and its action in that case might have a destructive effect on the floor. But in designing floors it is considered safe in the majority of cases if double the dead-load is assumed as a weight which has to be provided for in arranging the proportions of the girders and other members.

When it was announced that the engines in the generating station of the London County Council had caused vibration in the Greenwich Observatory, which is about half a mile distant, there was some amazement among men having experience in building, whether as architects, engineers or contractors. For if under conditions where more than the average amount of care would be exercised there was vibration, what was to be expected in ordinary cases? If in the Greenwich Observatory, where delicate tests were undertaken, danger was ascertained, the conclusion was unavoidable that in ordinary buildings where engines were at work there could not fail to be danger, although no means had been employed to determine its extent. In other words, there was a misgiving that the general confidence in manufacturing premises especially was misplaced. The report of the scientific committee, consisting of Lord ROSSE, representing the Royal Observatory; Sir BENJAMIN BAKER, representing the London County Council; and Dr. J. A. EWING, representing the Admiralty, was therefore waited with anxiety.

The London County Council, whom so many people held to be culpable in the case before the circumstances were known, as if skilful construction was impossible under any public department, expressed from the first a desire to avoid everything which would injuriously affect the Observatory. Whether it was wise to select Greenwich as the site of a generating station need not be considered. If the least risk was apprehended, however, the Government authorities could easily have

prevented the erection of the station. But in the inquiry the County Council have accepted the blame if any, and Sir BENJAMIN BAKER, their representative has obtained the evidence which must be considered as the most precise and therefore the most damaging to the Council. We refer to the report by Professor DALBY. Rigorous as may have been the investigation it must be admitted that the vibration does not arise from any defect in the construction of the station, and nothing was elicited to give occasion for alarm among manufacturers who employ either hydraulic, steam or electric engines. Important as would be the results of the Royal Observatory and to those who have to utilize the observations made by the officials, still greater harm would follow if it were concluded that a building could not be erected which would be free from vibration if it had to shelter a powerful engine.

During several years tremors have been felt in the Observatory, which were due to railway and road traffic. Since the engines in the generating station began to work, vibrations differing in character from the tremors have had to be sustained. Instead of being intermittent, they are never wholly absent. But the committee were unable to discover evidence that the vibrations affected materially the observation of the stars, which is the principal occupation of the official. According to the report, "there is already *prima-facie* evidence that the most delicate observations which have hitherto been made can still be made, although the engines are running; but without further data we are not in a position to speak positively on the point." Oscillations were shown by the aid of mercury, and this no doubt suggests a disturbance of the former conditions of the Observatory, and they may give rise to doubts in a comparison of the calculations of the astronomers with those of other observatories. But the vibrations are of a kind which anywhere else would not be worth notice. It has been found that in some of the American tall buildings wind-power or other atmospheric influences may cause a vibration that has reached occasionally half an inch. But it is very doubtful whether the vibrations in any part of the Observatory could be expressed by figures which ordinary men were able to appreciate.

Infinitesimal as it may be, what is the cause of the vibration? Professor DALBY has ascertained beyond all doubt that the defect arises from the character of the engines. If the anvil employed by the Samsobol the rural circus happened to be improperly welded, and a flaw existed from the upper surface to the base, a blow struck upon it might be fatal to him, although he would not feel any blow struck upon an adjoining part. If also the blows were aimed at the sides of the anvil and caused a slight motion of its heavy weight, human patience could not endure the inconvenience. The designers of the engines, accepting the old belief that an engine when once firmly fixed in position can be set in motion without producing any injurious effect on the foundation, have created dynamic forces which are in opposition and which tend to overcome the inertness of the concrete bed. As Professor DALBY says:—"The balance-weight on each engine formed by the prolongation of the crank-arm in the contrary direction to the crank is only sufficient to balance the revolving masses of the engine;" and "the unbalanced forces acting on one foundation block due to the pair of engines balanced to it, the two engines driving one generator, the force on the block is that due to an unbalanced horizontal force of 3 tons at 94 revolutions per minute, and an unbalanced horizontal couple of 1,200 foot tons approximately. There is also an unbalanced vertical force on the block of 2 tons approximately, and an unbalanced vertical couple of 690 foot tons." With the aid of mercury Professor DALBY says there is no cause motion of the block of concrete, although to what extent he has not discovered.

The remedy is to be found by the introduction of a revolving balance-weight, and by making the vertical

on equal to the horizontal piston. The estimated would be 2,700*l.* for each engine. But as there is evidence that the star observations are injuriously affected, the committee say they do not feel warranted to spend so much money. It is suggested that in the contemplated extension of the station care should be taken to have accurately balanced steam-turbines and compressors. It is also recommended that reciprocating engines should not be used after 10 P.M., and if possible, 11 P.M. should be adopted. It will therefore be evident that in spite of all that has been alleged in the newspapers the Observatory of Greenwich has not been injured, and is not likely to suffer, from the vicinity of the generating station.

A more real grievance relates to the two chimneys adjoining the generating station. The air is obscured in the field for the observation of the stars is retarded. But the Astronomer-Royal admits that the existing chimneys have not hitherto seriously affected his observations. The committee consider they could be shortened 33 feet without any injury to the stoking at a cost of about 1,900*l.* It is remarkable that the committee do not recommend the removal of the upper part, for it might be found that the expense was unnecessary. They suggest that a year or two should be allowed to elapse before a decision is made to. Two chimneys were in progress when the investigation was proposed, and operations on them were once suspended. The committee recommend that they should not be carried up any higher, especially as one of them is intersected by the "altazimuth line" of the observatory, or 182 feet above the stoking floor. The lower portion of the generating station can be then cleared out and equipped to the extent of 20,000 kilowatts, but the committee are strongly of opinion that there should be no further extension on the present site. It will be evident that no sacrifice of any importance is essential. All that was expected by the professional architects is reduced to insignificant proportions. An engine was not properly designed to meet all the contingencies, and in consequence a little mercury in a U-shaped trough half a mile away was disturbed. That was the head and front of the offending. But the investigation has had its use in demonstrating that vibration is rare in buildings, and that even with engines which imperfectly balanced the extent of it is too slight to be measured by any philosophical instrument.

THE WORKMEN'S COMPENSATION ACT, 1906.

By Professor W. S. HOLDSWORTH, D.C.L., &c.

ON July 1 of this year this Act will come into force, and will repeal the two earlier Workmen's Compensation Acts of 1897 and 1900. We propose, in the first place, to discuss two of the many difficulties in the construction of the Act which are apparent on its face, and, in the second place, to say a few words upon some of the principles underlying some of its sections.

(i) The first difficulty arises upon the first section of the Act. Section 1, subsection 1, provides that "If any employment personal injury by accident arising out of and in the course of the employment is caused to a workman, his employer shall be liable to pay compensation." Subsection 2 of this section contains several provisos to the section. Proviso (c) runs as follows:—"If it is proved that the injury to a workman is attributable to the serious and wilful misconduct of the workman, any compensation claimed in respect of the injury shall, *unless the injury results in death or serious and permanent disablement*, be disallowed." We shall deal later with the question of the principle which underlies this proviso; at present we are concerned only with its construction. We observe, in the first place, that the injury must have been caused by accident; and we may take as authoritative the defini-

tion of the term "accident" given by the House of Lords in *FENTON v. THORLEY & Co.* (1903) A.C. 443. The term accident means "an unlooked-for mishap or an untoward event which is not expected or designed." The injury may have been caused by some deliberate act on the part of the workman. In that case he had ruptured himself by putting out all his strength to start a machine; but this will not make the injury any the less accidental. It is undesigned or unexpected, and therefore an accident if we use the expression "accident" in the ordinary and popular sense of the term. Now, if we take this definition of the term "accident," we ask ourselves how it is to be applied to the proviso cited above. How can it be said that an injury which is due to the serious and wilful misconduct of the workman is "an unlooked-for mishap or an untoward event which is not expected or designed?" Lord LINDLEY, in the case which we have cited above, seems to be of opinion that an injury due to the serious and wilful misconduct of the workman could not be regarded as accidental. "It appears to me," he says, "that *prima facie* the Act entitles the workman to compensation, but that this inference may be displaced by proof that the injury is attributable to his own serious and wilful misconduct, or to some other cause which shows that the injury was not accidental." Yet the proviso contemplates the payment of compensation to a workman, or the family of a workman, whose injury is attributable to his own serious and wilful misconduct, if that injury has resulted in his death or serious and permanent disablement. How such an injury can be accidental, so as to bring the case within the first subsection, we must leave to the judges to discover. Looking at the manner in which they have interpreted the term "serious and wilful misconduct" (*The Architect*, Nov. 23, 1906, p. 335), it would be clearly difficult to say that any injury resulting from such misconduct was accidental at all; and it is only if the injury is accidental that the right to compensation arises. If it be said that this workman did not, though guilty of serious and wilful misconduct, expect or design this mishap, the answer is that the law presumes that persons intend the natural consequences of their acts, and that upon such presumption the mishap was neither unexpected nor undesigned. The presumption is a necessary one. As the Court of Common Pleas put it in 1837:—"Instead of saying that the liability for negligence should be co-extensive with the judgment of each individual—which would be as variable as the length of the foot of each individual—we ought rather to adhere to the rule which requires in all cases a regard to caution such as a man of ordinary prudence would observe." But unless the Courts are prepared to relax this rule, it is difficult to see how effect can be given to the two parts of the first section cited above. It appears to us that an injury can only be said to be at once accidental and the result of the serious and wilful misconduct of the workman if we interpret the word "accidental" as meaning, not that which was unexpected or undesigned by a man of ordinary prudence, but that which was unexpected or undesigned by the workman who has seriously misconducted himself.

The second difficulty arises upon the thirteenth section, which defines the term "workman." It runs as follows:—

Workman does not include any person employed otherwise than by way of manual labour whose remuneration exceeds two hundred and fifty pounds a year, or a person whose employment is of a casual nature, and who is employed otherwise than for the purposes of the employer's trade or business, or a member of a police force, or an outworker, or a member of the employer's family dwelling in his house; but, save as aforesaid, means any person who has entered into or works under a contract of service or apprenticeship with an employer, whether by way of manual labour, clerical work, or otherwise, and whether the contract is expressed or implied, is oral or in writing.

There are many difficult questions which arise upon this definition. The term "casual nature," for instance, will require some explanation. But it would appear that, apart from the exceptions, everyone who is engaged in manual labour, whatever the amount of his or her remuneration, is entitled to compensation; and that everyone who is engaged in labour other than manual labour is entitled to compensation if his or her remuneration does not exceed 250*l.* a year. What we should like to know is this:—Suppose a person is employed by three employers, each of whom pay him under 250*l.* a year, but his whole earnings amount to more than that sum—can he claim compensation from the employer about whose business he was engaged if he meets with an accident in the course of that employment? There seems nothing in the Act which would prevent him making such a claim. But it is quite clear that if such a claim is allowed the Act will compensate a person who is well able to take care of himself.

(ii) It is not without interest to inquire what (if any) are the principles which underlie this Act. The first observation which will strike the critic is the curious evolution of the legislation upon this subject. The Act of 1897 proceeded upon the principle of compensating persons for accidental injury (1) if the character of their employment rendered them peculiarly liable to injuries resulting from it, and (2) if their earnings were not sufficient to enable them to secure themselves from such risks. As the number of persons coming within the Act was extended the first principle was gradually lost sight of; and now in the present Act all persons (with very few exceptions) are given the right to compensation. This Act also goes a long way to undermine the second principle. A man may be employed upon such terms that he is well able to afford to insure himself against accidents; but the Act compels the employer to compensate him. Though we agree that in the case of those who cannot afford to insure themselves the provisions of the Act are not unjust, we cannot think that it is politic to cast the entire burden of insurance on the employer in cases where a person's earnings enable him to pay the whole or some part of his insurance. Such a provision seems to be a direct discouragement to the virtues of thrift and self-reliance and a direct incentive to rely upon State legislation for that provision which it is a man's duty to make for himself if he can afford to do so—a long step, in short, towards the substitution of a socialistic for an individualistic basis in the ordering of society. It is not without interest also to observe that the breadth of the provisions of the Act will tend to encourage the large employer of labour at the expense of the smaller man. If I employ a small man to come and keep my garden in order two days in the week I must insure him. If I contract with a large gardener to supply me with a man I am under no such liability. Though we do not suppose that the Act was deliberately intended to inflict such injustice, we can quite well see that the result may be by no means distasteful to the more rampant of the Socialists. The more industry is concentrated in the hands of a few big men or big companies the more speciously will it be possible to raise the cry of monopoly in answer to those who, in the interests of economy and efficiency, are the opponents of municipal or any other form of Socialism. It is easier to appropriate a few large business undertakings than to suppress the smaller and more numerous undertakings of many persons. We have all of us heard the tale of the ruler who wished that certain of his recalcitrant subjects had but one neck, that he might be able to strike off all their heads at one blow.

But this Act does more than merely extend the provisions of the older Acts. Some of its provisions make it quite clear that the very persons who cry out against class privileges are themselves engaged in the creation of a privileged class. We have seen that if any meaning is to be given to the proviso in subsection 2 of the first section, we must exempt the

working man from the necessity of conforming to the average standards of prudence. Section 13 goes yet further. In the definition of "dependants" we read that "when the workman, being the parent or grandparent of an illegitimate child, leaves such child so dependent upon his earnings, or, being an illegitimate child, leaves a parent or grandparent so dependent upon his earnings [the word 'dependants'] shall include such an illegitimate child and parent or grandparent respectively." It appears therefore that the working man is exempt not only from the obligation to observe the ordinary rules of prudence, but also the ordinary rules of morality. The burden of the employer is to be increased by the immoralities of his workmen, even as in olden days the country was burdened by the necessity to make provision for the illegitimate sons of kings. That the lot of the illegitimate child is hard no one can deny, but that it should remain hard in the interests of morality is obvious to most sensible persons, and has up to now been obvious to the Legislature. That the illegitimate parent has any title whatever to consideration is an opinion which we should have thought no sane person would have even considered. But it is otherwise if the illegitimate parent is a working man—says the present Government of this country.

The sacred working man is privileged in many ways—in his housing, his means of locomotion, in the free education of his children, in his free insurance against the risks of his calling, in the immunity from legal process which his trade union enjoys. Since all these privileges are not sufficient this Act privileges also his serious misconduct and his immoralities. The king can do no wrong, nor can the trade union. The workman may indeed do wrong, but the consequences of his wrong-doing must, where possible, be lightened. His weakness is such that he demands and obtains a unique protection against his own folly and wrong-doing, and yet politically he is placed on an equality with those who need no such immunities for their protection. The Legislature, by conceding his demands, has created a situation to which the pen of SWIFT, and SWIFT alone could have done adequate justice.

NEW BOOKS.

IT may not be generally known that in 1886 a society for the study of monumental brasses was founded in Cambridge. About 1897 an Oxford University Brass Rubbing Society was also attempted. In different counties efforts have been made to illustrate and explain local relics. Mr. H. W. MACKLIN, M.A., president of the Monumental Brass Society, has prepared a volume on "The Brasses of England" for a series known as "The Antiquary's Books," published by Messrs. METHUEN & Co. Eighty-five illustrations are given of characteristic examples. The author says:—"It will be found that the history of brass-engraving falls naturally into definite periods, each with its special characteristics. In the widest sense the periods will correspond with those of contemporary architecture, and this will help to explain why brasses begin at their very best, and then, after a single century of great excellence, gradually decay with architecture, until they are lost in the Classic revival. In a more restricted sense they roughly correspond with dynastic changes in English history, and will be so treated in the present volume." These generalisations agree with the author's as expressed in a handbook which he published in 1890. A great many brasses have survived in England—probably about a thousand. For a long time they were accepted as a favourite kind of memorial, and men left funds to have them engraved. Although money could not have been so abundant in Aberdeen, there is a record of one erected in 1613 at a cost of 12*l.* 15*s.* 6*d.*, which would more

ent a much larger sum in our time. Whether brasses would be as much appreciated as they are if reproductions were more difficult is a question not easily answered. Rubbings can be so easily obtained, large numbers of tourists consider it is necessary to possess specimens. How far they have any value as portraits is impossible to determine. At one time they were considered to be mere conventional representations. But as a closer study has demonstrated that the worth of realism was recognised in ancient Egypt, we may also suppose that occasionally an effort was made to impart resemblance to the brasses. In the representation of costume and armour it was possible to have fidelity without much trouble. Caution should, however, be exercised before accepting the details, for on a brass in Norwich a man is shown in armour which could not have been in use for at least a century before. Many men up to the time of the Reformation belonged to confraternities or guilds, and they had the privilege to be buried in robes resembling those of professed monks. The brasses which represent laymen as if they were friars are therefore not to be condemned for inaccuracy. Mr. MACKLIN adopts the chronological order in describing brasses, and there are references to the most interesting examples in the country. He is compelled to condemn the destruction of many of them as victims of restoration:—"The architects and clergy of the last two generations have unfortunately wrought much havoc amongst the art and antiquities of the times whose memory they wished to preserve, and it is the more surprising when we remember that the engraving and setting of monumental brasses was just one of those arts which were most closely connected with the rise and fall of ancient Gothic architecture in England." After the perusal of Mr. MACKLIN's book we doubt if the youngest architect would be indifferent to the interest of a brass or in any way propose its removal or destruction. It is a valuable treatise and must represent a long course of inquiry and comparison.

The pocket-book of "Approximate Estimates," by E. COLEMAN (published by Messrs. SPON), is expanding at such a rate that we may soon expect to see it double the size of the original edition. It is admirably adapted for the use contemplated by the author. It not only gives estimates, but occasionally reveals the actual cost of executed works. The Foreign Office in London, for instance, cost 1s. 1d. per foot cube, while the Houses of Parliament ran up to 2s. 6d. The author points out the remarkable variation which exists between tenders, specially if compared with estimates. An estimate for refuse destructor required by the Metropolitan Asylums Board was calculated at 210*l.* The highest tender amounted to 1,250*l.*; the lowest was 58*l.* For painting a public building the tenders ranged from 75*l.* to 2,341*l.* The enhanced cost of labour and materials is remarkable. In 1892 cottages were erected at 200*l.* each; twelve years afterwards the price rose to 320*l.* each. Mr. COLEMAN considers that within the last ten years the increased cost of building varies from 5 to 30 per cent. Unless generous allowance is made there is risk in employing old price books.

If we may judge of the programmes of technical schools and the numbers of young people who pay fees to be allowed to take part in the process, the taking out of quantities would appear to be almost a diversion. If they are never called upon to work from genuine architect's drawings, they are, at least, likely to have acquired more or less training in analysis which will be well worth the time and money expended. "The Quantity Student's Assistant," by Mr. GEORGE STEPHENSON, published by B. T. BATSFORD, is so well adapted for novices, it would be an advantage if the substance of the greater part, if not the whole of it, could be committed to memory. It has, no doubt, the disadvantage of being without diagrams, and therefore confusion about the meaning of words is sure to arise. Otherwise it is well adapted to serve as a primer of the process, the instructions in which can be modified

according to circumstances by students who take up quantities as a business.

Wood-carving is considered by officials and other authorities as one of the arts or crafts which are indispensable if England is to remain a competitor with foreigners. The book on "Practical Wood-Carving," by Miss ELEANOR ROWE, is as instructive a book as any student could desire. The authoress was twenty years manager at the School of Art Wood-Carving at South Kensington, and is therefore competent to explain the most effective ways of obtaining results. But it would be a satisfactory addition if something were said about the monetary advantages which an average student is likely to derive from the art. A great deal of the ornament which at one time was carved by hand can now be produced by machinery at a fraction of the cost. The egg-and-tongue moulding, the acanthus-leaf moulding and other varieties which appear in the pages seem to be almost too mechanical for human hands. Men and women in this country cannot compete in price with foreigners who make the work a family affair, although they may show at least equal artistic skill. With all such arts, plain-speaking is desirable, for it is absurd to allow young people to imagine that work which may be well adapted for relaxation or spare hours in the evening is, owing to the price paid for it, sufficient to gain for them an ordinary "living wage." Assuming that the student is aware of all the risks, the pages are well suited for his or her instruction. There are illustrations from actual examples in various styles; there are photographs which show how tools are to be held in working and there are diagrams to explain the construction of pieces. The instructions are clear and detailed, and if not sufficient to enable the student to dispense with the kind of teaching usually given in technical schools, will at least serve as an efficient auxiliary to it.

TEMPLE OF NAKHON WAT.

THE Naga temples, which exist in an extraordinarily perfect condition, are as large and as magnificent as any religious buildings in the world. That called Nakhon Wat, in Cambodia, is the most remarkable of them all. Its dimensions are amazing. Its plan is almost an exact square, and measures nearly an English mile each way. The walled enclosure of the temple is in area 1,080 yards by 1,100, and is surrounded externally by a moat 230 yards wide. The temple itself consists of three enclosures, one within the other, each raised to such an elevation above the outer as to give the whole a pyramidal effect. The several enclosures are, in fact, double open galleries or verandahs, supported on ranges of columns, the whole being carved with bas-reliefs. It is scarcely possible to speak too highly of the architectural beauty and repose of these arcades, or rather colonnades. Certainly no Gothic cloister ever exceeded them. Mr. Fergusson grows eloquent as to the marvellous excellence of the masonry and as to the constructional perfection of the arrangement for excluding the sun and admitting both light and air by the use of double verandahs, the outer one lower than the other. The bas-reliefs, however, are even more wonderful than the architecture which they adorn. They occupy an aggregate length of at least 2,000 feet, with a height of about 6½ feet. The number of men and animals sculptured in these reliefs cannot be much less than 20,000. There is a noble causeway across the lake leading to the chief entrance; an antenaos, supported by 100 columns, and measuring 180 by 150 feet; the naos itself, measuring 213 feet by 200, with a sort of spire at each angle, and a loftier one—of the usual composite pyramidal Oriental form—in the middle. All the courts were tanks, capable at least of being occasionally flooded. It is a most curious circumstance that the columns of this temple resemble closely the Roman Doric, just as the Grecian Doric must have lent its peculiar forms to Cashmere. No explanation can be given of this strange peculiarity.

The Norwich Town Council have appointed Mr. C. J. Brown, the architect of the education committee, as architect of the proposed new public elementary school in the Heigham district.

ROYAL ACADEMY LECTURES.

IN his second lecture to the Academy students, delivered at Burlington House on Monday afternoon, Mr. Reginald T. Blomfield, A.R.A., F.R.I.B.A., the Professor of Architecture, dealt with the question of "Design and Temperament."

Mr. Blomfield reminded students that when they had adopted the advice he offered in his first lecture, that they should analyse the buildings to be studied, breaking them up into their abstract parts, and searching for the principles of their design and construction, the critical study of buildings would by no means have been completed. So far they would only have gathered what would be of immediate use to them personally as working artists. Not only was there an infinite field of history, but there was the other side of the case—the right appreciation of the artist himself whose work they were studying. It was ungrateful not to discharge that debt; but, apart from that, it was only by this wider study of architecture under all its varied aspects that the student could understand how great and vital an art it was, and the extent of its resources as a means of expressing thought and emotion. It was a mistake to dwell exclusively on the technical side of architecture—that must, of course, be mastered before one could hope to design; but architecture was something greater and more profound than merely technical excellence. Though its appeal was more abstract and less readily understood than the other arts, it was like them, in the last resort, addressed to the emotions. Temperament, no less than imagination and intelligence, was an essential element in all good architecture; and by temperament he meant some force and passion within a man which drove him out to do certain things in a certain way and no other—thus they could not imagine Vanbrugh translated into terms of Robert Adam. He proposed, therefore, that evening to leave the beaten track of technical discourse, and to make an excursion into the dimmer regions of artistic temperament, with the double object of arriving at a clearer understanding of the work of the artists he should refer to, and also of showing that the art of architecture was not a mere cold abstraction, but that lofty aims and a strong personality would leave their mark on architecture not less than on the other arts. He held that if the life and work of typical architects were studied, it would be found that in their work design and temperament were intimately associated, that through all vital art there ran more or less strongly the man's peculiar personality. In many cases one's want of personal knowledge of the artist prevented full understanding of his work; we could only read back from the work to the man—and here we were met by certain historical limitations. The sympathetic study—the psychological study—of individual work was scarcely possible before the days of the Renaissance. As an example of the interpretation of an artist's work by his personal temperament, Mr. Blomfield selected Alberti. Leon Battista Alberti belonged, he remarked, to a noble Florentine family; he was a gentleman and a scholar, perfectly educated, a man of admirable accomplishments, mental and physical. He wrote multifarious pamphlets, books on painting and sculpture, and the famous treatise "De Re Edificatoria," the first, and in some ways the most remarkable, of the long series of books on architecture which has continued ever since. In the Bologna edition of 1647 of Vasari, the wood-block at the head of the chapter on Alberti suggests the athlete quite as much as the scholar, and wonderful stories were told of his personal prowess. He pursued sport as he pursued literature and art, for the intrinsic pleasure he found in his art, and in the realisation of his own energies. The net results of this unusual combination of qualities were traceable in his architecture. There were two sides to his character—an austere reserve and fastidious taste on the one hand and the adventurous instincts and robust judgment of the sportsman on the other, and in the end Alberti's innate force of character won the day. In the first instance, Alberti approached his art from the point of view of the scholar rather than from that of the architect. He was exercised about the exact parts of design according to the Classical models, as he had come across them, and his enthusiasm for the antique led him into difficulties from which a more intimate study of architecture would have saved him. He was an alert and a many-sided man. He probably outgrew his early subjection to the antique, and became interested in the forms and methods of architecture for their own sake, for with all their professed veneration for the teaching of the ancients, the earlier Italian

artists used their own judgment with the utmost freedom. Alberti's distraction of mind was visible in his architecture. It was not always pleasing, but there was no pettiness about it, and it was a serious attempt at individual expression. He transformed for Sigismondo Malatesta the Gothic church of San Francesco at Rimini. He filled the interior with marbles and sculptures of the heathen gods and goddesses, of children, of fruit and flowers and of all that told of the new delight in life; and began a façade with triple arches and a mighty pediment which was to rival the temples of ancient Rome. Few buildings were more characteristic than San Francesco of the earlier Renaissance and of Malatesta himself and his architect. It was a sheer attempt to translate modern thought into terms of paganism. The same instinct for larger and more liberal forms was seen in the great church at Mantua, which, in spite of later additions and its painted simulations of architecture, was still one of the finest churches of the Renaissance. In Alberti we were brought face to face with a new type—a man of high position and complete education, who had devoted himself to architecture from simple love of the art, and who was able to show in his own works the qualities of reserve, personal dignity and contempt for trivialities which marked him out from other men. Alberti almost alone among the men of his time was thinking in terms of architecture, was aiming at getting out of architecture its own peculiar qualities, and making his appeal by form and rhythm—above all by the subtle beauty of scale. The lecturer next reviewed in detail the life and work of Baldassare Peruzzi, of Siena, who was throughout life an extraordinarily unlucky man. He was a man of simple-minded devotion to his art, ever seeking for fresh combinations of beautiful forms, ever refining on his own inventions, without losing touch of the essential elements of greatness in design. His work as a decorative painter, his skill in perspective, his keen eye for spectacular effect, and his remarkable originality in the design of scenery and the staging of plays, all combined to fill the mind of Peruzzi with infinite visions of architecture. Few things are more surprising in Peruzzi's work than the way in which, with the inexact archæological equipment of the Renaissance, he arrives at the refinement of detail and austere selection of form which had more of the true Greek spirit than the neo-Greek revival of much later times and greater knowledge. In this regard Peruzzi stood almost by himself among the architects of the Renaissance. He alone among them saw the possibilities of Greek detail under the brilliant sky of Italy. He dealt with the traditional forms of Classic architecture with the confident freedom of a master. Detail with him was only a means to an end—that of reinforcing the central intention of his design and of driving home the sense of scale in his building. To produce the effect of great size was one of the first qualities of architecture, and no building had been more successful in this than Peruzzi's Palazzo Albergati at Bologna. It was a great loss to architectural history that his design for the completion of St. Peter's at Rome was never carried out. His weak point in design was the display of the skill he possessed as a painter; and it was not until his latest days that he shook himself free from the snares and pitfalls of the sister art. In his mature work, however, he avoided that theatricality which was always the danger of Italian architecture. Peruzzi was indeed, the real artist at work in architecture. His art became the revelation of his own character in its strength and subtlety, its delicate refinement, its constant instinct to press forward in the path of architectural discovery. He was the type of the artist who stood aloof from worldly success, and whose aim was steadily set on the finer qualities of life. In conclusion Mr. Blomfield addressed the students as follows:—"It is your privilege as artists to follow Peruzzi in this. In whatever circumstances you find yourselves, you are there artists to watch for and realise the finer and rarer qualities of life; to see the unobvious, to play the part of the interpreter, even it may be of the seer. It is the function of the tradesman to satisfy fashion; it is your business to see further ahead, to disentangle the permanent interest, even if only in our own small corner of existence and to endeavour to render it vital for all kindred spirits. This it is that gives distinction to the artist's calling. Tricks and dexterities leave us untouched. It is the personal contribution of a thing once keenly felt, the individual passion, the rare moment of illumination, that differentiates the artist and justifies his existence, if not now, at any rate, in the

ture. It is on this point that we, as artists, must keep our eyes fixed, without regard to the temptations of advancement and the allurements of immediate fame.

GLASGOW INSTITUTE OF ARCHITECTS.

AT the quarterly meeting of the Glasgow Institute of Architects (Mr. J. M. Munro, president, in the chair) was reported that a letter had been received from Mr. Keppie resigning office as a representative of the Institute in the governing body of the Glasgow School of Art, in view of his firm being likely to be appointed architects of the new building, and that the President had been unanimously elected as the representative in place of Mr. Keppie. A letter was read from the Royal Institute regarding the Glasgow School of Architecture examinations, intimating that if an external examiner were appointed to be present at the examinations they would be prepared to accept the diploma or the senior certificate of the Glasgow School of Architecture as exempting candidates from the preliminary and intermediate examinations of the Royal Institute. This was remitted to the joint committee of the School of Architecture for consideration and report.

Mr. Watson, convener of the committee appointed to consider the Glasgow Corporation's proposals regarding the duties of clerks of works, reported that his committee had communicated with the allied societies regarding the duties of clerks of works in their own districts, and had received from these societies replies dealing with the subject. He further stated that his committee had now fully considered the whole matter, and that they were of opinion that the proposals of the Corporation were objectionable in general, and that clauses 4, 5 and 6 of the proposals were specially so. The meeting agreed with the sub-committee's report, and recommended that the sub-committee be appointed to meet the Corporation's committee and explain the Institute's position.

The President stated that it was intended to commemorate the jubilee year of the Edinburgh Architectural Association by an exhibition in the rooms of the Royal Scottish Academy, Edinburgh, during July and August next. The exhibition would be limited to work executed during the past fifty years by Scottish architects, with the addition of such old or special work as the committee may consider of sufficient interest. An interesting incident in connection with the exhibition is the forthcoming visit of the Royal Institute of British Architects during the period in question.

HUTTON EFFIGIES.

TWO effigies with an interesting history have been returned to Penrith parish church after an absence of 187 years. Unfortunately they have both suffered during their wanderings, says the *Carlisle Journal*, for they were for an unknown number of years lying in a farmyard, or apparently uncared for among the impedimenta of a country house stable yard, while in the journey back to their original place they received knocks sufficiently hard to break off pieces of the brittle stone.

Anthony Hutton, Master in Chancery, a famous lawyer of his day, belonged to an ancient Cumberland family, and lived at Hutton Hall, Penrith. At his death in 1637 his widow had an effigy of him prepared in a soft white stone, known by geologists as "tufa," a rock formed by springs depositing magnesian limestone, found chiefly about Bonisborough. The lady went further, and provided a companion figure, also recumbent. These for more than ninety years stood in the north choir of Penrith Church, enclosed with iron gates, and bearing an inscription stating that—

"Here lies interred Anthony Hutton, Esq., who was a grave, faithful and judicious Counsellor at Law, and one of the Masters of the High Court of Chancery, son and heir of that renowned Sir William Hutton, of Penrith, and was matched in to the noble family of Sir Thomas Burdett, of Bramcourt, in the County of Warwick, Baronet, by the marriage of his virtuous sister Elizabeth Burdett, whose pious care and religious bounty hath erected the marble tomb to perpetuate the memory of such a worthy Commonwealth man, and of so dear a husband, who died the 10th of July, 1637."

The lady made her own action clear for later generations by causing to be cut on the base of the stone representing herself the following words:—

"Here lyes the Portraiture of Elizabeth Hutton, the wife of the lately deceased Anthony Hutton, who, though living, desired thus to be placed in token of her Union with him, here interred, and of her own expected Mortality."

The effigies were placed close to the family pew, and there Sunday after Sunday for thirty-six years Mrs. Hutton worshipped in full view of her own "portraiture." The figure of the man wears a legal costume, a gown with long hanging sleeves, richly laced over the upper part of the arm, the "crackling," as it would be called at Cambridge; his right arm is extended along his side, and his hand grasps his long sleeve near its end. His left arm is doubled on his chest, and the hand holds a folded paper. The gown reaches to the ground, and has a deep round falling collar, probably of lawn; the sleeves close fitting from elbows to wrist, with plain cuffs of lawn or linen. The lady's attitude is similar to that of her husband, except that her left arm is extended at her side and her right doubled upon her chest. She has a ruff round her neck, a flowing veil over her head and full sleeves; her gown is gathered in at the waist by a knot of ribbons. During her widowhood Mrs. Hutton, from whose family descended the late Baroness Burdett-Coutts, was an important person in the parish, bearing the cost of maintaining the fabric in the choir, besides providing for the apprenticing of a full generation of Penrith boys.

The effigies were apparently removed from the church at the restoration, which lasted from 1720 to 1722. They are believed to have been taken to Hutton Hall, and afterwards to Nunwick Hall, Great Salkeld, then the residence of Dr. William Richardson, a distant connection of the Huttons. In 1894 they were found in a sadly mutilated condition lying in the yard behind Nunwick Hall. Mr. R. Heywood-Thompson, the owner of the hall, had the effigies placed upon a raised stone base enclosed by a railing at the north side of Great Salkeld church tower. The feeling of Penrith people interested in local lore and history was that the effigies should be returned to their original place, and now, by consent of the vicars and churchwardens of the two parishes they have been removed to Penrith, where on Sunday they were objects of much interest.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the rooms of the above Society on Thursday, the 21st ult., Mr. P. A. Robson read a paper on "School and College Building," Mr. H. S. Chorley, president, in the chair.

The lecturer said:—When I titled the paper I was thinking of higher elementary schools, higher grade schools, secondary schools, training colleges and the like, but I found that I must thrust aside elementary schools with a few remarks and speak mainly of secondary schools and training colleges. First, because elementary schools are now on a scientific and economic basis which is well known; and secondly, because the rules for planning secondary schools have been twice issued in a nebulous manner which seems to imply that the subject has to find itself by gradual evolution rather than by clear directions to the promoters of secondary school buildings from headquarters. With regard to classrooms, I may remark that left-hand light is a fetish which has been unduly glorified, and in some cases it is positively bad, and in a babies' room right-handed light is preferable. I am inclined to think that the Cowper Street school in Leeds is the last of these very large schools to be built (although in London a school for 3,000 children has just been built under exceptional circumstances), and I am sure that better educational results will emerge from smaller schools better distributed. Now a word as to economy in schools. This should be effected by cube rather than by area. The only gain in making classrooms 16 feet from floor to floor is that it is possible to get mezzanine floors off the staircases. Secondary schools will be built in increasing numbers during the next few years, because we are behind other countries in this class of building. I am inclined to think, especially in country districts, that we over-window our schools. With regard to ventilation, distinction should be drawn between schools in towns and those in the country, and again between those in or near manufacturing centres and those in better positions in the same district. Of large public schools I think you will do well to study Christ's College, Horsham, for boys, and the Roedean school at Brighton for girls. The plans for the Welsh colleges or universities have been worthy of study, but the designs seem to me to miss the genuine collegiate atmosphere.

NOTES AND COMMENTS.

THE arrangements are complete for establishing next week a phylogenetic museum in Jena, which is to serve also as a memorial of ERNST HAECKELS passing as a medical doctor in 1857. A part of the funds were derived from the subscriptions given on the occasion when he reached his sixtieth year. Since that time many other donations have been received which will enable HAECKELS's great desire to be realised. He was the first authority in Germany to adopt the principle of evolution, and since then he has been its most earnest expositor. The new museum will consist of specimens arranged in such a way as to explain the doctrine with greater force than is possible in a book. HAECKELS's own collections will be deposited in the museum, and will always be accepted as having historic as well as scientific interest. It is remarkable that in the country of DARWIN, HUXLEY and HERBERT SPENCER, a museum of the same class has yet to be created. The older universities would be aghast if the proposal to erect one were placed before them. The Governmental museums cannot be said to have any definite plan, although the late Professor OWEN was to be allowed to illustrate his theory of the relations between organic beings in the large hall of the Natural History Museum. Germany, which is fettered in many ways, is allowed greater freedom in sustaining theories than is possible in England, and on that account the example set by Jena is not unlikely to find imitators in other universities.

PASSY is a pleasant suburb of Paris which is easily reached. It has an historic society, and the members wish to prove their utility by setting up a plaque on the house in the Avenue Ingres which ROSSINI, the composer, had erected, which he occupied during ten years and in which he died. But if all the houses occupied by musicians, painters, writers and scholars in Passy are marked in that way the town would present a curious appearance. For over a century and a half it was preferred by literary and artistic celebrities before all the other places about Paris. Passy and Ranelagh may be considered as inseparable, for a stranger would now find a difficulty in discovering the line of separation between them. The city of Paris had offered a site for a house and garden to ROSSINI gratuitously, but he preferred to pay the small sum of 15 francs a metre for the ground. The composer brought out his best works in Paris, and he bequeathed a sum sufficient to produce an income of 6,000 francs yearly for the encouragement of composers. He also founded the Maison de Retraite d'Auteuil.

ECONOMY receives reverence in Scotland from municipal bodies, and it would be well for ratepayers if their representatives accepted the truth that if pennies are guarded the pounds may be left without special protection. The expenses of deputations and representatives always cause discussion, and several of the Scottish corporations have been considering their obligation to send delegates to the congress of the Royal Sanitary Institute and the congress of the Royal Institute of Public Health. To the ordinary member of the health committee of a corporation the objects of both are similar, and not only money but time would be saved if the business of both could be unified and shortened. A conference was held in Edinburgh on Monday, which was attended by representatives of the corporations of Edinburgh, Glasgow, Dundee, Falkirk, Dunfermline and Kirkcaldy, when the following resolutions were unanimously adopted:—"That in the opinion of this conference it is very undesirable that the Royal Sanitary Institute and the Royal Institute of Public Health should hold separate congresses each year"; "That a representation be sent by this conference to the Royal Sanitary Institute and the Royal Institute of Public Health, urging these bodies

to make an arrangement in future for holding a combined congress, or holding their respective congresses in alternate years;" and "That those corporations which have agreed or may agree to send delegates either to the Royal Sanitary Congress or the Royal Institute of Public Health be requested to ask their delegates to support the representation of this conference when it comes up for consideration at their respective congresses." This Scottish example is worth the consideration of local authorities in England.

It would be presumptuous to offer advice relating to business to a firm so well established as JOHN BARKER & Co., LTD., Kensington. Architects are able to realise the strength of its resources, and occasions are constantly arising in which the co-operation of the firm would be desirable. But when it is found that the firm appeared in the High Court claiming fees as architects, although on reduced terms, human nature must rebel, and JOHN BARKER & Co., LTD., is likely to be regarded as a doubtful auxiliary, although there may be no direct evidence on the point. Mr. Justice PHILLIMORE, who tried the case, had no difficulty about the status of the plaintiffs as architects, for the amount of the claim became a case of *quantum meruit*, and the sum paid into Court by defendants was considered sufficient.

THE information supplied by the London County Council respecting the requirements of the proposed county hall is more ample than is usual with municipal bodies. The plans are on an adequate scale, and are produced in excellent style. The contest may now be considered as having commenced, and it is to be hoped designs by English architects will be of a kind which will not make it necessary for foreigners to take part in the second competition. A great opportunity has been created for demonstrating the skill in architecture which is found in this country.

ILLUSTRATIONS.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—DETAILS UNDER DOMESTIC FLOOR—NO. 1 COURT—CITY LANDS ROOM—CORRIDOR, GROUND FLOOR—STAIRCASE.

WE have already published several views of the new Palace of Justice which was opened by Their Majesties the KING and QUEEN on Wednesday. In addition, we give five views this week. As early as 1218 there was an order from HENRY III. to the Sheriffs of London commanding them to repair the gaol of Newgate, and promising that their outlay would be repaid from the Exchequer. It is possible that some sort of a courthouse then existed near the gaol. But the earliest mention of a sessions hall was in 1357 when EDWARD III. ordered that the "Mayor of the City for the time being shall be one of the justiciars for the delivery of the gaol of Newgate, and shall be named in every commission to be made thereupon." The court, it may be supposed, was subjected to alterations whenever they were found necessary in the prison. In 1770 GEORGE DANCE, R.A., began the rebuilding of Newgate, and on its completion a new sessions house was considered to be desirable and was erected in 1785. After half a century that building was superseded by another courthouse, in which the last sitting was held on Monday last. A description of the new building appeared in *The Architect* of November 23, 1906. It is only necessary to repeat that Mr. E. W. MOUNTFORD, having succeeded in the competition, designed the building, and that the works were carried out by Messrs. HOLLOWAY Brothers as general contractors. The sculpture is the work of Mr. F. W. POMEROY and the wall-paintings are by Sir W. B. RICHMOND and Professor GERALD MOIRA. Oak panelling is used in the courts, and the carving was by Mr. G. GEALE.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at the premises in Tufton Street, Westminster, Mr. A. Needham Wilson, vice-president, in the chair.

Messrs. A. Kay and H. P. Brentnall were elected members.

The Late Mr. A. Maryon Watson.

The CHAIRMAN said before proceeding with the other business of the meeting he had to perform a melancholy duty. The Association mourned the loss of one who had taken the greatest interest in its welfare, he referred to the late Mr. Maryon Watson, who died somewhat suddenly after a short and painful illness. His death made a void in the ranks of the younger men of attainment and high promise in the profession to which he devoted his talents. The chairman alluded to some incidents in the career of the deceased. Mr. Watson, he said, was an Associate of the Royal Institute of British Architects and honorary secretary of the literature standing committee; he was a member of the Council of the Association. He was the first silver medallist in the Royal Academy schools in 1897, and gained the Institute Essay Medal in 1901. Mr. Watson also held a certificate of competency from the Statutory Board of Examiners under the London Building Act, 1894. For four years he was lecturer on the History of Architecture at the Architectural Association. He entered the office of his father as a pupil in 1892 and he visited Sicily in the same year. By the kindness of Sir John Webb the deceased had the privilege of attending at Queen Anne's Gate, and there had the opportunity of working upon the drawings of the Britannia Royal Naval College, Dartmouth, and of the Royal College of Science, South Kensington. In May 1901 he entered into partnership with his father.

A vote of condolence and sympathy with the widow and relatives of the deceased was passed.

Mr. GERALD C. HORSLEY read the following paper, entitled—

Some Aspects of Training and Design.

He said:—Some time ago a well-known writer stated at a conference of teachers that his contempt for modern education was only exceeded by his contempt for men who live up their lives to teaching, and for those—a feeble sort in his opinion—who talked about education. His sympathies were wholly with men who went forth and did things.

The speaker, perhaps, reserved his admiration for what he called the "self-made man," and we may guess that he would, had he been addressing architects on the subject of their education, have advised them to go forth and learn their work by building. He might have said, "You shall know architects by their works and you shall learn by their works." The advice, if profound, is primitive; it accords better with the events of an earlier day, when architecture was in a more experimental state than our knowledge allows at the present time. It is perfectly good advice for poets, but hardly for men whose feet are crossing the threshold of the workshop of art. These men know—even the genius among them, conscious of his gifts, knows—that they must learn their work in other ways as well as by the experience gained in actual practice. It is because I believe that there is both room and need for a larger measure of preliminary training before building is undertaken than the student of architecture generally allows himself, that I venture to say anything to you to-night.

Notwithstanding the opinion of the writer I have quoted at the beginning of my paper, you will agree, I believe, with me in thinking that we architects at any rate would be justified in having any feeling of contempt either for architectural training, however much we may hope to see some things changed in it, or for the professors and teachers in our architectural schools. We know too well the good work which is being done in the face of many difficulties. Nor can we feel contempt for those who meet either to discuss methods of training, seeing that training and education are necessary in every art, and as long as progress lasts the final word on these subjects can never be said.

You may regard the subject of architectural training from different standpoints; I will only attempt to-night to all upon the effect of certain forms of training upon design.

Before making any suggestion as to what may be weak in our training, let me briefly refer to a few of its advantages and opportunities, particularly as the student of

to-day can hardly realise the value of his inheritance in means of study, compared with the opportunities which would have been open to him fifteen or twenty years ago. We may first notice the recent addition to these means in the excellent and valuable scheme of co-ordination of the principal architectural schools in the country, drawn up by the Board of Architectural Education; a scheme which has been cordially accepted by our profession, and which is working well. The different schools, which I may remind you are our Architectural Association Schools, the schools of University College, King's College and Liverpool University, are doing useful work in training. The scheme, however, is of too recent an origin for us to have a clear-cut idea of its ultimate effect upon English architecture. We believe it to be founded upon right lines, and that the result of its working will accordingly be successful as far as it goes.

In addition to the schools under the scheme are the schools at South Kensington, Manchester, Birmingham, &c., where the work done is very similar, and there are many technical and County Council schools which nearly all have classes intended for the study of architecture as well as for teaching the methods of trades and crafts found in building. These craft classes are not utilised at present by students of architecture to any extent, owing chiefly to the fact that the influence of the trades unions is at present unfortunately against the admission of anybody but members of the unions into the classes for the study of the building crafts. It has long been recognised that it would be an advantage to young architects to join these trade classes in order to obtain practical knowledge, and if by their doing so they do not keep out the workmen for whom the classes were originally founded, it is difficult to see that anything but good could come out of such an arrangement. Indeed, some years ago the committee of this Association, endeavoured to secure this advantage at a technical school near to the then headquarters of the Association in Great Marlborough Street, but the influence I have referred to was too strong, and prevented the scheme from being carried out. The attitude of the trade unions to training and workmanship has an important bearing upon architecture which deserves a paper to itself. I have not time to enter fully into it here.

To return to the scheme of the Board of Architectural Education, the principal departure from the procedure of the past is the establishment of the two years' preparatory course before the student is articulated to an architect.

In the past the student was articulated without any preliminary training—a good beginning for those who were fortunate in finding a good master. There were, indeed, classes in London at the Association, University and King's Colleges, and the good instruction given by the Royal Academy of Arts, but all these were evening classes. There were no day classes, except those for drawing in art schools connected with South Kensington.

We may therefore roughly say that the student's early architectural education depended upon the office in which he was. In a good office he would get varied experience, both artistic and practical; in a bad office he might have a similar experience to a case which I once came across in a large Midland town, where a pupil of ability had been allowed during a period of three years to do nothing but some indifferent tracings.

In spite of drawbacks of this kind, apprenticeship is universally believed to be the bedrock of any good system of architectural training, and the Board of Architectural Education very wisely retains this system, but adds to it the preliminary two-years' course in the school. Given that the pupil has made a wise choice of his office and master, apprenticeship secures many advantages, chief among which is the influence derived from tradition. This influence emanates from the master, and has been transmitted to him—in part at least—from his master.

In addition to that, there is the stimulating effect of close companionship and common interest, which may prove to be an inspiring force to the beginner.

During the term of apprenticeship the Board advises a continuance of the school course, and the theoretical knowledge acquired in the school, combined with the practical knowledge acquired in the office, ought to build firmly the foundations of power to design.

Further, the syllabus of the Board advocates the study of ancient buildings, which was so great and so essential a feature in the training of enthusiastic students five-and-twenty and more years ago; and which it is to be hoped no newer teaching organisation in the future will ever attempt to discourage. We may rival, but we can hardly surpass

the enthusiasm and devotion with which the students of this earlier period measured and drew old work, and no architect will deny that this study must take a leading position in a student's training. Unfortunately, with the growth of easy photography, some modern students appear to think that to spend valuable time in carefully taking photographs of a building is as good as sketching and measuring it. Never was a greater mistake made; it is impossible to find out the secret of the beauty of an old building without measuring and drawing it, and the sooner the 2-foot rule and drawing block take the place of the camera on these occasions the better will be the study of architecture.

One other advantage the student of to-day inherits, viz. the result of the victories in the warfare of many years past against merely paper and T-square architecture, and the threatened extinction of the arts and crafts which are part of building. The work and influence of many artists in the last century, and of societies like the Art Workers' Guild, have helped to open the office doors and bring the student face to face with the materials with which he must build.

The inner spirit of the Gothic revival of the middle of the last century led to the more general study of buildings and of the men who made them, and this great movement can place the recognition of the craftsman and the crafts to his credit.

But to return to the system of training advised by the Board. If loyally followed it should go a long way to insure a thorough training of architects, and thus bring about the extinction of the bad office and the creation of the good. It is to be noticed, however, that the Board concludes its report with the following words:—"In putting forward the syllabus the Board desires to point out that its object is to lay a sound foundation on which the student can continue his training in later years. The Board cannot contemplate the complete equipment of an architect as possible in a four years' course. Its object is to start the student on those lines of study which will best enable him to attain to some proficiency in the art and practice of architecture."

In other words, after the four years' nursing the student is to shift for himself; the Board, at any rate at present, can "only start the student on lines of study." It makes no attempt to suggest his course through later years. With the British instinct for independent action, the fabric of instruction is to be carefully supervised as regards its foundations and basement storey, but the superstructure is to be designed and constructed entirely by the novice.

Hence we shall see our students taking different paths, as their means and situations in life may dictate, after the four-years' course is over. Naturally, few of them will attempt to practice; the majority will seek for further experience in becoming assistants or improvers, or in entering builders' workshops, or as assistant clerks of works.

In conjunction with any of these developments, some will enter the Royal Academy schools, others will take up a course of work to pass the final examination at the Royal Institute of British Architects; some will travel in order to measure and draw, or work at designs which may win for them studentships or prizes. All this, good and useful work as it may be, is nevertheless disconnected and piecemeal in character; there is no cohesion in it as in the days of the four-years' course, unless we find it in the schools of the Royal Academy.

If we agree, as I presume we do, that the supreme object of our training is to create ideals and aspirations, and foster the growth of ideas in the minds of students so that the end or goal of their career will be a fine architecture, it seems unfortunate that the Board should lose touch with them just at a time when these aspirations and ideals are taking shape and ideas beginning to flourish. We must surmise that it is the purpose of the Board to extend the scope of its recommendations as time goes on.

In the meantime, as nothing comprehensive really holds the field, we are at liberty if we wish to construct theories for ourselves.

As matters stand, the four-years' course is a thorough school course, and it is a question whether the subsequent freedom of action is not the chief fault in our training of which we should take note, and if it is not responsible for some of those weaknesses in design which we would prefer not to see in any of our students' advanced competitions.

If we believe a further course called for it would have to be of a distinctly advanced character; the influences in it would have to be, above all, artistic, and constant association

with students of other arts, such as painting, sculpture, &c. would be necessary. This course would make a special point of teaching composition.

Such a scheme presupposes the existence of a great college of art—a university of the fine arts—and it is significant that the nearest approach to such a university that we have in England is contained in the schools of the Royal Academy. This is because the architectural school there (as in the better attended schools of painting and sculpture) is adapted for the advanced student and not for the beginner. We can conceive that if the admirable system of instruction which obtains there for architects were widened and extended and connection established with schools of other bodies, we would have such a university of the fine arts.

If we look abroad we see in Paris, in the senior classes of the Ecole des Beaux-Arts, an institution of this kind. It is the ambition of young architects in Paris who have passed through some years of preliminary training to enter these classes, and I propose very briefly to describe a little of what they do there, not because I suggest that we should copy all that they do, but because we may learn something from their methods.

I have some drawings very kindly lent to me to-night by Mr. Phenè Spiers which will show you the kind of work a student is expected to do in the earlier part of his training at the Ecole des Beaux-Arts, for Mr. Spiers is one of a small number of Englishmen who, for a time, were students at the Beaux-Arts.

Mr. Spiers's drawings are the more interesting as he was studying in Paris at a time when the work of French architects was deservedly greatly admired by English architects and as we cannot traverse the whole course of modern French architectural art, I have a few illustrations of work done by some of these French architects which I do not believe could have been executed without the fine training they had received at the Beaux-Arts. These works were carried out in the first three-quarters of the last century and have stood the test of time, and are admitted to be of a fine and noble character. I regret that I have not been able to get together a larger number of photographs to illustrate these works or a larger number of plans, a form of design in which the French architect greatly distinguishes himself. In passing, I may say that a study of the plans to take only one accessible book in our libraries, "L'Architecture Privée," by César Daly, makes clear the care they exercised in their design and their thorough artistic character.

I have also a few slides in the lantern which will illustrate some of the work done by French students in competition for the Grand Prix de Rome, after they have finished their course at the Ecole des Beaux-Arts.

Before showing you these illustrations may I enumerate the principles which we endeavour to impart in our training, and you will then be able to judge how very well they are exemplified in the work of these French architects.

At the risk of bad definition and the omission of something of importance, I may state them thus:—

To instruct the student—(1) In methods of building; (2) in knowledge of construction, and in the principle of good design must be founded upon good construction; (3) that any decoration of any kind forming part of design must be in sympathy with, and subordinate to, the larger lines of the architectural scheme; (4) that simplicity, breadth of treatment, fine proportion and scale must exist in a good design, and form the basis of style.

We find these principles animating such men as Du Roux, Vaudoyer, Labrousse and Duc, eighty years ago. They were winners of the Grand Prix de Rome in successive years from about 1820. They were the founders of the great school of French architecture of the middle of the last century. They were the result, apart from their special talents, of the system of architectural education founded 250 years ago by Louis XIV., and his minister, Colbert. At the same time that the Royal Society was founded in England, to promote the study of science, in which foundation Sir Christopher Wren took part, the Académie d'Architecture was founded by the King of France.

François Blondel was president, and in his first address to its members in 1671 he said:—"Are there no books treating of this subject (viz. architecture) which you ought not to read more than once, no drawings of ancient or modern buildings upon which you ought not to meditate no time nor care that you ought not to be obliged to employ in order to form in your minds the veritable and perfect idea of architecture? Let us confer together in good faith."

and communicate our thoughts for the development of architecture. For it is true that it suffices not to have a medium acquaintance with the rules of this excellent art in order to be veritably an architect, and that this quality demands the co-operation of so many virtues and different attainments that a lifetime is insufficient to acquire it."

To show the all-round character of the new Society the members at once set to work to inquire into and report on the different stones then available for building purposes. I understand this report, which took some years to compile, is a most interesting and useful work. Nor were the king or Colbert behindhand in supporting the architects. In 1666 the minister persuaded Louis to buy a palace in Rome for the accommodation of selected architectural students for purposes of study, and in order to encourage students, we learn that the king decreed—I again quote Mondel—that "the sound principles" and "most correct rules of architecture should be publicly taught two days a week" by the Academy, "in order that a nursery, so to speak, of young architects might be formed; and to give them more courage and passion for the art, the king ordered that from time to time prizes should be given to those who succeeded best, promising that a certain number of the young men so rewarded should be sent immediately, at the royal cost, to Rome, in order that nothing might be wanting to the king's part to complete their education and render them fit to act in the conduct and superintendence of the royal buildings. At the same time His Majesty commanded that during the second hour of the public lectures those sciences which are necessary to an architect, such as geometry, arithmetic, mechanics, fortification, perspective, stereotomy and other portions of mathematics should also be taught."

In so thorough a manner, more than two centuries ago, were founded the French Academy of Architecture, the Ecole des Beaux-Arts and the Grand Prix de Rome. These institutions have passed through many vicissitudes, and while students of architecture, painting and sculpture have been going regularly to Rome for their four or five years' study since the prize was founded, the Ecole des Beaux-Arts, as we know it now, was reconstituted early in the last century.

To understand clearly the condition of architectural training in France, I must refer you to the instructive article by Mons. Gaudet in the *Architectural Review* of October, 1903, and a paper by the late Mr. W. H. White, published in the Transactions of the Royal Institute of British Architects in 1883.

I am especially indebted to these authors and to the discussion which took place after Mr. White's paper for the information contained in the short description of the classes of the Beaux-Arts I wish now to give you. I include a few of Mons. Gaudet's own remarks translated from the French in his article.

The education in architecture in France is above all things artistic. While it does not neglect the teaching of scientific and purely technical processes, the end and aim of the training is to produce artists. The object of the French training is to render the student receptive; to make him fruitful in design, and imaginative. By making the training very general in character, it hopes to foster that, with which all artists should be born, namely, the gift of having ideas.

With these ends in view an important position is occupied in his relations to his pupil by the master of the atelier studio. In France a young man who desires to become an architect acquires, first of all, some knowledge of drawing and modelling, &c., in one of the smaller art schools. He then joins an atelier, much as he would an office in England; yet the difference is great, as the atelier studio for the study of architecture only, presided over by the master or patron, who is an architect in practice. It is not an office in which the master's work is done as in England. In his early days in the atelier he doubtless learns more by criticism and help freely given him, if he is a good pupil, than by the elder pupils than by the supervision of the master, who as an architect in practice would not have time to devote more than attention to his senior pupils. But the eye of the master is on him from the first, and as he makes his way forward in the work of the atelier he finds the relation between master and pupil becomes close, almost paternal. The truth is, the choice of the master under whom the pupil is placed is carefully made by the student and his parents. Once placed the master becomes to the pupil the link which binds him to the great tradition in architecture, which the French claim has never been broken

with them, and which has descended from master to pupil from the days of the Renaissance, and from the great Gothic days when man learnt from man and not from books.

This system, which encourages a devoted attachment of the pupil to the master, and the whole atelier to the master, creates an *esprit de corps* which is a great factor in the formation of a French artist.

In addition to this system of master and pupil, the ever-increasing requirements in knowledge of the architect necessitates the school. There are many art schools in France, and while we notice that these schools are always founded for the encouragement of the Fine Arts, and not alone for architecture, our inquiry must be confined to the great national School of the Beaux-Arts, in Paris.

It is the custom therefore for the pupil who has joined his atelier to prepare himself for the entrance examination into this school, and as this school includes, as its name proclaims, students of painting and sculpture, as well as architecture, the students are always associated with other artists of the future, and form a community which, even when their studies may be for a time purely scientific and technical, never allows them to forget their vocation.

The young architect in France studies in two institutions therefore, the studio and the school, and he carries with him into the school the influence of his master, as the guide of his studies. For instance, the classes in the school embrace such sciences as geometry and physics, stereotomy (or section work), strength of materials, construction, history, drawing and modelling. But the adaptation by the pupil of this knowledge artistically is influenced by the master of the pupil's atelier. Crudely speaking, while the school can teach the necessary sciences and formulæ, it cannot teach architecture in its highest sense. That is left, and must be left, to the influence of the chosen master.

So much for some good principles. Having chosen the master and joined his atelier, the young aspirant makes preliminary studies in drawing, colouring, projections, scientific work, cast drawing and modelling. These he presents for the entrance examination at the Ecole des Beaux-Arts. If admitted, he joins the second or junior of the two classes into which the school is divided.

From start to finish in the school, the student is taking part in competitions in design. These competitions are not judged solely by the masters (or professors of the school), but by a jury composed of thirty architects, whose services are given gratuitously. Twenty of these are permanent members, and are composed of members of the section of architecture in the Académie des Beaux-Arts, architect professors of the school, and artists whose distinguished careers signal them out for this distinction.

Ten are elected every year by the drawing of lots.

The students in the school are not restricted as to time, but their progress through the school entirely depends upon the number of prizes or marks obtained in the competitions, and if enough marks are not obtained they cease to be members of the school.

For instance, a student on entering is at once in the second class. Here he remains until he wins a medal or sufficient marks to promote him into the first class, with the right to participate in the senior competitions.

It is thus emulation which inspires the school. Coercive measures do not exist. The pupils are treated as men who know what is for their advantage.

The competition for admission is very keen, as the number who apply is great and the vacancies few. Those successful proceed to studies in science and art. They attend courses in mathematics, geometry and construction. The air is thick with "concours," or competitions in which the object is to obtain honourable mention in design. Some of these designs are made in the school in fixed hours, others are worked out outside, and are submitted to the jury at stated intervals. They all are intended to train the student to enter the first class, where the great competitions take place.

The courses in knowledge of materials and construction are made very thorough, and, as Mons. Gaudet says, all this demands more or less time; in fact, the sojourn in the second class alone cannot be less than two years and a half, and must frequently be more.

In the first class, the studies of the students are essentially artistic. Every two months there is a competition in a set subject, with time competitions in the school. Medals and mentions are given in these "concours," as in those of the second class. In addition, there are open for competition by pupils in the first class prizes of money founded

by patrons of the fine arts. There are also competitions in the history of architecture, in drawing from the life and in modelling.

There are also definite courses in the theory of architecture, the history of architecture, and the history of French architecture. This last course is specially intended to prepare students in the task of restoration or repair of old buildings which may fall to their lot in the future in France.

There are courses in physics and chemistry, including heating, ventilation, acoustics, light, electricity, geology, &c., and in building legislation, contracts, by-laws, &c.

Courses also which are open to the painters and sculptors, as well as the architects, are held in literature, general history, history of art and archæology.

In connection with the school there are galleries of architectural models and of sculpture, and a library open to students in the daytime and evening.

Certainly the motive force in these classes and competitions is emulation, and the reward of all this hard work and these trials of skill is acquired knowledge and developed talent, but there is a more mundane reward as well. For the students in the second class it lies in becoming members of the first class, in itself a high distinction. For the students of the first class there is the *Diplôme d'Architecte*—the Diploma.

We have seen that the first class must be a high distinction. The diploma is still beyond, and only those students in the first class who have obtained a certain proportion of marks in the different competitions have the right to offer proofs of their fitness to receive the diploma.

The student in this trial of his knowledge and fitness for this distinction proposes a subject of his own choice, which is submitted for acceptance to a special committee or jury. If approved, he proceeds to work out his design, often a matter of great labour. The work completed, it is submitted to the members of the jury, while he himself undergoes a *viva voce* examination at their hands to test his fitness as a practical architect, and he has to give evidence that he has been engaged in some practical architectural work.

This, then, is the culminating point of the French student's career. After many years of hard unremitting labour, in which he must, by the very nature of the courses of study, prove himself to be an exceptionally able and hard-working man, he has this great prize even before him still to obtain—the diploma. To make clear what an arduous course this is it is enough to say that there are only seven or eight hundred architects in France who possess the diploma.

There is, as you all know, yet another prize—the Grand Prix de Rome, open only to Frenchmen, who must be unmarried and between the ages of sixteen and thirty. This prize is not part of the *Ecole des Beaux-Arts*, but is given by "L'Institut de France." As a matter of fact it can only be a competition between the best pupils of the *Ecole des Beaux-Arts*. None other would have a chance.

The competition is carried out first by a process of preliminary competitions and eliminations, until finally ten only are chosen by a jury of architects to compete in the final competition. As you know, the work produced in this competition is in every way remarkable. The successful competitor spends four years at Rome at the Villa Medici, and is obliged to carry out some definite work in the study of architecture in Italy, Greece or the East. The student during this time is the guest of his country, and is free to promote his studies in comfort and dignity, amidst the companionship of the most gifted men of his time in the arts, and is certain of employment by the State on his return to France.

Such then is a brief sketch of the system of architectural training which obtains in France. For thoroughness and for masterly qualities it has long been pre-eminent in Europe. But all architects in France do not go through the whole of this training. Many, if they get into the second class, may not pass into the first. But our concern is not so much with the student as with the system of training which makes it possible for those who have time and talent to attain to a high standard of excellence.

I would like to quote to you some words used by the late Mr. Fred Cockerell, a late honorary secretary of the Royal Institute of British Architects, when reading a short appreciation before that Society of Duban, Vaudoyer and Labrousse in 1875. These architects were honorary members of the Institute, and they had died within a few years of one another not long before this date. He said:—

"I find in these men a high ideal, involving a high ambition pursued with a singleness of aim and an untiring energy, quite unsullied with any taint of greed. The early ambition of these men, whether they are born to ease or to toil, is not to rush into practice, but to distinguish themselves in the school, and to gain its honours and their crown—the Grand Prix. Their lives may, indeed, put us to the blush, and I cannot but feel with humiliation how great is our need of the study of them."

In conclusion, if my time had permitted I should have liked to have pointed out with more directness some features in our training where we may fairly claim some superiority over our brethren abroad. I will mention two:—(1) In the training we give our students in some forms of country and town house work; and (2) in the practice our students make, to which I have before referred in measuring and drawing the old work of their own country. The French students, we may affirm to their undoubted loss, do not measure and draw the fine ancient buildings of their country to anything approaching the extent our students do in England. A select body of French students, on the other hand, like the Prix de Rome men, do make splendid measured drawings of old work in Italy and Greece, as an inspection of the publication called "*Fragments d'Architecture*" will at once show you, but as a body, we can say that the French students do not make practice of this necessary form of study. This is a weak spot, and you can see the result of it in some of their work. But in their modern work of a monumental character, in the laying-out of a city, in the designing of civic and public buildings, in which the highest qualities of architectural art are called for, we know how they invariably succeed, and although tradition should not be so blindly followed as to stultify individual talent and invention, we surely see in studying the French methods of architectural training the benefit of a carefully planned scheme of advanced study among artists. To promote this there would be no need to give up our cherished institutions. I would not willingly change anything in the syllabus. We need not have ateliers exactly like the French. Our offices can be very good studios, and our best schools are already studios of a high order. But what we have not got, and I think we need, is a great central comprehensive school of art, preferably in Paris, of a great national character; that is to say, supported by the funds and encouraged by the approbation of the nation, and some system of studentships or other inducement which would make it easy for our best students to prolong their studies in art in conjunction with their studies in practical building work. If this could be constituted on carefully considered lines, I believe it would lead to what we all have at heart, namely, the greater knowledge of and the greater glory of architecture.

Professor F. M. SIMPSON, in proposing a vote of thanks to the author of the paper, said he would like to refer to one or two points touched upon. Mr. Horsley rather complained that the Board of Architectural Education had limited its scheme to four years, and that was not quite a correct deduction of their published conclusions. The Board regarded the four-years' course merely as a minimum term, and they did not mean that the time should be restricted at all. After four years students would be expected to continue the work of the last two years, but of an advanced character. He was sorry that the Royal Academy had agreed to admit students to their school on the two years' certificate. If they had allowed students to enter after receiving the four years' certificate there would then have been much more likelihood of the Academy becoming a real Academy for the higher work of architectural students in England. After two years' training students were not up to the standard that would enable them to take full advantage of the teaching and instruction at the Academy. If they were ever to have such an academy of architecture as Mr. Horsley had outlined, it seemed to him essential that the two years' preliminary course should be extended. He did not think two years was sufficient time to learn an outline of the subjects of which the architect was expected to have extensive knowledge. Professor Simpson suggested that ordinary schools were to blame for the backwardness of youths in such matters. How many boys, he asked, have school having done any drawings which were worth anything at all? As regarded modelling, there were only one or two schools in England that encouraged it, and they were sometimes considered as crank schools. This was that a good deal of the work which might be done in ordinary schools was neglected. In America (and he supposed

there was no country in the world where education was so well considered) students graduated from one school to another, and the method in their teaching prepared them for this. He was very glad to hear Mr. Horsley's appreciation of French art, though he had some slight doubts whether the general high level of French art was due so much to the training at the Ecole des Beaux-Arts. He felt that the excellence of French art was due to the fact that the French traditions of architectural design had never been broken, and those traditions extended over a period of more than four hundred years. Another point Mr. Horsley had touched upon was the engineering work of the French. That was one of the most important and valuable lessons to be learned from French architecture, showing, as it did, how well they could collaborate, not only with painters and sculptors, but also with engineers. The immense success of the day school of the Association was a matter of the greatest gratification not only to members of the committee, but to everyone who was interested in architectural education.

Mr. ARTHUR KEEN seconded the vote of thanks, and remarked that architectural students in the present day had opportunities in their training which were not possible a generation ago. What Mr. Horsley had told them about the Ecole des Beaux-Arts was extremely interesting, but he could not help feeling they should learn caution from it in England. The characteristics of English work were not to be learned under such training as prevailed in France. The simplicity and restraint of their own architecture were not to be mastered in a school. It was generally agreed, he thought, at the International Congress, that the domestic architecture in England had reached a very high level, and they must remember that some of the very best exponents of architecture at the present time were men who came from offices, and who had not studied in any architectural school. These men learned by apprenticeship and the study of old work. The present demand, however, was for public buildings—big and important structures—and that made it necessary for students to be properly taught all the recognised architectural features and details which belonged to imposing architecture. With regard to the Royal Academy schools, the speaker understood that the methods had changed a good deal since his own time, and he would regret very much if the Academy opened its doors to very young students. The right position the Academy should take was to offer opportunities to students who had studied for four years elsewhere, who would regard it as a finishing school. And with the three schools of architecture, painting and sculpture under one roof, the Academicians should try to bring the arts into closer union.

Mr. W. MILLARD said he did not understand why there should be so much said about designing at a time when students ought to be doing only preliminary work. A better method would be to make students learn the facts about a building, which they should appreciate as a structure, and then they should be set to produce it on paper. Preliminary work was not carried on long enough. Of course, in training students in an office a great deal depended upon the men with whom they worked, but the same could be said of the instruction given in schools.

Mr. H. P. G. MAULE said it seemed to him there were two sides to the question of architectural training: one was theoretical, and the other was practicability from the student's point of view. In any course of architectural work it was necessary to ascertain what was most suitable to individual students. He was delighted to see in the paper an insistence on four years' work before any higher course of training was taken up. There was great danger in trying to overdo the preliminary course. The chief value of Mr. Horsley's paper was the suggestion he held out that the body which should undertake the higher architectural training was the Royal Academy. There should be a clear understanding that the Academy did not try to carry on both the preliminary and the higher course of work. The schools throughout the United Kingdom were well able to provide the early training. The higher education certainly should not commence until the student had had two years' preliminary training and two years' office training. At the end of four years he should be capable of taking advantage of the opportunities offered in the Academy schools. He suggested that it would be advisable to codify the syllabus of the Board of Architectural Education. At present he thought it endeavoured to cover too much ground.

Mr. HALSEY RICARDO in his remarks said he hoped a

great deal from the Board of Architectural Education in its endeavour to start upon a substantial foundation, and also from the effort it made to co-ordinate all through England a form of teaching in education and training.

HOLYROOD CHAPEL.

THE Council of the Cockburn Association in their report for the past year refer to the proposed restoration of the Chapel Royal at Holyrood as follows:—

The munificent bequest of 40,000*l.* left by the late Earl of Leven and Melville to be applied towards carrying out the restoration of the ancient Chapel Royal at Holyrood was welcomed throughout Scotland as promising an end to the long period during which the chapel had been allowed to remain in a ruinous condition. Very divergent views were, however, taken as to the advisability or otherwise of attempting to restore the building to its ancient form. The Council carefully considered the matter, and after taking into account the various points of view from which restoration might be regarded, namely, sacred, national, historical and æsthetic, they came to the conclusion that the restoration ought to be proceeded with, and they accordingly passed the following resolution, copies of which were forwarded to the Secretary for Scotland, with the request that the same might be transmitted to His Majesty the King, and also to Lord Balcarres and Sir John Stirling-Maxwell, the trustees of the testator's will:—"That this meeting hails with the greatest satisfaction the prospect of the restoration of the nave of Holyrood Abbey Church. It regrets that this part of the building has so long been allowed to continue a desolate ruin, but rejoices in the prospect of what still exists of one of the most interesting buildings in Scotland being preserved from further dilapidation. Accordingly desires to record its high appreciation of the patriotic spirit which inspired the late Earl of Leven and Melville to make provision in his will for carrying out the restoration, and for the thoughtful care displayed in the appointment as architect to take charge of the work of Mr. Thomas Ross, than whom, in the opinion of this meeting, there is no person better qualified. Further, this meeting humbly and respectfully ventures to express the hope that His Majesty the King will be graciously pleased to consent to the proposed restoration." The Council have learned with regret that, acting upon a report by an English architect, Lord Balcarres and Sir John Stirling-Maxwell have come to the conclusion that the work ought not to be proceeded with. How far this decision is in accordance with the clearly expressed wishes of the late earl, or whether the course adopted by the trustees is in accordance with the terms of the will and the powers conferred therein upon them, will probably appear at a later date. As the question of what action should be taken by those who desire that the restoration be proceeded with is still under consideration, more than this cannot at present be said. The matter, however, will have the attention of the Council.

CHINESE PICTORIAL ART.

A LECTURE was delivered by Mr. Laurence Binyon of the British Museum, on the pictorial art of China, at the second meeting of the newly-formed China Society at Caxton Hall, London, on Thursday evening last. He asserted at the outset that painting was the supreme national art of China; that it constituted the central and typical expression in art for the whole of Asia, and especially for Persia and Japan. The latter country had found in China a new inspiration for its own arts. The carefully stippled drawings on rice-paper with which Europeans are familiar are not the real art of China, which rests on one of the great art traditions of the world. Compared with European methods there are great differences to be noted. Chinese paintings disregard shadows. They are essentially decorative and rely largely on a calligraphic quality of line. One of the interesting points of the subject is its great antiquity. As early as the third century B.C. we find a developed art of painting, and the artist's brush already perfected. In early times painting was executed on wood panels and walls, but of these old mural decorations no traces remain. About the second century A.D. the painting of landscape existed, and the names of individual artists of that period are still on record, while very shortly after the six canons were formulated which laid down principles of art never since abrogated. The salient point of these is that

therein fidelity to nature is entirely subordinated to the expression of abstract beauty. The great age of the pictorial as of the other arts of China was that of the Sung dynasty. With perhaps a somewhat too sweeping generalisation the lecturer claimed that the landscapes of this time expressed nature in a way that our painters have only dared to attempt within the last generation or so. One is inclined to think that Rembrandt's etching, "The Three Trees," for instance, might have been appreciated even by a Sung artist, and that it possessed those solitary and dramatic qualities to which Mr. Binyon bore witness, with an added sense of humanity, of the existence of which in Chinese art he hardly succeeded in convincing some of his auditors. He sketched the decadence of the Ming and succeeding periods, and in stating his conclusions pointed out that he had been able only briefly to deal with a continuous expression of art ranging over more than 2,000 years. Chinese art was weak in the plastic and architectural sense. The absence of the nude was a notable feature. It was lyrical and contemplative—expressive of thoughts and emotions rather than of the epic and the narrative, and was characterised throughout by a great simplicity and devotion to the abstract idea. The inevitable comparison with Japanese art was somewhat carefully minimised by the lecturer; but though it received more attention in the discussion which followed, the one important enlightening point of it was missed. For Chinese art is too formal and too ideal. The Japanese took its dry bones and vitalised them with an infusion of humanity—of the Oriental kind. And their painting extended into a variety of beautiful and diverse ways, of which Chinese painting, so far as we yet know it, gives us barely a hint.

Mr. Binyon illustrated his paper with some interesting lantern slides, and has inaugurated a study which should prove to be both valuable and fascinating. But much more remains to be done before we can arrive at the beginnings of definite opinion.

GUSTAVO GIOVANNONI AND CURVES IN PLAN IN THE TEMPLE AT CORI.*

By WILLIAM A. GOODYEAR.

(Continued from page 132.)

NEITHER Thiersch nor Hauck were acquainted with the curves in plan of the cornice, convex to the centre of the court, in the second Temple Court of Medinet Habou. These curves were discovered by Pennethorne in 1832, but he did not publish them until 1878. This was only a year before Hauck's publication, and the Egyptian curves were still unknown to Hauck in 1879. If the gable theory of Penrose required a final death-blow it would be furnished by the curves in plan of the second Temple Court of Medinet Habou, where there are naturally no gables. But the curves in plan at Medinet Habou also throw out of court the special theories of both Thiersch and Hauck, and this is why I have not explained them. It will not be overlooked, however, that the optical effect in the cornices at Medinet Habou is that of a rising curve in a vertical plane. At the angle of 45 degs. the spectator has the effect of a rising curve in elevation of an amount equal to that of the curve in plan. At points further removed the curve appears less. At nearer points the effect is greater and increases enormously on close approach. Thus on close approach the normal perspective curve is much exaggerated.

The theory of Thiersch, briefly stated, moves from the illusion which tends to affect the appearance of two lines meeting at an angle. These effects were cited by Penrose for acute angles, as calling for a correction under the gable. Thiersch, however, points out that, whereas acute angles appear larger than they really are, obtuse angles appear smaller. His arguments contend that the direction of Vitruvius regarding the construction of the curves was limited to those temples which stand on an elevated platform above the level of the eye. Thus, the Parthenon, as seen by a spectator looking toward one of the angles, would exhibit obtuse angles both in the stylobate and in the entablature (with the apex of the angle turned toward the spectator). These angles would appear smaller than they are, and as this effect decreases with the distance from the angle, the lines would appear to curve downward away from

the angle. This effect would be corrected by a rising curve in elevation. Hauck contested this explanation on the ground that the optical deflection of the obtuse angle was so inconsiderable that a correction would not be needed, but more particularly because such a correction would, in any circumstance, only be needed for the spectator looking toward the angle of the building, and would not be needed in views facing the front or sides. Hauck based his own theory on the fact that the intercolumniations of the Parthenon are smaller at the angles by about 2 feet, in order to admit of placing the corner metopes at the angles of the building, instead of placing them over the centre of the abacus, where they normally appear. This diminution of spacing gives an increase of perspective from the point of view facing any side of the temple from positions nearly opposite the centre. Hence, according to Hauck, if the perspective rising curves in elevation were not also correspondingly increased, the perspective effect of the columns would be out of harmony with the perspective effect of the horizontal lines. Thus Hauck in a sense returned to the explanation of Hoffer. For although he held that perspective exaggeration, for its own sake, would not have been in line with Greek feeling, he also held that this perspective exaggeration was properly sought in view of the contradictory effects otherwise produced by the necessary narrowing of the angle intercolumniations. As the title of Professor Hauck's monograph indicates, he supposed that the Greek curves were confined to the Doric style, in which style alone the angle intercolumniations were reduced in order to allow the triglyphs to be placed at the angles of the temple. Since that date the discovery of curves in the Ionic temple at Pergamus would have spoiled his theory, but it is also wholly unavailable for the interior curves of the second Temple Court at Medinet Habou, which are convex in plan to the centre of the court. As far as the theory of Thiersch is concerned, the openings of the obtuse angles in the interior of the court at Medinet Habou are turned toward the spectator, not away from him (as in the exterior of a Greek temple). The angle illusion, if any were produced, would therefore be a rising curve in elevation, and would thus need no correction. Although the theories of Thiersch and Hauck are no longer tenable, their publications still have great interest and importance as critiques of the theory of Penrose and otherwise.

It ought perhaps to be added that the theory of Thiersch is the only one which has ever even been offered to explain the account of Vitruvius. Although the explanation of Vitruvius has been otherwise universally discarded or (more generally) ignored, the meaning of his explanation certainly ought to be susceptible of explanation, even if the explanation be not correct. Vitruvius directs that the stylobate of the temple shall be built with a rising curve in elevation lest it appear "alveolated" (like the bed of a channel) and the curves of the entablature are considered as a mere outcome or logical sequence of the stylobate curve. Thiersch moves from the fact that Vitruvius is speaking of temples resting on a *podium*—that is, above the level of the eye of the exterior spectator—and that the effect of sagging from the exterior point of view was to be counteracted by the curve. I will venture to suggest that Vitruvius is speaking of an effect of "alveolation" for the spectator standing on the platform. It is a logical result of the laws of curvilinear perspective that all plan surfaces below the level of the eye must tend optically to "dish," that is, to appear like a dish or bowl. Aeronauts find this appearance in the earth's surface when raised above it in a balloon, for the same optical reason. The same optical laws explain the dome-shaped appearance of the sky. Thus, although the explanation of Vitruvius is certainly insufficient to cover the known facts, it appears to be a common-sense and practical explanation, which deserves recognition and mention among the many which have been offered. The explanation of Vitruvius is additionally interesting from the fact that it is not simple: the outer porticos of the Parthenon which have the stylobate curves. The entire platform of the temple is delicate: hemispherical, or, as the French would say, *bombé*.

Still another argument against the gable theory of Penrose is furnished by the Brooklyn Museum surveys of 1899. The photographs, taken under my direction, of the Temple of Concord at Girgenti, show that there are rising curves in elevation on the flanks, but no curves under the gables. Hence the curves of the flanks could not well be an afterthought derived from the curves under the gables, since the latter do not occur in this temple. This very important

* A paper read before the Archaeological Institute of America at Washington, January 2.

argument against the gable theory of Penrose has never been adequately published.

Penrose has based his argument for the derivation of curves on the flanks of a temple from the curves under the gable, from the high antiquity of the Neptune Temple at Paestum and from the supposed fact that this temple had curves under the gable but none on the flanks. Thus, for Penrose, the Neptune Temple represented the primitive type of the Greek curves, but he was ignorant that Jacob Burckhardt in his "Cicerone" has announced constructive curves in plan convex to exterior on the flanks of the Temple of Neptune. These curves were photographed for the first time by the Brooklyn Museum surveys of 1895.

From the preceding summary two results are fairly well established. First, the popular impression that the Greek curves were intended to make the lines look straight, and to correct effects of sagging supposed to be inherent in straight lines above the eye, is without authority, as far as the quoted experts are concerned, and the theory of Burnouf,* in the "Revue Générale de l'Architecture" for 1875 is too fanciful to require more than passing mention here. The second result is this. As far as Penrose is concerned, he only suggested a sagging effect under the gables at the ends of a temple as the explanation of the curves. Against this theory the following points may be urged. It has not been accepted or favourably mentioned by any French or German expert. It has been vigorously opposed by two distinguished experts in optics, and the theory of Hoffer is also opposed to it in principle. It is finally thrown out of court by known facts in Egypt and at Girgenti.

We are now able to return to the discovery of Professor Giovannoni at Cori.

Popular impressions are not so easily blighted as scientific or archæologic theories. Every man in the street who has heard of Greek curves will tell you that they were meant to make the lines look straight, and will so continue to tell you long after the publication of Professor Giovannoni's discovery. But considered as a scientific or archæologic theory the discovery at Cori disposes of the gable theory of Penrose for all time, for the simple reason that this curve produces a sagging effect in the upper horizontal line and therefore could not counteract one.

But the discovery does far more than this; it forces a revision of most of the other theories on Greek curves and widens our views regarding them to a remarkable extent. And before I take up this phase of the subject, I wish to point out the possibility that the curves at Cori may not be the only ones which are concave to the exterior even in existing Classic monuments.

Pennethorne observed curves in plan concave to the exterior in the upper entablature at the ends of the Parthenon. Hoffer explicitly described the same curves and measured them. The plan of these concave curves, with measurements, is published in the "Wiener Bauzeitung," of 1838. Hoffer described these curves in plan as beginning in the capitals, as continuing in the entablatures and cornice, but as not being found in the tympanum. They amount to about 2 inches only at the cornice. Penrose quotes the observation of Pennethorne and gives his reasons for believing the curves to be accidental. In deference to Penrose, Pennethorne in 1878 adopted his view that these

curves were accidental. The argument of Penrose is that the gaps between joints were greater in the rear than in the front. Hoffer's observation that the tympanum surface is a straight line would appear to suggest that the curves above and below it could hardly be due to accidental movement. No decision on such a head can be reached or even suggested in this paper, and the explosion which ruined the Parthenon is not to be forgotten; but it is surely worth remembering, in face of the concave curves at Cori, that concave curves in the Parthenon gable fronts were observed, measured and published in 1838 by Hoffer as constructive.

There is another observation on this head. In 1895 I observed curves in plan concave to exterior in the eastern pediment of the Temple of Neptune at Paestum, and they were photographed in 1895. This photograph shows the concave curve in the line of abaci as well as in the cornice. I have never previously published these facts, for lack of time and opportunity, but I was moved by the observation at Cori to make it known to Professor Giovannoni and to send him a photograph. This observation has been laid before the Roman Society by Professor Giovannoni at their session of November 6, 1906, and the President of the Society has been kind enough to write me a congratulatory letter on this subject. It appears to me of high importance that the curve in plan at Paestum concave to exterior should be carefully examined by experts on the site. Whatever the result at Paestum might be, the curves at Cori still remain the first conclusively demonstrated constructive curves in plan, concave to exterior, which have ever been found in the construction of an ancient monument.

(To be concluded.)

CO-OPERATIVE EFFORTS IN BUILDING.

THE true work of art, the true masterpiece of reasonable and manly men conscious of the bond of true society that makes everything each man does of importance to everyone else; the unit of the art, this house, this church, this town hall, built and ornamented by the harmonious efforts of a free people; by no possibility could one man do it, however gifted he might be, even supposing the director or architect of it were a great painter and a great sculptor, an unfailing designer of metalwork, of mosaic, of woven stuffs and the rest—though he may design all these things, he cannot execute them, and something of his genius must be in the other members of the great body that raises the complete work. Millions on millions of strokes of hammer and chisel, of the gouge, of the brush, of the shuttle, are embodied in that work of art, and in every one of them is either intelligence to help the master or stupidity to foil him hopelessly. The very masons laying day by day their due tale of rubble and ashlar may help him to fill the souls of all beholders with satisfaction, or may make his paper design a folly or a nullity. They and all the workmen engaged in the work will bring that disaster about in spite of the master's mighty genius unless they are instinct with intelligent tradition; unless they have that tradition whatever pretence of art there is in it will be worthless. But if they are working backed by intelligent tradition, their work is the expression of their harmonious co-operation and the pleasure which they took in it. No intelligence, even of the lowest kind, has been crushed in it, but rather subordinated and used, so that no one from the master designer downwards could say, This is *my* work, but everyone could truly say, This is *our* work. Try to conceive the mass of pleasure which the production of such a work of art would give to all concerned in making it, through years and years it may be (for such work cannot be hurried), and when made there it is for a perennial pleasure to the citizens to look at, to use, to care for from day to day, from year to year. Is this a mere dream of an idealist? No, not at all; such works of art were once produced, when these islands had but a scanty population, leading a rough and to many a miserable life, with a "plentiful lack" of many, nay most, of the so-called comforts of civilisation. In some such way have the famous buildings of the world been raised, but the full expression of this spirit of common and harmonious work was given only during the comparatively short period of the developed Middle Ages, the time of the completed combination of the workmen in the guilds of craft.

M. R. Brandon, of Paris, has been successful in the competition for the Khedivial Bourse at Cairo.

* Even the briefest mention of Burnouf ought not, however, to omit to give him credit for having, alone among modern authors, given the correct explanation of the *scamilli impares* of Vitruvius. Penrose supposed that the *scamilli impares* were the drums of the columns which rested on the stylobate. These drums, in the Parthenon, are of unequal height on opposing sides. Otherwise the columns resting on the curved and sloping surface would lean away from the centre of the temple. This interesting proof of the intended construction of the curves is not, however, the true explanation of the *scamilli impares*, by means of which the curves were to be constructed. Even in the second edition of his *Principles of Athenian Architecture*, published in 1888, Penrose was still ignorant of the obviously correct explanation offered by Burnouf in 1875. It is significant of the general neglect by archæologists of the subject of Greek curves that Burnouf's explanation has not even been alluded to by any other authority. Burnouf points out that *scamillus* is a diminutive of *σκάμνον*, and may be translated as "a little stool." Burnouf says *un petit banc*. These little stools were the small pyramid-shaped sighting blocks which are still used in France for levelling a line of steps or a masonry platform. If placed in graded unequal sizes, gradually increasing in height from the centre toward the extremities of the line of steps, such *scamilli* could be used for constructing a curve, and, as Burnouf says, it was as easy in antiquity to construct a curve with these implements as it now is to build to a level. He also points that such *scamilli impares* must have been used for building curves in plan.

HOSPITAL PLANNING.

A LECTURE on "Hospital Planning and Construction" was delivered by Mr. Alex. Cullen at a joint meeting of the architectural section of the Royal Philosophical Society and the Glasgow Architectural Association. Mr. R. D. Sandilands presided. In the course of his paper the lecturer traced the history of the hospital from the time it was attached to the Church, and described the different types of present-day hospitals. He pointed out that while the different types might vary in plan, yet the same general principles of sanitation were involved. The planning and construction of a hospital for infectious diseases was then discussed. The lecturer showed by diagrams how the ward pavilions should be placed on the site in order to obtain the fullest amount of sunshine. The character and use of the several buildings were described, and the lecturer urged the combining of simplicity with efficiency, as these were the essential elements in hospital construction. In planning the architect should at the outset carefully study the problem and obtain a definite and clear idea of the purpose the building had to fulfil. Then he should direct all his thought to make the plan meet the requirements. A good plan invariably formed the basis of a fine elevation, and it was possible to make a plan artistic as well as an elevation. The principal points to observe in construction and the most suitable materials to use were also fully described, and the lecture was illustrated by lantern slides.



A Durable Building Stone.

SIR,—Would you kindly allow me to inquire if some of your readers could recommend me a building stone that may be relied on to resist the atmospheric conditions of certain of our cities and industrial centres. There is not in my experience a really durable building stone on the market at a reasonable price, prompt delivery guaranteed. Some of your readers probably know a building stone, however local, that can by its use in ancient buildings or otherwise prove its reliability. Thanking you in anticipation, I am, yours faithfully,

J. J. M.

February 25, 1907.

GENERAL.

Professor Alfred Messel has been appointed architect to the Royal Museums in Berlin.

The "Blue Gown," by Mr. George Henry, A.R.A., which was exhibited last year, has been acquired for the Public Gallery of Cape Town.

The Lord Mayor has consented to open the International Building Trades Exhibition at Olympia on Saturday, April 6. Sir A. Webb, R.A. will propose the vote of thanks.

A Petition was presented in the House of Commons on Monday from the trustees of the British Museum praying for a further grant for that institution.

Architectural Designs for the Salon Exhibition (Société Nationale des Beaux-Arts) are to be lodged on March 16 and 17. Members are allowed until March 28 and April 3. Designs for the rival Salon are to be lodged on April 4 and 5.

An Earthenware Vase, containing some 300 brass Roman coins, has been found in a brick-field at Goring, near Worthing. The coins are in good preservation, but are smaller than the mould from which they were struck, and therefore do not exhibit, except in a few instances, the inscriptions. The coins are of a common Roman type, some thousands having been found along the Sussex coast.

Two of the Niches in the great altar screen in Southwark Cathedral have been filled by Mr. W. A. Bell's gift of figures of Peter de Rupibus, who in 1207 erected the Early English nave, and of St. Olaf, who delivered London in 1008 from being sacked by the Danes.

The Lancashire Education Committee have approved of plans for a new day school at Great Harwood, to accommodate 900 children. The building will be of two storeys, and the school will be in three departments, one of which will be for manual instruction and domestic work. The estimated cost is 16,000/.

The University Court of St. Andrews met on Saturday, and it was reported that Mr. R. S. Lorimer, A.R.S.A., had prepared plans for the addition to the buildings of the library to be erected at the cost of the fund gifted by the rector, Mr. Andrew Carnegie, LL.D., for that purpose, and the court directed that specifications on the basis of these plans should be prepared with a view to arranging for the building being commenced as early as possible.

A Question was asked in the House of Commons on Tuesday whether the number of Royal Academicians could not be increased, as hardship arose from the difficulty of election. The Chancellor of the Exchequer, in reply, said that the Government have no control over the Royal Academy, and therefore his right hon. friend could hardly undertake to make the representations suggested in the question.

The Exhibition of paintings by distinguished Danish artists will be opened at the Guildhall Art Gallery on Tuesday, April 9. Among the contributors of pictures to the exhibition are Queen Alexandra, the King of Denmark, the Czar of Russia and the representatives of the late King Christian of Denmark.

The Report of a sub-committee having been considered at a meeting of the Lord Provost's committee of Edinburgh Town Council, it was decided by eight votes to five, after hearing a deputation from the markets committee asking for reconsideration, that the new art school should be built as a whole and not in sections.

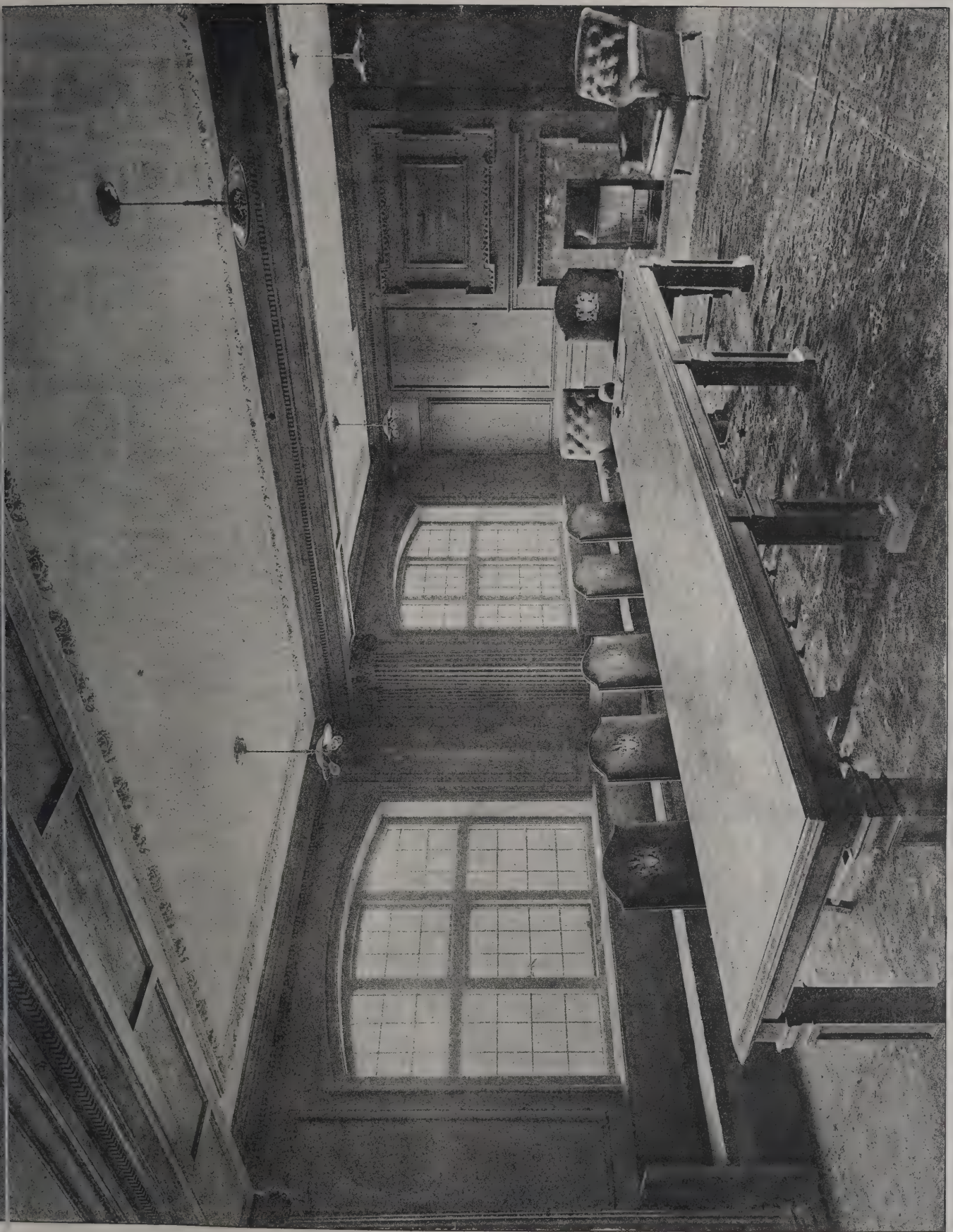
The Libraries Committee of Glasgow Corporation report that, in consequence of extensive remains of old buildings having been found embedded in the site of the new Mitchell Library in North Street, the new foundations will require to be carried to a greater depth than was originally expected, and as the character of the strata at the greater depth is less satisfactory than was indicated by the trial pits which were sunk to ascertain the nature of the subsoil, the concrete foundations are to be increased in breadth so as to prevent any possibility of settlement when the building is erected.

The Liverpool City Council have adopted by a large majority a proposal of the finance committee to celebrate the 700th anniversary of the grant of a charter to Liverpool by King John, and making an additional allowance of 2,000/ to the Lord Mayor.

The Scottish Faculty of Advocates have formally approved of the plans which have been submitted by the Treasurer for the extension of the Court of Session. According to the scheme the number of courts will remain as at present. An entirely new large court-room will be built to the south of the present structure, but one of the existing outer house courts will be abolished to make room for a passage leading to the new block of buildings. Part of the space thus saved will be utilised in extending the present eastmost court. Increased accommodation for judges and jurymen will also be provided. The estimated cost of the work is 22,000/. Nothing can be done until the estimate has been passed by Parliament.

The Stockport Town Council held another meeting in committee last week for the purpose of considering the revised Kinder waterworks scheme. It was decided to proceed with the excavation of the remaining portion of the tongue trench, and to make such trial holes for the win trenches as may be considered necessary by the engineers. The cost of the work, which is to be carried out by administration, not to exceed 12,000/. Messrs. Hill & Sons, the engineers, were instructed to prepare as rapidly as possible the plan for the earth dam. The question of appealing in the case of Kellett v. the Corporation, in which the plaintiff was awarded 52,546/., including 29,400/ for breach of contract, was also brought forward, and the waterworks committee were asked to consider the matter and report the opinion.

The Council of the Society of Arts are prepared award, under the terms of the Benjamin Shaw Trust, gold medal or a prize of 20/. The medal is to be given "For any discovery, invention, or newly-devised method for obviating or materially diminishing any risk to life, limb, or health incidental to any industrial occupation, and previously capable of being so obviated or diminished by any known and practically available means." Intending competitors should send in descriptions of their inventions not later than December 31, 1907, to the Secretary of the Society of Arts, Adelphi, London, W.C.



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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: CITY LANDS ROOM.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

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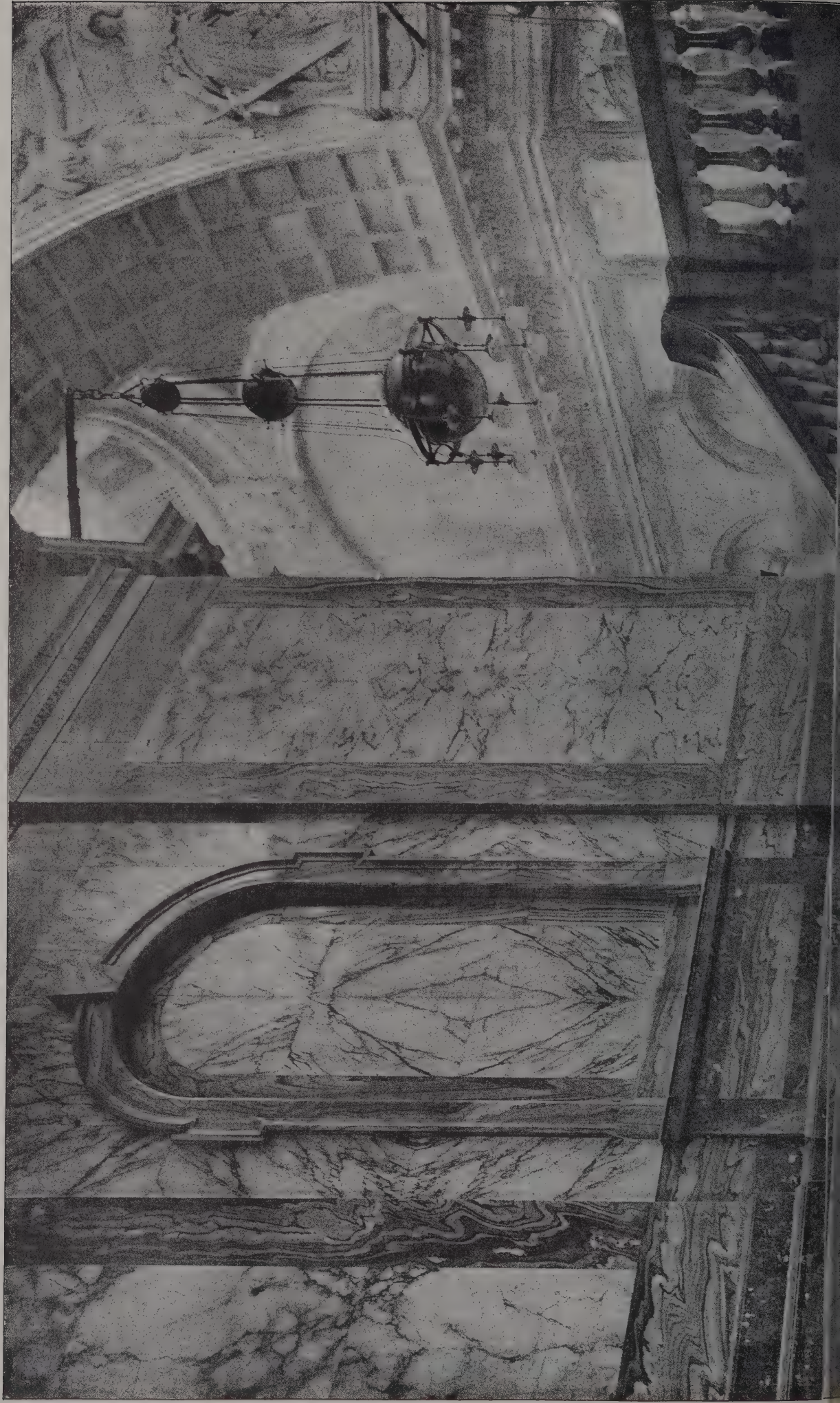
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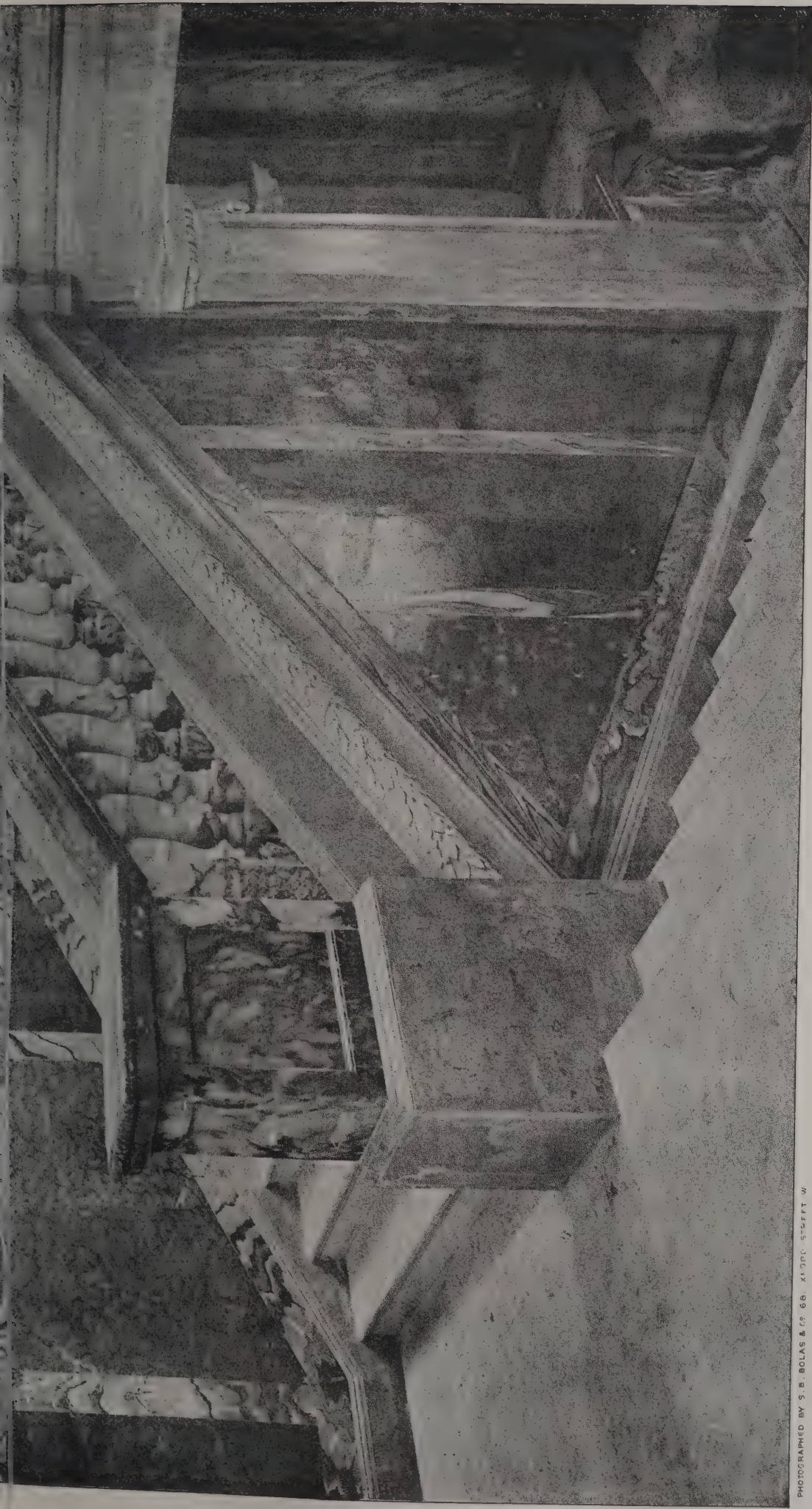
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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: No. 1 COURT.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

The Architekt, Mar. 1st 1907.





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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: STAIRCASE.
E. W. MOUNTFORD, F.R.I.B.A., Architect.

The Architect, Mar. 1st 1907



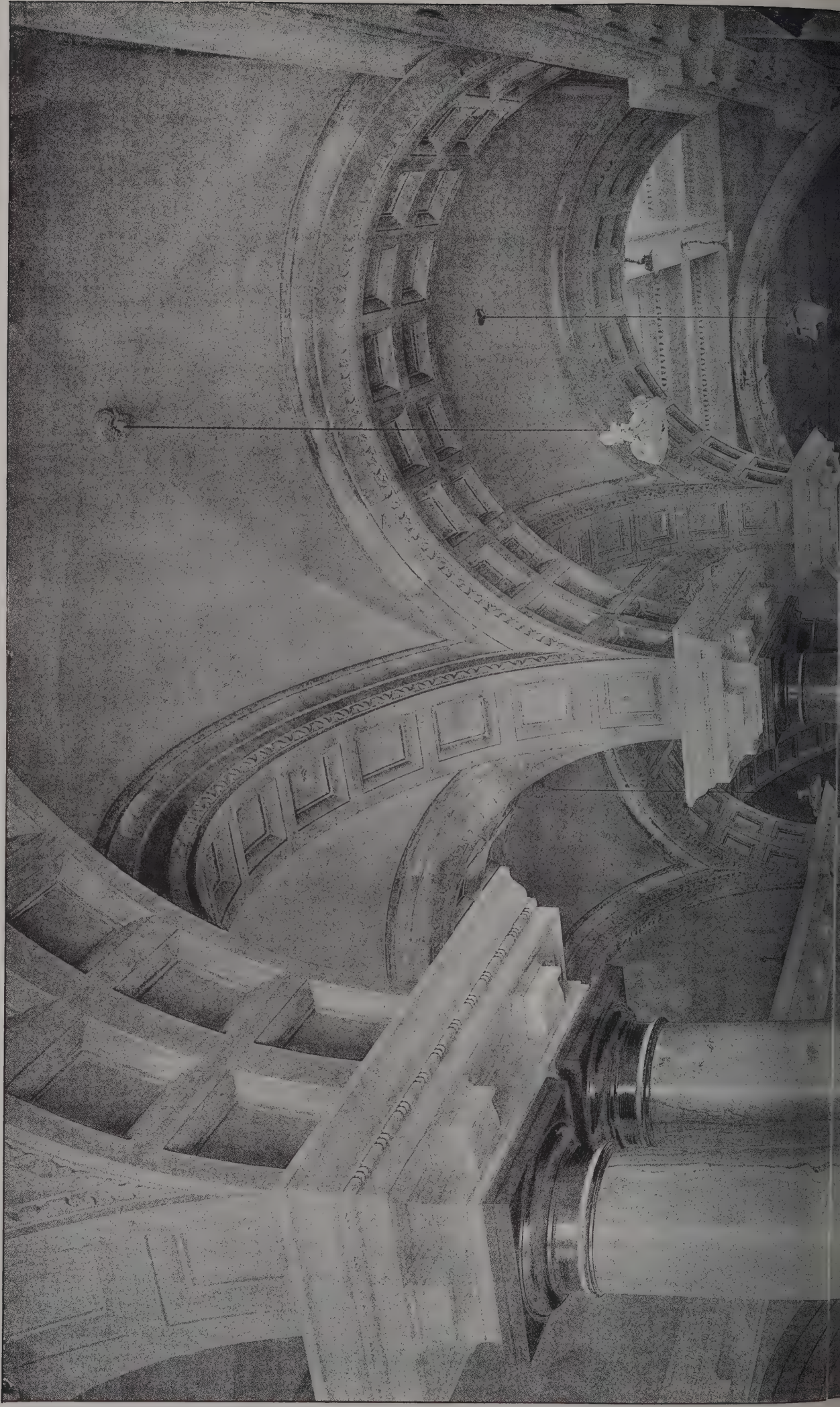


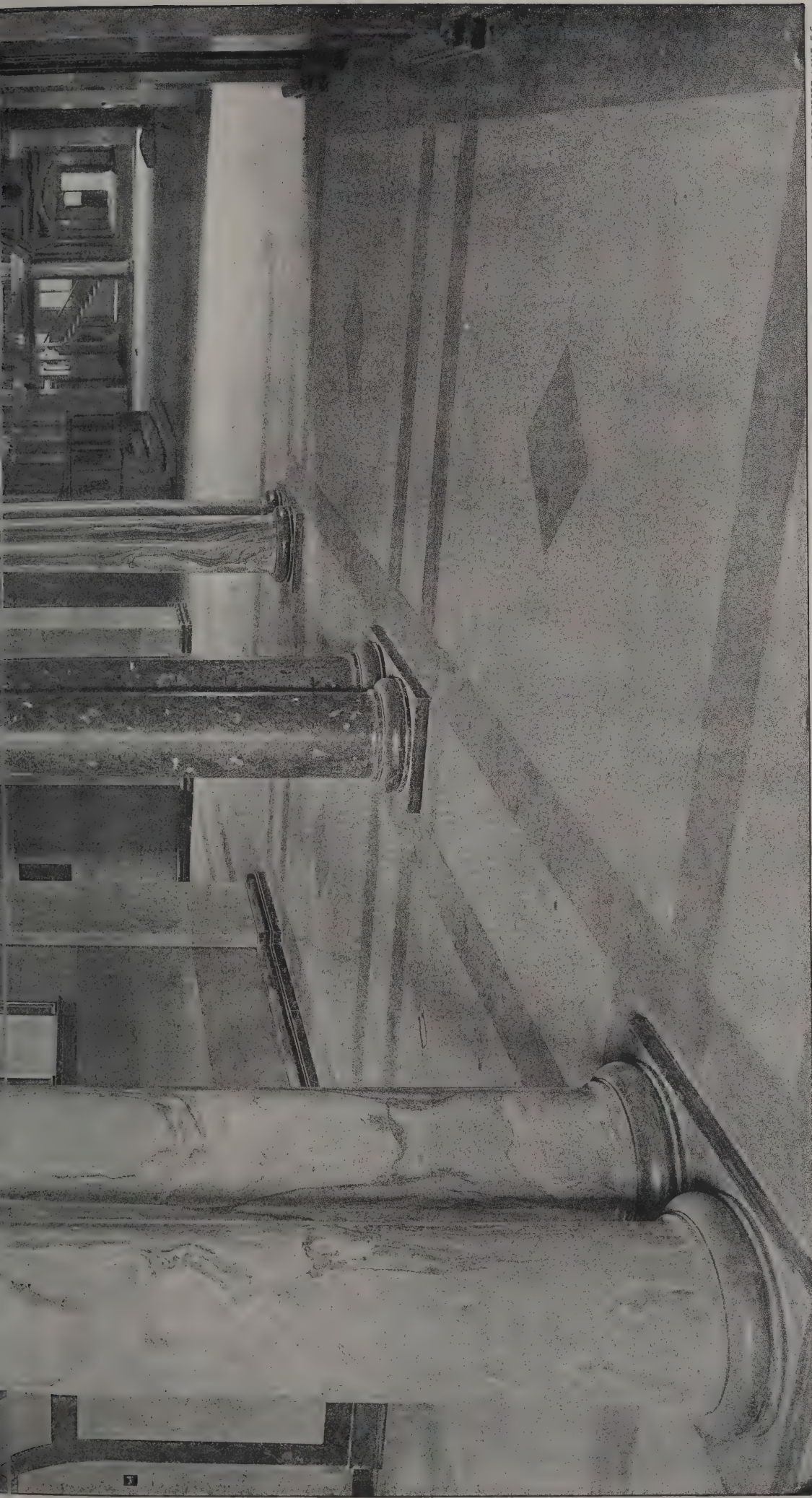
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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: DETAILS UNDER DOME.
E. W. MOUNTFORD, F.R.I.B.A., Architect.

Ohio Architect, Mar. 1st 1907.





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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: CORRIDOR, GROUND FLOOR.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

The Architect.

THE WEEK.

WHENEVER a misdeed can be ascribed to an architect, he receives scant mercy from journalists. The outcry against the late ALBERT THOMAS is an instance. The unfortunate man was one of the architects of the French Government, he was an officer of the Legion of Honour, and until two years ago he had charge of the Grand Palais, part of which was erected from his design. He had obtained the Prix de Rome in 1870, and for many years he was much respected. Unfortunately, of late years he was affected by a common form of mental disease—kleptomania. Finally, he became paralysed, and in that state he had no recollection of what he had done. From his official position he was allowed access, not only to the national archives, but to the collection in the Ecole des Beaux-Arts. M. LESOUFACHÉ, the architect, had enriched the latter with drawings and engravings of eighteenth-century architecture, including original drawings by BLONDEL. M. THOMAS, either with or without permission, was allowed to take many of the volumes and portfolios to his own house. Having temporary possession as if they were his own property, he cut engravings from the volumes to which they belonged, in order to arrange them on a different plan. After the death of M. THOMAS a part of his library was sold, and the bookseller who purchased them was not long in perceiving that some books were national property, and returned them to the library of the school. Madame THOMAS made a further search and discovered thirty-nine other volumes, which were also returned through the agency of M. BONNAT, the painter. An official inquiry is now in progress. M. THOMAS was a candidate for election to the Academy of Fine Arts, and it is not to be supposed that any sane man who was ambitious of that distinction would run the risk of robbing an institution which is so closely connected with the same academy. His mania for acquiring things was latterly so strong that he took possession of an iron gateway and, as one of his friends remarked, he would have carried off the two towers of Notre-Dame if the task were feasible. Architects have no immunity from psychological degeneracy; they must share in the common lot; and when so distinguished a representative of the profession as the late M. THOMAS lapses, his fall should give rise to pity rather than to the creation of landers.

At one time the question whether a ladder was a "scaffold" under the Workmen's Compensation Act repeatedly arose in the county courts. Another instance had to be considered in the Preston County Court on Tuesday. The widow and children of a plumber who was killed in December by falling from a ladder sought compensation from Messrs. WILDING & SON. The man was engaged in cleaning a gutter of a house and descended the roof from which he fell. The repair of the gutter was accomplished by another man who stood on a ladder which he considered to be necessary. It was contended on behalf of the defendants that cleaning a gutter was not repairing a building within the meaning of the Act, and the ladder was only required to enable the man to reach the roof for the purpose of examining the gutter, and therefore was not a scaffold. Judge JAMES HAMILTON decided that the building was being repaired, that the ladder served as a scaffold, as the working could not be carried out without it, and that the claimants were entitled to 225% compensation. The Court of Appeal has already decided that it was a question of fact whether scaffolding was employed. If anything served that purpose and was a support the right of the workman came in, and he was entitled to compensation.

THE new municipal art school of Edinburgh is to be erected on the site of the cattle market in Lauriston, which is not far from Heriot's Hospital. The market is a source of profit, and the city has been enriched by it during the last ten years to the extent of 38,000/. To eject the dealers all at once in order that the school could be erected under one contract would not be a wise proceeding, and a discussion on the subject occupied some time at the last meeting of the Town Council. The Lord Provost considered that not only would it be more convenient to have the new buildings erected at one time, but it would be breaking faith with the Government if the arrangements were not completed by March 31. The market committee considered that if one-half the buildings were undertaken, that would show the intention of the Council to avoid delay, but it would also allow of some business being transacted in the cattle market. It was also declared possible to accept the whole estimates for the school and to arrange with the contractor for the erection of the buildings in two sections. Thirty members agreed in favour of a partial retention of the market, while only seventeen agreed with the Lord Provost's proposal to have the work carried out in its entirety.

THE earthquakes at San Francisco and at Kingston have caused much alarm among some of the American insurance companies. There is no question that clauses were found in policies by which the offices expected to escape earthquake liabilities. But it was observed by a judge in the Californian Court that ordinarily we do not look for ellipses in insurance policies. An ellipsis is suggested here to be supplied by reading in antecedent words. Whether it was so made intentionally and the clause left in obscurity for ulterior purposes, or accidentally by inaccuracy of statement, neither of which we have the right to assume, the fact remains that the most important clause in the whole policy is left sufficiently obscure to render it in marked contrast with the other clauses, which limit liability by the use of apt and appropriate words." The belief is becoming more general that earthquakes may be anticipated as a possibility in a much wider region than was hitherto recognised as volcanic. The way to meet the contingency would be through an increase of insurance rates. But the competition between offices is too intense to allow of much addition to the former rates, and in the United States especially the usual charges do not provide for catastrophes.

FROM the report of Consul-General ROLFE it appears that much discussion took place after the eruption of Vesuvius as to the desirability or otherwise of rebuilding the destroyed towns, as it was thought by many that it would be better to select a site in the plain further away from the mountain and with greater railway facilities. This plan met with strong opposition from the population, who insisted upon actual rebuilding of their old houses. They consequently set to work, and it is astonishing to see with what rapidity these towns are being rebuilt, and it is more surprising still to see a number of new houses springing up in the immediate vicinity of the Ottolano station, where the destruction of the adjacent houses was as wholesale as anywhere. In fact the close of 1906 saw a very large portion of the inhabitants installed again in their old homes, so that it is safe to predict that in the course of a year from date of what appeared to be their absolute destruction both Ottolano and San Giuseppe will rise again from their ashes. The disastrous eruption of Vesuvius and the continuance of the Calabrian earthquakes have not only had the effect of swelling the tide of emigration to the extent of depopulation in some cases, but have effected the curious change that the agricultural population of the central provinces is migrating to the south in search of work.

IN THE YEAR 1707.

THE year 1707 could be shown to possess great importance for Great Britain by a political historian. Among the events was the completion of the union with Scotland, which in many ways, unlike that with Ireland, has been a reality. It was also in 1707 that important military events took place in Spain, in which England bore a part. In the history of literature the birth of HENRY FIELDING was suggestive of the opening of a wide field in which Englishmen have gained success. But our task is to mention some occurrences which are usually passed over in all accounts of the time.

CHRISTOPHER WREN was then a high official. In January we find him reporting to the Lord High Treasurer concerning the removal of the secretary's office in the Cockpit from the ground floor to an upper floor. The building was then one of the principal seats of office, but it was not originally arranged for the purpose. WREN not only made suggestions about carrying out the desired alterations, but he prepared designs and proposed that as danger might arise to the letter books and other documents, it would be wise to preserve them in portable presses. Another time we learn that WREN was in consultation with the Speaker about the enlargement of the House of Commons, and recommended that the difficulty could be overcome by having an additional row of seats in the galleries, which would not cost more than 270*l.* It is evident that he was no less efficient when dealing with small matters than with great architectural works. Another report of WREN's related to the dues charged on Portland stone. For every ton of stone shipped at Portland, unless it was to be used for royal palaces or stated Government buildings, a duty of 12*d.* per ton had to be paid. The islanders received 9*d.* for the poor, and the receiver of land revenue for Dorsetshire took the remaining 3*d.* The duty was levied on all the stones used for St. Paul's and the Chelsea College. Some quarries appear to have been granted to the Dean and Chapter of St. Paul's, and WREN was empowered to give licenses to quarrymen for working them. But for stone taken from their quarries for other purposes the Dean and Chapter were entitled to 6*d.* a ton. From a second report it is evident that some of the quarrymen were not disposed to recognise QUEEN ANNE's right to the whole of the quarries, for new ones were opened without permission. WREN accordingly appealed to the Lord High Treasurer asking him to lay the matter before the Attorney-General, in order that such a course might be adopted as the law allowed. WREN explained that as the quarries yielded much larger and finer blocks of stone than were to be found elsewhere, great care had always been taken to preserve them from waste and to prevent abuses by irregular working.

A report by JAMES MONTAGUE places the Portland case in a somewhat different light. According to that official the duty of 12*d.* had been paid time out of mind, one moiety going to the king or queen as lord of the manor, while the other went to the profit of the inhabitants. In 1665 CHARLES II. altered the arrangement, and only 3*d.* went to the Crown and 9*d.* to the inhabitants. It was said that WREN, in ordering the stone for St. Paul's and Chelsea College and the new churches in London, did not announce that the stone was for the Crown, and therefore the inhabitants received 9*d.* a ton for their own benefit. MONTAGUE considered that the payment should be continued, and that WREN had no authority for believing that stone which was not employed in Crown buildings should be exported duty free. Apparently MONTAGUE thought that the old practice of the inhabitants was preferable to any of WREN's innovations.

The strangest of all the reports which WREN wrote during the year related to an engine which ejected an inflammable liquor. In less than a minute the stream of fire burned an old door very furiously which was at some distance, and would soon have consumed it if the

engine was not so small and contained little of the material. WREN considered the design might become useful to the public, but whether in peace or war was not explained. A grant of 200*l.* was allowed towards the preparation of a larger engine.

At that time the importance of the Navy was shown by the necessity of conveying troops to Spain, where the War of Succession was raging. The Forest of Bere was Crown property, and the warden proposed to cut down 300 trees for the use of the Navy. WILCOX, an official who was much employed in connection with the forests, was asked to report on the subject. He stated that the warden contemplated selling the trees to the Navy for his own advantage. Probably in doing so a common practice was followed. The Commissioner of the dockyard at Portsmouth, on the other hand, wished to have the trees felled at once. He contended that all timber which was to be converted for shipping, and which was cut when the sap was in the tree, not only decayed itself but also the timber that was next to it. The value of Dover Haven as a refuge had been demonstrated. One hundred ships and vessels had taken sanctuary in it, and had been preserved from the fierce storms as well as the enemy. It was pointed out that ships of 500 tons could be received and kept afloat, that it had become "water borne" instead of a dry port. The expenditure of 3,370*l.* to repair the damage done by the great storms was therefore implored.

Liverpool will shortly be celebrating its antiquity, and one feature will be a representation of Liverpool Castle. In 1707 the mayor, bailiffs and burgesses petitioned that two warrants granted by CHARLES II. for demolishing the castle should be acted on. Some persons had obtained a lease for fifty years of the old buildings. But they refused to comply with the conditions, and it was resolved to eject them. In 1649 an Act was passed that all the royal palaces should be sold. The palace of Richmond was one of them. After the Restoration it was reclaimed. In 1707 one of the buildings was occupied under lease by the Countess Dowager of WINCHILSEA. One ALEXANDER CUTTING, who had bought the adjoining property, was rendering the house useless and the Countess sought relief. The Lord High Treasurer had then more important business in hand, and her Ladyship was informed that the matter would have to be determined by law.

The union with Scotland imposed additional work on many English officials, but most of all on those connected with the Mint. Sir ISAAC NEWTON was then the master, and he was called upon to prepare reports and give instruction about dies and other things connected with the processes of coining. It seems remarkable that among the men consulted was the professor of astronomy at Oxford. The reports from Scotland revealed that the English civil officers were regarded as enemies of the inhabitants, and their lives were in danger.

One curious charge was made during the year in relation to the castle of Beaumaris. It was erected by EDWARD I. at the end of the thirteenth century. At the time of the Civil War it was held by the Royalists but had to surrender. Several members of the BULKELEY family acted as constables. A charge was raised by one of the officers of the Surveyor-General's Department that Lord BULKELEY, who then filled the office, had removed lead and timber as well as the best hewn stones from the castle and had used them in building of his own. It was stated that the house occupied by the local member of Parliament was erected from the materials, and there were several others constructed at a later time. Lord BULKELEY said his ancestors for hundreds of years had been constables of the castle, and as the fee they received was only 40 marks a year the keeping in repair of the castle was not contemplated. It was believed that after the Restoration all the castles in North Wales were ordered to be demolished. The castles of Flint, Conway, Carnarvon and others were also ruinous, and the materials had been converted

ivate uses. Lord BULKELEY declared that Beaumaris castle was never finished, and the only habitable apartment was completed at the expense of his great-grandfather, who for his loyalty was imprisoned in it. His lordship, however, admitted that he had employed some of the loose stones to finish a building. He also removed several tons of lead to prevent the castle from falling, but it was laid up in a cellar. The officials did not accept the defence; and the transaction shows that the eighteenth century ancient buildings, ecclesiastical as well as secular, required to be protected against their appointed protectors.

The War of Succession in Spain was sufficient to monopolise all the attention of Englishmen. It was in 1707 that Lord GALWAY, the British commander, lost 8,000 men and all his baggage and artillery at Almanza, and that event was sufficient to excite alarm. It was not to be expected that much attention would be given either to literature or art. Indeed, there were not many native artists at the time. VANBRUGH, FRANCIS BIRD, and JAMES THORNHILL, HENRY HOWARD and a few others exhausted the list. But enough was done, especially in architecture, to aid in the revival of the other arts, and it was WREN's desire to make St. Paul's representative of all the fine arts, and if he did not succeed the cause was to be found elsewhere.

THE OLD GOVERNMENT SCHOOL OF DESIGN.

By A STUDENT.

BEFORE making up my mind as to the propriety of publishing an account of two years passed in the drawing and painting classes at Somerset House, Strand, from 1850 to 1852, I felt doubtful whether a chronicle of the kind could be of much interest to the student of to-day. Although the school is occasionally referred to, yet the inner working is passed over, and a record of actual experience may therefore have a little interest for modern students.

The classes at Somerset House had not been in existence many years when, at the age of 14, began my artistic career as a student. My father doing business with many artists, from my infancy my surroundings were artistic. Some noticed and encouraged my puerile efforts, among them JOHN WYKEHAM ARCHER, F.S.A., and GEORGE LANCE, the Painter, his brother-in-law. Having watched my progress, they recommended me for a seat at the old school, which I took with mingled feelings of delight and doubt on May 16, 1850. My father said to me:—"You have now obtained what you desired, and will go on the right road, and must forget your early unmethodical ways."

At first I found copying various symmetrical curves springing from a central stem was not very exhilarating, but I persevered, and between the hours of 10 and 4 got through sufficient work of a commendable nature in the elementary class in three months to permit my passing up to the great room.

At this time the elementary class was held in a room on the ground floor west of the entrance from the Strand, and was conducted by WALTER R. DEVERELL, who was one of the pre-Raphaelites. The advanced classes were held on the top floor. The modelling-room, with casts from the antique, both figure and ornament, was conducted by Mr. TOWNSEND. The great room, which extended from the Strand to the courtyard, had previously held the Royal Academy's annual exhibitions, and a fine engraving exists showing Sir JOSHUA REYNOLDS conducting King GEORGE III. through the gallery, ear-trumpet in hand. The head-master, J. R. HERBERT, R.A., afterwards gave way to RICHARD BURCHETT, who held the position during the development of the schools up to his death. RICHARD REDGRAVE, R.A., also visited us. The other masters were Messrs. DENBY, RICHARDSON and HERMAN. The lecturer

was RALPH N. WORNUM, afterwards keeper of the National Gallery. The attendants were, curiously enough, all Scotsmen—COMYNS, IMRIE and MACDONALD. The rotund hall porter, BAUCUTT, with whom the students traded for paper, pencils, &c., was a well-known character, and very useful when drawing materials were suddenly called for. Those required by the senior students in the production of designs for manufacturers, &c., were provided by the Department, and supplied by ROBERSON, Long Acre.

Amongst the students, nearly all of whom I clearly remember, a few, naturally, take precedence for the work they performed then and afterwards. Although he was not a senior at the time, I mention the name of WYKE BAYLISS first, because he subsequently received the honour of knighthood. He was a prominent member of "our set," and could advance his opinions without fear. His personality was striking. On one occasion he told us he would draw a sphere in such a position that the outline should be an ellipse. Of course, we denied his assumption. To prove his words, he placed an ivory ball between the glazed window and protecting bars of the baize door at the top of the stairs, and standing on one side made the picture plane oblique instead of perpendicular to the line of sight, much to our amusement and a little disgust. It was a trick, of course. FREDERICK PEPYS COCKERELL was somewhat exclusive in his manner. His work was produced in the modelling-room, where I believe he made a special study of the casts from the antique it contained. To draw the human figure correctly should be the desire of the architectural student. No buildings of importance are complete without the aid of the sister art of sculpture, which should not be treated as a separate study; it should go hand-in-hand with architecture. The latter appears bald and incomplete without carved embellishment. Fancy the De Medici chapel denuded of its sculpture. At the present day we have a redundancy, but very often lacking purity of design or careful execution. The late Professor COCKERELL (FREDERICK's gifted father) was a master of sculptural design; the pediment of St. George's Hall, Liverpool, contains figures designed by him. That architecture is enhanced by judicious sculpture is well understood by our French neighbours.

A prominent designer at this time was C. P. SLOCOMBE, who had, amongst other work in hand, a piece of tapestry intended for presentation to Lord DUDLEY STUART, for his laudable services on behalf of the Poles. It was very elaborate, and so far as I can remember contained heraldic devices. Mr. SLOCOMBE was afterwards one of those who helped to revive the art of etching, and his plates are admirable. The next that recurs to my memory, CHRISTOPHER DRESSER, a hard-working energetic student, was clever in copying the plants, flowers, &c., that were sent from the Royal Botanic Gardens at Kew every Monday for our use. He made many studies in pencil or chalks on tinted paper. As Professor DRESSER's books on ornamentation are well known I will leave my pleasant friend for an architectural student, A. A. ALDERTON, who achieved success by his careful perspective drawing of a Greek temple, the Parthenon, I believe. Under Mr. RICHARDSON, the architectural master, and Mr. REDGRAVE, R.A., who assisted ALDERTON in the colouring, he turned out a fine drawing. A son of HENRY WEEKES, R.A., was with us. "FRED" WEEKES and PAUL JERRARD, son of the Strand printseller, were inseparable, but no remarkable work from them at this time occurs to me. There was, however, one student who came as a meteor amongst us and remained but a short time. His name was POWELL, and we heard he had studied at the Paris School of Fine Arts. His abilities were exceptionally good, and he was perfectly at home at figure-drawing. I remember him chiefly for the accurate portraits he took of his fellow students in spare time. I have mine by me now; it is exquisite for delicacy of touch and pure outline. I have also a head of a bearded man by him with turban highly

shaded that might be taken for work of an old master. Of his subsequent career I know nothing, but have heard that he was unfortunate and died young. There were very few branch schools at this time, and some of the students were trained for masterships of those which were to be opened. Among them, HODDER went to Edinburgh, ARMITAGE went to Islington, and "little" LOCKE sailed for Calcutta. The last was a great favourite with us. It was suggested that I should adopt teaching for my vocation, but as time went on a strong partiality for architecture led me to think it was my proper and natural bent.

I copied the best examples of PALLADIO and SCAMMOZZI with ancient Greek Doric that formed the school stock. My drawings were highly tinted, and I also made a perspective view of the Temple of Diana projected from geometrical drawings. But previous to joining Mr. RICHARDSON'S architectural class I had gone completely through the course of linear perspective under Mr. BURCHETT, and he gave me a task that had not been attempted before. There was a set of very fine plaster casts of the entablatures and capitals of the "Five Orders." I made measured drawings of that in the Corinthian style, from which was produced a perspective view. The cast was then hung up by a window overlooking the courtyard, receiving the south light. I shaded my outline in sepia, highly finished. This effort needed patience, but I was rewarded by obtaining the National Medal for it and the money prize in addition.

Reverting to my contemporaries, there were amongst us a few who were evidently possessed of independent means, and resorted to the school for recreation and to fill up time; but for the most part students came to work with a view to making art, in the form best suited to their several capacities, the means of livelihood in the future. Two were deaf mutes; one took up copying the painted ornamental pilasters at the Vatican, and produced excellent examples. A student named CUTHBERT was a proficient draughtsman, and one of those who afterwards assisted Professor SEMPER in designing the funeral carriage of the Duke of WELLINGTON when the school, under the new designation of "School of Practical Art," was being removed from Somerset House to Marlborough House.

The methods practised when I was a student may have since given way to a new order of things. I only speak of the system at the old school. Before doing so the saying attributed to MICHEL ANGELO, "Learn to sketch before you finish," is brought to my mind. It is my opinion that progress in drawing must necessarily vary with the temperament of the student, and that where one would sketch an idea at first another would wish to exercise painstaking care. TURNER in his early drawings was remarkable for his careful details, and evidently possessed that "infinite capacity for taking pains" which is a characteristic of men of genius. His later works were free from excess of minutiae, and broadly treated even to slovenliness, but the effect of greater detail was there. The writer thinks that this is the natural technical evolution, at any rate it was so with us, and the highest accuracy and neatness were required. Youth is the best time for carefulness, and painstaking methods bring success in their wake.

The day classes were open from 10 to 4, as previously stated, but a brief interval was allowed at midday for a "snack." In fine weather I with one or two others went for a ramble in the neighbourhood, combining recreation with a study of ancient buildings.

Keeping out of the Strand whilst munching our sandwich we explored the Temple with its early circular church and cross-legged knights, saw the grave of GOLDSMITH and Fountain Court, thinking of TOM PINCH and his sister RUTH, or sometimes looked into the veritable Roman bath with its vaulted roof and icy-cold water. Somerset House itself was carefully examined and the refinement of Sir WM. CHAMBERS'S detail admired. By-the-by, how sound the masonry

keeps; it is perhaps the best preserved in London. There was a legend with us that a workman fell from a scaffold at the south-west angle of the courtyard, and was saved from coming to the ground by his watch chain catching a timber, thus breaking the fall, and the watch dial was let into the joint of the rustication to record the event. I may be in error, but have the impression that the dial was there when I was a student, but on a subsequent visit I could not notice it.

On October 30, 1851, LOUIS KOSSUTH, the Hungarian patriot, was entertained at the Guildhall, and had to pass along the Strand on his way. To honour the eloquent man a flag was to be displayed from the middle window of our great painting-room, and the work of adjusting the flagstaff with pulley and line was completed about the time of the departure of the students homeward. But the spirit of fun entered into the brains of the more electrical of us, and a broom was attached to the cord and swung over the Strand, gently at first, and withdrawn into the room; but the bolder spirits of the school were not satisfied with this, so the household utensil was again exhibited to public gaze, but with an unpleasant result. Whether purposely or by accident, the line was allowed to slip and the broom was suspended over the heads of the people. The workmen were recalled, when the staff was taken down and readjusted, and the flag hung in time for KOSSUTH to pass beneath it. A great crowd had gathered and was much amused, some wanting to know if the national property was for sale. I did not actively participate in this frolic, but I saw it done.

As a Government institution, the school possessed certain privileges accorded us, and we were allowed to attend functions that were very agreeable. For instance, on July 2, 1850, we were present at the fête of Scottish Highland games held in Holland Park, Kensington, where I saw the Nepaulese Envoy resplendent with his jewelled costume. Again, I witnessed the funeral procession of the Duke of WELLINGTON on November 18, 1852, from the garden at Marlborough House, facing St. James's Park. At this period the school was about to take up its quarters in this historic mansion, and there I joined the class for building construction. But reference to these studies would not properly come under the head of this chronicle.

On July 16, 1852, HENRY COLE, afterwards K.C.B., or "FELIX SUMMERLY," as he was familiarly called, presented awards of merit to the successful students, on which occasion I received the National Medal for Linear Perspective, but the inscription upon it and the case in which it is enclosed reads, "School of Practical Art," the new designation for the old school, my *Alma Mater*. Three prizes for other subjects, value 3*l.* 10*s.*, were also awarded to me. Under date May 17, 1852, my journal relates that "The QUEEN visited Marlborough House in the morning privately to inspect the work of the students." Her late Majesty took interest in the progress of the school and encouraged us on more than one occasion.

I stop here. I regret if I should have failed to adequately interest the reader. On the other hand, I have derived pleasure by recalling some of my happier days.

OLD HALIFAX.*

THE general reader is not supposed to care much about the history of buildings, and accordingly in Mr. LING ROTH'S large volume the part on "The Yorkshire Coiners" comes foremost, and is most prominent in the title-page. To the student of social life it may appear strange that in the latter half of the eighteenth century the crime of coining prevailed in the

* *The Yorkshire Coiners, 1767-83: and Notes on Old and Prehistoric Halifax.* By H. Ling Roth, Hon. Curator, Bankfield Museum, Halifax. With numerous illustrations and chapters of "The Making of Halifax," by John Lister, M.A., and on "The Blackheath Prehistoric Circle," by J. L. Russell. (Halifax: F. King & Sons, Ltd.)

neighbourhood of Halifax; and for taking part in it several men were executed, while others were whipped. Enthusiasts of numismatics and archæologists would do well to remember that the practice was not confined to coins of the realm. In 1775 a chest containing nearly a hundredweight of Roman silver pieces was found in a field near Bingley. Pewter and copper vessels were stolen in order to imitate them. The first attempts were not successful, but counterfeits in block-tin and pewter which were made with care were accepted as genuine Roman coins.

The notes on Old Halifax are likely to possess much more interest for architects. The name remains a puzzle. According to CAMDEN it was derived from the possession of relics connected with the "Holy Face" and the "Holy Hair." But there is no acceptable record of any kind to support that theory. It is believed that "Feslei" in Domesday Book was the name of the district at the time of the Conquest. When the Survey was made there was no church at the place. It is supposed to have formed part of the lordship of Wakefield, which was granted by HENRY I. to Earl WARREN, and by the second Earl the church of Halifax—*Ecclesiam de Halifax cum suis pertinenciis*—was made over to the Cluniac priory of St. Pancras at Lewes, in Sussex. Although few traces of that church and convent remain, there is no doubt the priory was one of the greatest in England. It was claimed for

Halifax parish, largely assisted, doubtless, by the gifts of the monks, led to the rebuilding, or partial rebuilding, of the church in that geometrical order of architecture transitional between the Early English and the Decorated styles. Of this building, unhappily, but a fragment of its northern nave wall, and two double-light windows in that wall, one in a later wall, and the inner doorway of the north porch, remain. Nor are we able to determine with any certainty the dimensions of this thirteenth-century church.

Halifax possessed an agent of another kind that was supposed to deter men from evil ways. Writers about the guillotine trace its history as if it were an evolution of the Halifax "maiden" or gibbet. Whether the machine was introduced as part of the custom of "infangethief" or was a peculiarity of Halifax cannot be determined. The general belief is that it was introduced for the protection of woollen manufacturers against thievish workmen. TAYLOR, the water poet, says of it:—

At Halifax the law so sharp doth deal,
That whoso more than thirteen pence doth steal,
They have a gin, that wondrous quick and well
Sends thieves all headlong into heaven or hell.

Whether general or not, the gibbet was used in Halifax for a longer time than in other places. But it is remarkable that the rope was preferred elsewhere to the axe which was allowed to fall from a height.



THE MULCTURE HALL.

Drawn by H. R. Oddy.

GONDRADA, who had a share in the gift, that in introducing the Cluniac monks she was civilising the English church—*Intulit ecclesiis Anglorum balsama morum*—and Mr. LISTER considers it was an advantage to Halifax to be closely connected with the priory of Lewes. He says:—"For one thing it brought our forefathers into touch with the southern and at that time more progressive and cultured part of the kingdom, and the development of the resources of their estate in the north was a matter of material interest to its monastic lords." Mr. LISTER gives much interesting information about the history of the town in the thirteenth and fourteenth centuries. The Cluny monks appear for a time to have allowed the ecclesiastical control of Halifax to slip from their hands. But in 1256 a Papal Bull was issued empowering them to take possession of the church and its revenues. At the end of the thirteenth century Halifax shared in the great interest in religion which was a result of the preaching of the monks. Mr. LISTER says:—

At this golden age of art—about 1290, probably—the zeal of the first vicar and the liberality of the people of

As in other matters, it is difficult to determine when the woollen trade originated in Halifax. Although several trades are mentioned in a roll of 1307, there is no special entry which suggests cloth-working as the staple industry of the town, unless "JOHN the Weaver" exercised that trade. In 1314 there is, however, a record of a fulling mill and also of a corn mill, and we are told that "from those two water-mills have been evolved in course of centuries all the numerous factories which now represent the bulky volume of Halifax trade." It is commonly believed that EDWARD III. invited clothworkers from Flanders and that they were founders of the trade. But Mr. LISTER maintains that cloths were woven in the townships adjoining Halifax and were fulled and dyed before a Fleming was known in Yorkshire.

There is an interesting description from a conveyance executed in 1432 of a house in Shibden. In those days, when a Halifax builder was commissioned to erect a house he was instructed to erect one of six, eight or ten "crooks," and that simple method is supposed to have been the only specification in those confiding days.

The houses were framed, and the roof timbers rested on large oak uprights or bays, which from curving inwards at the top were called crooks. In the deed of 1432 the house is to be *de octo laquearibus contiguus*, a direction which the lawyer took care to make plainer by adding *Anglicè viij crukkes*. The house was to be covered *cum tegulis*, *Anglicè slatestones*. The tenant was to build the house at his own cost (with the exception of 26s. 8d. from landlord), within five months of the execution of the lease, and he was to "uphold with thake and mortar and leve hit tenauntabille on the end of his term."

An effort is made to describe the building operations as they would appear to an onlooker in 1432. In the next century it was evident that people were more difficult to please, and painted ornament and stained glass were utilised. It is also possible to describe with accuracy the furniture of the vicarage house in the time of HENRY VIII. The walls of the chambers, as well as the hall, which earlier used to be covered with rough panelling, were hung with "fine say," a species of worsted tapestry, and there were many goodly pictures in the rooms. The vicar possessed several pieces of plate. When the property was seized by HENRY's officials three or four horse-loads of books of Holy Scripture, divinity and law, with other faculties, were removed. They suggest that the clergy prior to the Reformation were not as ignorant as is sometimes represented. Some of the most interesting houses which were allowed to survive until modern times are described and illustrated. It is also possible from documents to recreate later buildings such as the manufacturers' hall. In the time of CHARLES there is reference to a "Woollen Hall" and a "Linnen Hall." But nothing is known about them. In 1774 it was decided to found a manufacturers' hall, and the circulars which were issued now appear rather amusing documents. Although the building was of importance no architect's name is mentioned in the announcements, but it is understood to be THOMAS BRADLEY, the engineer to the Calder and Hebble Navigation. The committee stated that it was proposed to lay the foundations and to raise the cellar storey between August and December 1774, and any mason or masons willing to engage in the whole or part of the work could learn how it was proposed to be executed by applying to the committee at the Talbot Inn. No arrangement apparently was made, for in the following December a manufacturer issued a warning to manufacturers and subscribers, in which he said that the approved (BRADLEY's) plan if put into execution would produce a building useful, elegant and plain, which might be finished with the money subscribed, "provided you employ no more of the gentlemen architects; if you do consider to employ them I fear too much of your subscriptions will be spent before you have adequate work done, and I may safely prophecy before the whole be completed you will have to subscribe afresh. The confusion and inconvenience that a circumstance of this sort would occasion is obvious to any man of common sense." The writer was afraid of the adoption of a plan for a circular building of which the defects were pointed out. The committee decided to erect a fourth part of the hall in April 1775, and invited tenders. Then in June the carpenters and joiners were invited, and on December 1 the building was ready for occupation. The total cost was 9,692*l.* os. 11½*d.* At the present time the hall is used as a wholesale fish and vegetable market, the 315 rooms serving as lumber-rooms and workshops.

Reproductions are given from BENNS's drawings of old buildings which existed up to 1856, which suggest that in the town and neighbourhood there were several interesting examples. The volume contains evidence concerning many events which happened in Halifax, as well as data which will suggest the ordinary life of the town. There are also chapters on prehistoric Halifax, and plates and illustrations are numerous. We expect that the volume will have the charm of novelty for the

majority of those who now live in Halifax, for there is no doubt the town has had its peculiarities. It will also be interesting to students of English life who live in other parts of the country. The authors have not in any way strained the evidence in order to make the record remarkable. There is an air of truth from the first to the last page, and although it may not serve for introducing picturesque descriptions the reader must feel that he is able to rely on all the statements.

THE LATE JOHN FINNIE.

THE death occurred on Wednesday in last week of the doyen of Liverpool painters. John Finnie was born in Aberdeen in 1829, and has been connected with Liverpool for half a century. Mr. E. Rimbault Dibdin has given the following appreciation of him in the *Liverpool Courier*:—"During a lifetime spent in association with artists, I have met among them many remarkable men, but no one quite comparable with John Finnie. Men of greater genius, larger achievement, handsomer, more witty, perhaps wiser—all these I have known; but not one who was all-round such a complete and satisfying personality. Nearest to him came the redoubtable Sam Bough, R.S.A., who resembled him in versatility, amplitude of resource, readiness of wit, and that indescribable quality which marks the distinguished personality. But Sam was rougher, more limited, more strictly a Bohemian. Finnie, if not by any means all things to all men—for he was himself always—was acceptable to all; a man who by his mere presence conveyed a sense of his superiority to the common men of humanity, yet elicited feelings of sympathy, camaraderie and affection."

Although Finnie was a Scotchman, his work was little known in the North, and I first encountered it when on a visit to Liverpool. Being taken by a native to the Autumn Exhibition (the last held in the Museum), I regarded the local efforts eagerly pointed out to me with the easy contempt for provincials natural to a youth from a minor metropolis until we came to a picture, "An Autumn Flood," signed "John Finnie." This arrested me. I was compelled to take it seriously. Soon after I entered on my apprenticeship as a Liverpoolian the name of John Finnie as president helped to attract me to the old Artists' Club in Bold Street. Having joined it, I soon met him, for he was no invisible president, but the magnetic central presence of the circle that met there for sociability and study. An intimacy soon sprang up between us, the remembrance of which is unclouded by a single unpleasant moment. We met at the club, at his house and studio, at the School of Art, at the periodical dinners of the "XX Club" and at the life class of the Liverpool Academy, where a playful leonine thump on the back occasionally accompanied his "Take your charcoal in your right hand," for his sense of fitness was outraged by my tendency to ambidexterity.

When he retired from the School of Art, Finnie broke up his home in Huskisson Street, and while retaining his Islington studio, removed himself and his activities to Tywyn, near Llandudno Junction, and set to work in most businesslike fashion to enjoy the artistic life untrammelled by any other work or care. He had a primitive but quite comfortable studio, he had several old comrades in art for company and his books and his violoncello for solace when tired for the moment of brush and scraper. I was only one of many who from time to time went to Tywyn almost solely for the pleasure of seeing his complete enjoyment of a busy idle life of basking in the sunshine of satisfaction which radiated from him. Never was a man more incapable of boredom, for everything and everybody interested him; he was never idle, and with books, music, talk, copper and canvas kept up a constant round of intellectual enjoyment. It was, indeed, a splendid spectacle to see him of an evening wielding a sturdy bow in a concert of strings at the house of Hague or Longshaw or some other friend, or doing his best with a flute to supply the place of a lacking violin. There might be something wanting in the perfection of ensemble, but his serene enjoyment was ample compensation.

Then his sky clouded. His devoted landlady and her husband died; he went out in a dreadful blizzard to attend the funeral of his friend John Ayling, and caught a chill, which resulted in a severe attack of influenza. He recovered, but his heart was affected, and his splendid

health seemed hopelessly broken. At last he decided to come back to Liverpool. Here his vigour gradually returned—at least in some measure—and we all hoped that he was in a fair way to enjoy that extension of life beyond the common measure which his exceptional physique seemed to promise. All went well until a few weeks ago when he had another attack of influenza. I last saw him at the opening of the Holman Hunt exhibition. He was with a favourite pupil, and seemed as full of interest in art as ever, but he was so manifestly ill that I went to his studio a few days after to inquire for him. But he had left it for ever.

It is not yet the time to attempt a definitive estimate of Finnie's place in art. When time and criticism have settled the question, it is probable that his reputation will stand even higher than it does at present, even though his great personality is now, alas! withdrawn. That he was a great teacher and the outstanding personality in Liverpool art for something like half a century is undeniable; only those with bad memories or short experience will measure his usefulness in this capacity by the last few years during which his scholastic vigour relaxed, or at any rate failed somewhat to keep pace with newer and more strenuous methods. As an artist he achieved less than was possible of him because of that divided allegiance which art never fails to punish. Yet unlike most teachers, he certainly reached greatness, and many of his works in oil and water-colour will take high rank among the achievements of the Liverpool school. Though he began as a painter of genre subjects, and attempted with success some figure-pictures in the pre-Raphaelite manner, his enduring fame will be as a landscapist of great versatility, whose work is marked by a fine sense of colour and design, and instinct always with a joyful perception of the beauty of the world. In his later years Finnie grew more and more fond of the practice of mezzotint, and a number of admirable plates produced by him will secure him a niche in the annals of engraving. It was a refreshing spectacle to see him seated before a copper-plate rocking or scraping with tireless industry and placing his toil with innumerable cigarettes. The contrast between the massive picturesque man and his cigarettes was almost as great as between him and his flute, yet somehow they harmonised. He had that way with him that made whatever he did seem absolutely right.

The long and useful life which Finnie enjoyed so thoroughly is at an end, and since it was for his happy nature as full of enjoyment as of work one should not too greatly regret the comparatively premature end. For his friends the loss is irreparable. Something has gone out of their lives the lack of which nothing can quite supply. But for him it is best that he has gone swiftly and unexpectedly while life was still a good thing, before the decaying powers of old age made it a burden. And over his grave might well be written the wise old adage, "To live well is to die happy."

EASEMENT OF LIGHT.

AN important article entitled "Notes on the Easement of Light in England and Elsewhere" has been contributed by Mr. H. A. de Colyar, K.C., to the "Journal of the Society of Comparative Legislation," published by John Murray. In the course of it the practice of ancient Roman as well as of modern courts in most parts of the world is described. The labour required for the compilation of a few pages must have been onerous, and several hundred cases are referred to. In describing the effect of the decision in *Colls v. Home and Colonial Stores, Ltd.*, Mr. de Colyar says:—

"That architects, builders and others should welcome such a decision is not surprising, especially in view of the fact that, owing to constant migrations from rural to urban districts, due to agricultural depression and other causes, the extension of existing towns and the creation of new ones must become more and more essential every year, in order to provide adequate shelter for the increasing urban population. Thanks to the decision above referred to, this work can now be accomplished with much greater freedom and infinitely less risk and anxiety than formerly—a condition of things which should ultimately lead to some improvement in the character of our buildings, and bring them by degrees more into conformity with recognised canons of art, both as regards construction and design. Architecture, which is said to be the most complex of the decorative arts, being now undoubtedly freed from harassing

restrictions of a legal character formerly believed (rightly or wrongly) to exist, may again flourish in our own land, as it did in ancient Greece, when buildings were erected which (sublime even as ruins) in their pristine state satisfied the highest standard of artistic excellence."

It is pointed out that "in the United States of America the easement of light which obtains in England is not generally recognised, being regarded as an anomaly in the law. It could not, it has been stated, be adopted in the growing cities and villages of the great Republic without working the most mischievous consequences. The enormous height of American buildings, which has caused them to be nicknamed 'sky-scrapers,' is evidently one consequence of there being no easement of light to check their upward growth. It is believed that not any of the States comprised by the United States of America have adopted the English easement of light. At all events, it does not prevail in the States of New York, Massachusetts, Maine, Connecticut, Pennsylvania, South Carolina, Alabama and Maryland, though its retention in Illinois, New Jersey and Louisiana has been asserted."

With regard to the extent of the easement of light and the 45 degs. test, Mr. De Colyar writes:—"In England the extent of the easement of light is the same, whether the right be acquired at common law or under the Prescription Act, as are also the conditions precedent necessary to constitute a cause of action for interference with such easement. For that Act has not altered the nature of the right or the principle on which it is to be determined whether the right has been infringed, but it has merely substituted a statutory title for the fiction of a lost grant or covenant not to obstruct. According to the recent decision of the House of Lords in *Colls v. Home and Colonial Stores, Ltd.* (where the ruling in the previous case of *City of London Brewery Company v. Tennant*, 1874, L.R. 9, Ch. 312, was approved of), the possessor of ancient lights is entitled to sufficient light, according to the ordinary notions of mankind, for the comfortable use and enjoyment of his house as a dwelling-house, if it is a dwelling-house, and for the beneficial use and occupation of the house if it is a warehouse, or shop or other place of business. There is, however, no proprietary right (as previously explained) to the light itself, in the owner of the dominant tenement, who has merely a right to resist the deprivation of light to such an extent as to amount to a nuisance; and in each case the question for determination is not whether since the alleged obstruction there is less light than there was before, but whether the light left is reasonably sufficient for the dominant owner's enjoyment, or, in other words, whether there has been such a diminution of light as to render the premises in respect of which it is claimed to a sensible degree less fit for the purposes of business or occupation. Moreover, even where a special light has been enjoyed for a special purpose for the period prescribed by the Prescription Act, no other right is gained than that of preventing the servient owner from building, so as to interfere with the light previously enjoyed, to the extent of causing a nuisance. And in the case of an implied grant of light, presumed by law to accompany under ordinary circumstances the lease or gift of a house, a grant of a special light is not readily implied, but only the enjoyment of so much light unobstructed as is reasonably necessary for the fair and comfortable use of the premises which are the subject of the grant. It was formerly considered that the existence of 45 degrees of light from the zenith was in itself a more or less conclusive test of the sufficiency of the amount of light. This notion seems to have arisen from a reference to a Metropolitan Building Act, which, however, was not intended to deal with questions of light, but to determine what was a reasonable width of street, having regard to the height of the houses on both sides and as regards air and everything else. It is now, however, settled that there is no law or inference of fact that the angle of 45 degs. is sufficient; though, on the other hand, it would seem that the fact that 45 degs. of sky are left unobstructed may, under ordinary circumstances, be considered *prima facie* evidence that there is not likely to be material injury, since experience shows that it is, generally speaking, a fair working rule to consider that no substantial injury has been done where an angle of 45 degs. remains, especially if there is also a good light from other directions."

It would be an advantage to architects if Mr. De Colyar's excellent essay were issued in a separate form, for it contains information of a kind that is not usually found in treatises on the subject.

NOTES AND COMMENTS.

THE judgment given in the First Division of the Scottish Court of Session is likely to surprise contractors for ironwork. The contract for the Glasgow Central Railway was taken by Messrs. BRAND & Co. They sublet a large portion of the ironwork to Messrs. GOODWINS, JARDINE & Co. It was expected that 12,650 cwt. of girderwork would be used in the low-level station beneath the central station. The sub-contract price was 13s. 3d. per cwt. Owing to alterations in the plans the weight was more than doubled, and amounted to 26,459 cwt. The sub-contractors claimed a higher price for the extra work, and the Court increased the price to 14s. per cwt. On appeal the First Division fixed the price for the whole of the work at what it was originally, or 13s. 3d. per cwt. The reason given was that the parties had tacitly agreed to accept schedule rates. As steel columns were not in the original contract, the price allowed was 20s. per cwt., with an allowance of 150% for the use of plant and labour. Another important point was that the weight as calculated from the drawings exceeded the actual weight supplied. The Court held that the calculated weight was contemplated when the contract was entered into and should be paid.

MOLIÈRE, like BOILEAU and several writers of the time of LOUIS XIV., resided at Auteuil, outside Paris. The house he occupied no longer exists. On the site of it and the garden was erected a large mansion known as the Hôtel Praslin. Near it was put up as a memorial of the dramatist a small structure called a temple. On the front was a bas-relief representing THALIA letting fall her mask and the inscription "Here stood the house of MOLIÈRE." The temple, like the original dwelling, is about to disappear. The hotel and gardens have been sold in lots. An effort was made by some admirers of MOLIÈRE to purchase the temple and to preserve it, for it contained not only his bust but a number of relics. The attempt was not successful, and it may therefore be assumed that on the ground where MOLIÈRE and his friends used to assemble a building consisting of numerous storeys will soon arise.

THE Dundee School Board have adopted the following resolution of the works committee:—"That the committee, while expressing satisfaction with the explanations given by the architect, recommend the board that for the future no schedule or specification be departed from after it has once been issued to contractors, whether the alteration proposed involves an addition or reduction in expenditure, unless the suggested change has received the sanction of the works committee, and excepting such alterations or omissions as may entail an expenditure not exceeding in the aggregate a sum equivalent to 5 per cent. on the total amount of any one contract which may be approved by the convener of the works committee." This remarkable effort owes its origin to a very simple occurrence. Mr. LANGLANDS, the architect, introduced radiators for heating of a more improved kind than was originally proposed. The additional outlay at the most will be not more than 42%, but for that sum there will be a larger area of heating surface and other advantages. Censors in Scottish towns appear to have eyes as microscopic as those of flies, and trifles assume astounding proportions, especially in works carried out by architects.

THERE are many able artists in France whose names are unknown in other countries. One of them was JUST BECQUET, the sculptor, who lately died in a Paris

hospital. He had attained his seventy-eighth year. He was born in Besançon, and early demonstrated his aptitude for art. He was sent to Paris, and there he was fortunate in being allowed to enter the atelier of FRANÇOIS RUDE, whose *Departure of the Conscripts* in the Arc de l'Etoile is probably the most popular example of the sculptor's art in France. If the gaining of medals was proof of ability JUST BECQUET could compete with any of his rivals. But he was not adapted for display, and the result was that he was little talked about, and, what was worse, did not receive the commissions for public work which he had the right to expect. In his leisure hours he devoted himself to music. He led a solitary life, and when his corpse was removed from the hospital there were only about a dozen friends who were present.

COMMITTEES and other men in the rare cases when it is contemplated to paint the walls of public buildings find a difficulty in the selection of subjects. Generally paintings which are suggestive of the past are preferred. It was supposed to be a concession to literature when a very small part of the Houses of Parliament was assigned to illustrations from English poets. It was therefore courageous on the part of Mr. G. BERNARD SHAW, when speaking at a prize distribution in Brighton on Wednesday, to advocate the displaying of events which might occur in modern days. He told the assembly that they could have pictures representing the lives of eminent citizens. One would show a citizen presenting the mayor with 20,000*l.* for a public object, and all around could be painted instances of what had been accomplished with the money. Another picture would deal with a gift of 50,000*l.* Instead of people grumbling at the rates, the men in Brighton would then be ashamed to pay only rates, and would be asking the mayor not to talk of shillings in the pound, but 500*l.* Even the poor might come along with their five shillings or five pounds, for these sort of things have happened in the history of the world. The spirit of voluntary giving, however, would never be aroused unless people were convinced that a great and popular use would be made of the money. It was pitiable to-day to see millionaires perplexed as to what to do with their wealth. Mr. CARNEGIE, for instance, had but one idea—free libraries. Are we so miserably poverty-stricken that the only thing we can think of is free libraries? Any really imaginative man walking round Brighton would be able to see ten dozen things badly needed which he might give money for.

ILLUSTRATIONS.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—DOME.

HOUSE AND STABLES, WESTCLIFF-ON-SEA.

THIS house has been erected on a commanding site facing the sea on the Esplanade, Westcliff-on-Sea, for Mr. CHAS. E. BELL. The exterior is built of red bricks with Bath stone dressings, a special feature having been made of the octagonal bay. Most of the work above first-floor level is treated with teak half-timberwork and stucco, and the roofs are covered with red tiles. The interior is finished in a modern style, with moulded ceilings and deep friezes; nearly all the doors were supplied by the Gilmour Door Company. The floors of hall, billiard and dining-rooms are of wood-block, and the interior painting finished with satinette enamel. The stables have been designed in a similar style to the house. Mr. A. J. ARNOLD, of Westcliff, was the contractor, and Messrs. CABUCHE & HAYWARD, M.M.S.A., of Westcliff, were the architects.

ROYAL NAVAL HOSPITAL, CHATHAM.

CATHEDRAL SERIES.—CARLISLE: SOUTH AISLE, LOOKING EAST.

THE CHEMISTRY OF WALL-PAINTING.

THE following evidence was given before the select committee of the House of Lords on the Palace of Westminster by Professor A. H. Church:—

Chairman (Lord Stanmore).

I think during the last ten years you have paid considerable attention to the state of the paintings and the stonework in these buildings?—Yes, for twelve years.

The results are embodied in reports which have been laid before Parliament from time to time?—Yes, there are now five reports.

These reports, of course, we may presume to contain your views upon the subject?—Yes.

But we should like to hear from you a little in detail what your advice would be to the committee or body whose duty it would be to provide for any pictures that were painted being first of all painted in such a manner as would not lead to their ultimate decay, and also as to any measures that would be necessary to insure their continued preservation?—I think I can give you in comparatively few words my matured opinion upon the subject after my experience of about twenty-six years, beginning with the Watts fresco in the great hall of Lincoln's Inn, which is the largest true fresco that has been painted, I believe, in this country, and which I tried to preserve twenty-six years ago. There are two points which have to be considered.

First of all, the ground on which a painting is executed, whatever the medium employed may be. Into the atmosphere of London there are now poured every year about a million tons of oil of vitriol, which turns the carbonate of lime in the stone and the plaster on which the painting is executed into gypsum gradually, with an expansion of about 10 per cent. in volume. The chemical change is accompanied by a mechanical expansion which causes a disruption of the ground and is the main cause of the destruction of the paintings in whatever medium they are executed, and even of mosaics in some cases, upon a ground prepared with lime and sand. The lime is the point of weakness. If you had plaster of Paris to begin with, then there is no action of the atmosphere and no destruction—it has already been altered, as it were, into the substance which the carbonate of lime or lime passes into. Therefore it seems very important as regards stonework, the ground on which the paintings or artistic works of any kind are painted or affixed, that we should not lose sight of the fact that the carbonate of lime is not an ingredient which ought to enter into the grounds. I see this sulphuric acid destroying all the architecture in London, both old and new, and it seems to me that this sulphuric acid has an enormously dangerous action. Sir Lawrence Alma-Tadema just now was talking about tapestry, for instance. That is a lovely material, though you may not have there expressed the direct thought of the artist. But tapestry becomes frightfully injured in the London atmosphere. It is a very absorbent material, and it absorbs sulphuric acid from the air. It takes up 10 per cent. of moisture, and it becomes sourer and sourer in the course of years, and the inevitable result is that, besides the injury to some of the colours and dyes, there is decay of the fibre: it becomes quite brittle. In fact, if you put your hand in a woollen curtain in a London house that has been up for two or three years you will notice there is a peculiar stickiness about it, and if you analyse that curtain you find sulphuric acid in a considerable quantity, and that destroys the fibre. Therefore, though I am sorry to express the opinion, I do feel that unless tapestry were in some way protected from the sulphuric acid—waterproofed, or I may say acid-proofed—I do not think it could be safely used in Westminster.

How do you account for the fact that the old tapestry in the House of Lords, which was destroyed in the fire of 1548, had been up there for between 200 and 300 years?—I think the difference is mainly due to the increased consumption of coal in later years. This calculation which I have mentioned, which is not my own, of one million tons of sulphuric acid poured into the air from the annual consumption of coal in London is a very serious matter, and although a good deal of it goes on to the ground, and a good deal is neutralised by the marble and stone of the buildings, yet a great deal must get into the houses and into large places with many open spaces such as the Palace of Westminster.

I think I interrupted you in the middle of your observations—have you anything to add on the point you were dealing with?—I think I have dealt with the question of sulphuric acid.

Earl of Carlisle.

I do not know whether you are intending to revert to the point again or not, but perhaps I may ask you this question:—From what you said about the chemical change of the surface of the wall, I gather that you would consider that the frescoes that were painted here would have been damaged whatever the preparation had been. Different explanations have been given for these frescoes having perished. It has been attributed sometimes to the sand that was used, and sometimes to the dampness of the walls, but I gather that you consider that the chemical change in the surface would be sufficient to damage the frescoes, however excellent the preparation had been?—A fresco is, of course, a very delicate structure. The colour, the pigment, is held on by a film of carbonate of lime, and that is in the course of a few weeks turned into sulphate of lime, and has no longer binding power, and it begins to perish.

Earl of Plymouth.

Arising out of that, may I ask you this question, Would you recommend that the walls, if it was intended to apply fresco in some form to them, should be prepared with plaster of Paris, instead of the ordinary plaster?—I should, instead of with the ordinary lime-sand plaster.

Earl of Lytton.

Do you think that if that were done the paintings upon them would be much more durable?—I think they would, but it must be remembered that the paintings must be kept dry; they must never be allowed to have moisture running down them, as sometimes has happened in the Palace.

Chairman.

When you speak of moisture, moisture from what cause do you mean?—Moisture from the condensation of damp-laden air upon the corridor walls. When the temperature, for instance, of the Royal gallery has not been kept up, and in winter time the air has suddenly become moist, as to-day, for instance, laden with moisture from the south-west, then the water runs down, and it is quite acid to the taste.

Having a plaster of Paris background would be no protection for that, would it?—It would be a protection against the acid, but not against the water, because plaster of Paris is slightly soluble in water, while lime plaster would not be in pure water.

Then the damp would injure it even more in the case of a plaster of Paris wall?—Yes.

Earl of Carlisle.

You could not have a fresco proper upon plaster of Paris, could you?—No, it is incompatible with that medium.

Painting on a plaster wall would be simply a tempera painting?—Tempera painting, or oil-painting or spirit fresco, as it is called, but not true fresco.

Earl of Plymouth.

If the walls were prepared with plaster of Paris, in that case would there be any distinct advantage in having a foundation of canvas upon which the painting was made and then applied to the wall?—I think there would.

I ask because, as you could not get a true fresco, as Lord Carlisle has pointed out, it removes any objection to painting on the canvas surface with spirit medium or anything of that kind?—Yes, it does. I feel strongly that the spirit-fresco medium should be executed not on the wall itself but on canvas, and should be *marouflé* to the wall afterwards.

Earl of Lytton.

I understand you to hold that whether that is done or the painting is on the surface itself, the preparation of the wall in the first instance is absolutely necessary?—I am not sure that I follow what your Lordship means by the preparation of the ground.

The plaster of Paris surface that you suggested?—Yes, I think it would be better to use plaster of Paris, because then you run no risk of any attacks from the back. You protect the front by the white lead mixture put under the canvas when you fasten the finished picture to the plaster, but you cannot be sure of the back, and both moisture and corrosive gases get in at the back unless you have slate, as they have at the Royal Exchange.

Earl of Carlisle.

Are you satisfied with the course adopted by the Royal Exchange as perfectly satisfactory?—I am on the whole very much pleased with it. The tilting forward of the slate ground an inch or two is a very good thing also; it prevents dust from lodging on the picture.

Earl of Plymouth.

And it is not apparent to the eye?—No, it is neutralised by the perspective effect.

Earl of Carlisle.

In Mr. Hamilton Jackson's book it is stated that in England walls which were to have figure subjects painted on them appear often to have been prepared with cloth glued over the surface in the fourteenth century?—In panels and cabinet pictures of the thirteenth and fourteenth centuries it was almost invariable to have canvas glued on to the panel, and where the panel has perished from the attacks of insects and mildew, and the picture has often been perfectly preserved, the saving clause has been the canvas.

So that practically this expedient is merely returning to an old practice?—It is merely returning to an old practice, only with something better than the practice used in the old days.

Chairman.

I think we have rather interrupted the course of your observations; would you continue what you were saying?—Having disposed of this dangerous enemy, sulphuric acid, what I was going to say was that then you have to select a method of painting or of decoration, whatever kind it may be; and mosaic is of course the most impenetrable and unalterable of all kinds, only there the question of the cement in which the glass, porcelain or pottery tesserae are laid is a matter of great importance. I have seen mosaics in which the lime cement in which it is laid has effloresced and exuded between two neighbouring tesserae. I only mention that because it is obviously necessary in an atmosphere like this to get a substance that is not altered by the corrosive atmosphere of London.

Such substances are to be found, I presume?—Such substances are to be got, or you can protect by a material which shall render absolutely waterproof the joints between the small squares.

Earl of Carlisle.

You heard Sir Lawrence Alma-Tadema mention the subject of plaster reliefs—bas-reliefs?—Yes, in gesso.

Have you anything to tell us about that?—I thought it was a very admirable idea, for gesso will stand. It is generally made largely of plaster of Paris and hardened by a mixture of other substances, and when it is painted—and I presume it would be painted in some way or other, or tinted—it is then practically unalterable.

Chairman.

You have not said anything as regards one very important point with regard to the preparation of pictures, and that is the pigments employed. We had the point strongly impressed upon us the other day by Sir Edward Poynter. He pointed out that all the earlier frescoes had been painted in terre-verte?—Yes, terre-verte and yellow ochre were two things largely used which were fatal to frescoes. We have had a case in the King's Robing-room in one of the panels there; one of the figures has got a large quantity of terre-verte in it, and that part of it gave us more trouble than any other picture in that room.

Earl of Carlisle.

That was one of Dyce's frescoes?—Yes, it is the one in the south-west corner of the room near the window. There is green terre-verte in the sandals of the knight in that small panel. Whatever may be the medium employed I have no doubt whatever that the best thing is a modification of the Gambier Parry spirit fresco.

That is practically what is used at the Royal Exchange?—Yes. The modification which is introduced, although the artists themselves do not quite like it, because it is not quite so easy to work, is to substitute for beeswax (which is not an absolutely imperishable material, and which gives a flatted or mat effect) a hard paraffin wax.

Mr. Abbey told us he made use of it for his paintings at Boston?—Yes; this is the stuff which I employ (*producing a specimen*); it is made from earth wax and has a high melting point; it feels exactly like a bit of wax when it is warmed.

How is it dissolved?—It never does dissolve; it is simply used to make a flat surface by being mixed with a liquid. You melt it with copal varnish and spike oil, or oil of turpentine, and then it solidifies into a sort of ointment, but it consists of minute particles diffused throughout the whole which gives a mat or dead effect.

Is that practically the same method as that which is employed by M. Puvis de Chavannes?—That I cannot say,

because I never could find out exactly what it was he did use, though I have examined some of his large wall-paintings in the library and museum at Amiens. I could not find out exactly, but I do not think it is. I should think this substance which is called ceresin has a melting point of 150 or 160 Fahrenheit; it is a very useful material to protect a finished painting in whatever material it may be executed other than water-colour; taking a fresco, for instance, it is a very useful material to strengthen the plaster which has been sulphated and disintegrated by the action of sulphuric acid. That has been done in the King's Robing-room, where the ground had perished and could be moved with the finger; that has had to be treated with what I may call ointment of ceresin, because you cannot dissolve ceresin freely enough; you cannot get a strong enough solution, but you can make a paste with a hydrocarbon called toluol, with about ten parts of that and two of ceresin and half a part of spirit of turpentine. You make an ointment and you put it on with a brush or palette knife and leave it for a day, and then the next day fire it in and heat it with an electric or other heater and drive it into the wall, and then nothing will alter it. That is the way those frescoes and other pictures are now being treated; they are being waterproofed.

Do you know Mr. Draper's work at the Drapers' Hall?—I have not seen it yet.

You do not know exactly what it is. He spoke of paraffin wax, I think?—I should think it would be ordinary paraffin wax, which is rather crystalline and granular and does not act so well as ceresin. It is chemically closely allied to it.

Earl of Plymouth.

This process does not affect the colours, does it?—It does not affect the general tone of the colours. It slightly darkens some and slightly lightens others, but the general result is very slight, and it may be used on decaying stone as well. I might just mention that part of the Mercers' Hall, Cheapside, has been treated with baryta water according to the method adopted at Westminster in the chapter-house, and if you look at it (and it is worth looking at now before the winter comes on) you will see that the three bays near the City which have been treated afterwards with this ointment of ceresin look like marble. The two that have been treated only with baryta water look like fresh Bath stone or Caen stone; they look very nice, but the others have a slight translucency, and I cannot help thinking that in the treatment and cleaning of the stone in the various lobbies of the Palace here that ceresin treatment might well be adopted.

Chairman.

Are you being consulted with regard to the cleaning of the stone that is now going on?—No, I have not been.

Earl of Carlisle.

I gather from your evidence that if you were deciding yourself how these spaces should be decorated you would recommend that the work should be done in spirit fresco in the same manner as has been adopted in the Royal Exchange?—Yes.

Supposing any suggestion of that kind were made, have no doubt some portion of your evidence would be quoted as indicating that any wall-paintings that were put up here would be liable to be deteriorated or destroyed. Could you in a few words tell us whether you think, if the wall-painting was done in the manner you have described it would be tolerably safe?—I think it would be perfectly safe, but the surface would require to be cleansed from time to time from deposits of soot and dust, cobwebs and acids.

How would it be cleaned?—By ordinary distilled water and bread and other very simple processes which have been described in the four Parliamentary papers on the subject.

Earl of Lytton.

It could be done without injury to the painting?—Yes, without any injury to the painting, but you cannot do without any injury on true fresco or on an ordinary oil painting, or on a painting executed in distemper, or even on a stereo-chrome. Apart from the great difficulty of acquiring proper technique in stereo-chrome work there the difficulty of the abraded surface and the changes which occur owing to the action of the sulphuric acid of the air. There are two changes which occur owing to the action of the sulphuric acid in the air, which are both most injurious to stereo-chromes.

Earl of Carlisle.

And to ordinary tempera?—Yes, in a measure.

Chairman.

Sir William Richmond was telling us the other day that was at present executing a wall-painting in tempera and had a wine medium?—Was that in London?
In London. You would be of opinion that that was less nable than spirit fresco?—I think it would be less clean- than spirit fresco. I may mention that I have just ored a fresco-painting done by Sir Edward Poynter when was an Associate of the Royal Academy about thirty s ago, in St. Stephen's Church at Dulwich, a picture of Martyrdom of St. Stephen (vide *Architect*, March 17,), a very interesting early work of the President. That a pure fresco. I have now coated it with ceresin after ng got the actual injuries restored. The whole of it covered with a film of sulphate of lime. The sulphuric of the atmosphere of Sydenham Hill had attacked the of carbonate of lime which protected it. One had to id of the obscuring film of sulphate of lime by means ater and spirit of wine and bread, and then touch up defective parts, and then the whole of it has been coated a what I called ceresin ointment, and that has been l in.

Earl of Carlisle.

The two panels painted by Lord Leighton at South ington were painted in this spirit fresco material, I ve?—They were.
On the wall?—On the wall.
The wall there is rather rough, is it not?—In the case ne of them, the northern lunette is on very rough ter.
That, of course, makes it more difficult to clean?—That e of the difficulties, the sand grains drop off.
That difficulty does not occur in the plan you have n describing of canvas applied to the wall?—It does not.
Can you tell me whether Lord Leighton's fresco at dhurst (vide *Architect*, April 29, 1871) is painted in that erial?—Yes. It is the earliest one done by him in that erial. I have seen it and it is in very fair condition. Only part damaged is where the moisture has got in at ase of the wall, and there the film of pigment has ed off in places.

Chairman.

Your opinion of the water glass process, I think, is ex- sed in some of these reports of yours, which have been e before Parliament, but I think we should like to hear it you have to say upon that subject?—If the artist can with it, and his materials are good, it is the next best ess to the spirit fresco, and it has the advantage, of se, of being painted in the light in which the picture is e seen, and under the circumstances which will prevail e future. But it has that drawback, that you must a plaster that is somewhat rough, and in consequence es not admit of being cleaned at all easily. Those two res in the Royal Gallery have been very troublesome ; e are millions of white spots in them, where the grains and have come off from the ground or have become d because of the action of sulphuric acid upon the lime h surrounds the little grains of sand. Therefore, as it t be painted to work up on a lime plaster ground and upon a gypsum or plaster of Paris ground, I fear that in ion, where sulphuric acid is present in such immense atities, it is not an available process.
Now I should like to come to one or two practical tions—I mean in the sense of being of immediate ern—in regard to this building. I know you have e a careful examination of those ruined panels in the per Lobby?—Yes.

Even out of those have perished?—They have.
The eighth is in perfect preservation?—Yes.
So what causes do you attribute the preservation of that l? I presume it was subjected to exactly the same spheric influences as the others, and it may be pre- ed to have had the same wall conditions behind it— at do you attribute its complete preservation as com- d with the others?—I am bound to say I am unable to ain it. It is the work of Sir John Tenniel. It is the e one which is perfectly preserved. It is painted t excessive thinness; all the pigments are laid on most ately. I can only imagine that Tenniel may have oyed some other medium also. He painted it in e, it is supposed on the fresco lime basis, and ay have introduced some material which has pro- ed it, such as white of egg, or some albuminous me other preservative material, because, as we e it is utterly different from all the others. I y coated it with paraffin wax, so it has not suffered since

it was treated. I may say it was beginning to go at that time; it had to be touched up in twenty or thirty different places where the colours had flaked off, but the ground was much less absorbent there; it was very different to the touch. There was a difference, but what it was one could not tell. One cannot take down a picture like that and analyse it; you can only examine it *in situ* by the ordinary tests. There must have been something that has not been revealed.

It is very curious?—It is a most curious phenomenon.

Then with regard to the others, six out of the seven are absolutely destroyed?—Yes.

Herbert's picture of "Cordelia" is not so completely destroyed as the others; do you think that is injured beyond the possibility of repair?—No; I thought that an artist who sympathised with his style might be able to renew it.

I am very glad to hear that is your view, because I understood you had expressed a contrary opinion?—Of course, I was very much shocked at its appearance; I felt it was beyond my powers. It is not a matter for a chemist.

It is a matter for a painter and not for a chemist, I take it?—Yes.

But you would not say that the whole of what remains must go?—No, I think not. I ought to have said, perhaps, that Herbert's picture of "Moses bringing down the Tables of the Law" is a most splendid example of stereo-chrome in an almost perfect condition in the peers' robing-room.

You mean the large one in the standing committee-room, that is stereo-chrome?—The very inferior one on your right as you enter is an oil painting on canvas, but the one facing you is stereo-chrome. I have cleaned it.

Earl of Plymouth.

What is the other name for stereo-chrome?—Water glass.

Chairman.

In regard to the picture of "Cordelia and King Lear," have you noticed anything peculiar about the robe of Cordelia?—I am afraid it is a long while since I have seen it.

It is rather curious. The blue of the robe is apparently in perfect preservation, but the ornamentation of the robe—the edging of it—has all perished?—I suppose the robe was painted in an artificial ultramarine.

Earl of Carlisle.

Do you know whether the pictures in the House of Lords itself were replaced by oil ones?—They are all frescoes—all six of them; there are three over the throne and three over the gallery.

I understood they were originally?—They still remain so. In one of these Parliamentary papers there is an account of my last cleaning of them; they sadly want cleaning again.

Chairman.

Then the only frescoes that have absolutely disappeared are the ones in the octagon upstairs?—Yes, in the upper waiting hall. I see the question of the cleaning of these frescoes is referred to in this Parliamentary paper, memorandum 5. They were treated eleven years ago.

Can you say how often the necessity for treating them would recur?—I think the treatment with ceresin, or other material, ought to be renewed every three or four years.

So frequently as that?—I am afraid it ought to be on frescoes, but on water-glass pictures much less frequently.

The pictures in the House of Lords, I understand, have not been renewed for eleven years?—Eleven years.

Earl of Lytton.

Is it an expensive process?—No, it is only the labour; the material is nothing. For instance, I think a sum of 100*l.* or rather less was expended last year upon the five large frescoes in the King's Robing-room.

Only 100*l.*?—Yes.

Earl of Carlisle.

Do you think that the Royal Exchange pictures require the same amount of renewing?—They are practically cleaned every year, I believe.

Chairman.

I think the earliest of those Royal Exchange pictures was painted about seven years ago, was it not?—I think it would be more than that.

I thought the date would be about 1899?—I think Lord Leighton's picture was painted before that.

I put the question with a view to asking as to whether

any deterioration had been visible since they were done?—I think that one is in a wonderfully perfect condition.

Is there any other matter you would like to add to what you have said, in the way of giving us warning or advice?—Nothing occurs to me at the moment, but no doubt a number of things may occur to me when I have left the room. If I think of anything might I send you a memorandum upon the subject?

We shall be only too glad to receive it.—Thank you.

Earl of Lytton.

To go back for a moment to the action of the atmosphere upon tapestry, I understand you to deprecate the use of tapestry owing to the action of the atmosphere upon it, but do you know of any process by which tapestry can be prepared against the action of the atmosphere; it seemed to me you rather suggested that?—I cannot help thinking that something might be done to prevent the wool and jute or hemp web from absorbing the acid vapours of the atmosphere.

You spoke about making it waterproof, were you thinking of any particular process?—I have thought of, and I have indeed tried upon fabrics several methods, but they all have to be done after the material is completed; it is not possible to work the wool, or the warp and the woof, with a prepared waterproofed wool and hemp or other fibre.

Earl of Carlisle.

Would not the surface, however you treated it, necessarily collect a great deal of dirt?—Yes.

Chairman.

Cannot that be cleaned off?—It is very difficult to get it off, the surface is so well adapted not only to absorb vapours, but to collect dirt and dust and soot.

I do not know whether there is any good specimen of tapestry in London itself now; but in the neighbourhood of London, for instance at Osterley, there is a great deal of very beautiful tapestry, and some of it is in very good condition?—One can, of course, study the tapestries in South Kensington Museum; those are nearly all under glass now. Those who have charge of them would know how far the ground was deteriorating.

Of course, the sulphur in the London atmosphere is a thing by itself?—It is quite by itself.

But when they are free from that the tapestries seem to last a long time?—I do not think a small amount of it, such as you get in the country or even in places in the suburbs, would be very serious; but in the heart of London, or in the heart of Westminster, we have to think about it and protect ourselves against it.

But the old tapestries of St. Paul's Cathedral have been for the last 350 years in the palace of the Archbishop, and they look as fresh as they were when they were first made?—The increased consumption of coal of late years in London no doubt makes a difference.

Earl of Plymouth.

As regards the question of glazing, you are well acquainted with the frescoes in the corridors to the House of Commons and the House of Lords?—Yes.

I should like to ask you what is the condition of those frescoes, and what was it before and since they were glazed?—I think there are sixteen of them, eight in each corridor, and seven of them have during the present year had their glasses removed, and they have been cleaned with bread and distilled water and spirits of wine, and the weak places in the grounds have been treated with ceresin wax. There were a few weak places, and there were a few bare spots; those have all been got rid of. I believe it will be generally found that they are now in a wonderfully perfect condition. The cleaning work consisted of the removal of a film of sulphate of lime in parts and one of silica, or flint, which had come out in the deepest colours of the folds, and made them actually lighter than the high lights. That has been done in the case of seven of them; that has been put all right. I was not acquainted with them before they were glazed.

Chairman.

Do you remember when they were glazed?—No, I do not; it was before I was asked to give my help in the matter of these pictures.

However, you are of opinion, I understand, that if the pictures were executed in the same manner as in the Royal Exchange, they could be reasonably preserved without glazing?—I think so; I think every one of those sixteen pictures in the corridors might safely have the glass taken off and be treated in the same way that the seven have been

treated this summer; that is, with a film of ceresin. I not present myself, unfortunately, owing to absence from England, during the operations, but I have watched the pictures for years, and I gave written instructions as to how they were to be treated.

We are very much obliged to you for your interest and evidence; have you anything further to add?—I think not.

HOLYROOD CHAPEL.

THE opinion of Mr. J. Crabb Watt, K.C., has been sought with reference to the bequest of the Earl of Leven and Melville for the repair and restoration of the chapel at Holyrood House. The following questions were put to him:—

1. Is the bequest valid or invalid in itself?
2. Does the clause delegate the decision to execute will on the trustees, and does the refusal of the trustees to execute nullify the bequest?
3. What steps can a beneficiary take to enforce payment or performance?

Mr. Crabb Watt considers the bequest in some respects unique, and the construction of the word "condition" occurring in it was not free from difficulty; but after lengthy examination of the authorities and text writers is of opinion that the bequest was valid and could not be nullified by the refusal of the persons he called for convenience subsidiary trustees—viz. Sir John Stirling-Maxwell and Lord Balcarres—to accept the subsidiary trust, and execution of the will could be enforced by a beneficiary. In this case the subject (40,000*l.*) and the object, "in putting into repair and restoring the chapel at Holyrood Palace," that it can be used as a chapel for the Order of the Thistle, were quite clear. The bequest was thus complete. The only condition mentioned in this part of the clause was obtaining permission of the King to the projected work. That was not so much a condition precedent as a statutory fact, because it was obvious that if the solum and fund of Holyrood Chapel were vested in His Majesty, he could do any other private owner might if he chose block the repair or restoration of his own property by another. If the fabric was vested in the Crown, the same principles applied. Further, the motives disclosed in the will were legitimate and praiseworthy. Apart from the public spirit evidenced in the bequest, the intention capable of being carried out without injury to any public or private interest was to provide a chapel for an Order of Knighthood and a memorial to the restorer.

It ought also to be observed that the bequest was for an object, which was to be accomplished by what at first sight appeared to be two processes, namely, repair and restoration. The testator appeared to have had in view that some parts of the structure, if not all of it, like many similar structures, were dilapidated beyond repair, and in places or parts of the fabric where such a state of dilapidation existed, he supplemented "repair" by "restoration." Of course, restoration frequently meant rebuilding, and the testator had that possibility in view *co nomine*. There was while the gift was limited in amount, it could not, in counsel's opinion, be maintained that it was void on the ground of insufficiency for complete repair and restoration. These were really synonymous terms in the sense that restoration was complete repair; but mere inadequacy of amount, even if the inadequacy were proved, which it was not, would not, in counsel's opinion, lead to total forfeiture of the gift. This would be making an unproved hypothesis frustrate a clearly-expressed intention and object. There seemed to be three classes of duties which the testator had made up his mind about—the financial administration, the design or plans for the restoration, and the carrying out of the work according to these plans. The first was committed to his trustees, the second to Mr. Ross, and the execution of the work was committed to Mr. Ross and the two friends named, with Mr. Ross acting as architect. It seemed, in short, to have been the belief, as well as the intention of the testator that he had arranged for everything necessary for the carrying out of his wish, even to the provision of two friends to act as unpaid clerks of the works. The testator thus, as it seemed to counsel, created a subsidiary trust within the principal trust, and the order in which the testator's intentions should have been carried out was, first, for the principal trustees to apply for the permission of the King, and having secured this, then to set out carrying out the testator's intention *quoad ultra*. The King might have refused his sanction, and in that event the question could have arisen. But the proper and the

gal order of proceeding had, in counsel's opinion, been inverted. Counsel thought the action of the trustees had been not merely unusual, but amounted to a breach of the trust committed to them. The principal trustees did not comply with the clear direction of the testator to obtain permission of the King. Counsel thought they were bound to explain why they did not do so, or whether they abstained from doing so from some collateral and therefore illegitimate purpose. Again, if the principal trustees directed the subsidiary trustees to consider the question of the possibility or feasibility of repair and restoration they exceeded their powers. The testator, in his opinion, obviously had made up his own mind on this question. Apart from which consideration it was manifest that repair and restoration were not in the region of impossibility at all. They were in the region of cost only, and it was not in the discretion of the trustees, principal or subsidiary, to determine that merely because 40,000*l.* might be sufficient for complete restoration they were to abstain from carrying out the intention of the testator to any extent. Counsel did not suggest that if it were impossible (in the sense of an object being absurd or of something being attempted against natural law) it would not be the duty of the trustees to stay their hand, and perhaps to obtain the authority of the Court for abstaining from carrying out the bequest. But such was not the state of the facts in this case.

The trustees' action in ignoring Mr. Ross must be imputed to this, that they entertained views adverse to the conviction as regards feasibility on which the testator himself acted in making the bequest, a conviction which they so knew was shared by Mr. Ross. Counsel also maintained that the trustees had acted *ultra vires* in taking the opinion of strangers upon a question which the testator never committed to them—that was, whether Holyrood Chapel could be repaired and restored. It was a breach of trust to ignore the direction of the testator with regard to Mr. Ross. It was elementary law that where the estate of a deceased person had legally vested in trustees for an object named by a testator, any beneficiary had a *jus crediti* which he could vindicate by action, and here the beneficiaries' vindicating action might be the Order of the Thistle, or any member thereof, or Mr. Thomas Ross, although in regard to Mr. Ross a question might arise whether he had title and interest to sue. The only serious question to be considered was, Did the testator delegate any power or discretion to third parties enabling them to defeat his purpose and subvert his bequest? Having quoted the authorities on this subject of *delectus personarum*, counsel did not think it could be suggested by anyone that the testator here meant this legacy to go into intestacy. Nor did he give it to the trustees to be spent at their discretion. Nor did he say that the execution of the work was to be at their discretion, but depended on their consent. On the whole matter counsel's opinion was that this clause was a valid bequest for the purpose clearly named, and that the duty of the principal trustees was to apply for the permission of the King, and (said consent having been obtained) then to proceed to the execution of the work, requesting the subsidiary trustees, including Mr. Ross, to see to the execution of the work according to Mr. Ross's plan. If the subsidiary trustees declined to see to the execution of the work the Court might be applied to for authority to dispense with their supervision, and the questions discussed, in counsel's opinion, would then come up for decision. Or, if the trustees simply sat still and did nothing, an action of declarator containing other appropriate conclusions might be raised against them. Or the legatees and the trustees might agree upon the essential facts and submit a case for the opinion of the Court. But, in any case, although the legal questions might not be free from doubt, and whatever views might be entertained of the propriety or otherwise of the restoration proposed, it seemed to him quite clear that the munificence and the object of the gift were too great to allow of their being frustrated through an assumed power to forfeit on the part of the subsidiary trustees.

At a Meeting of the Worcester City Council on Tuesday a recommendation by the property committee to appoint A. G. Parker, son of Councilor A. H. Parker, as city architect, in succession to the late Mr. Henry Rowe, caused a strong protest from the minority. An amendment to refer the matter back was defeated by twenty-five votes to seven, and the recommendation was agreed to.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL general meeting was held on Monday, when seventeen Fellows and forty-nine Associates were elected, viz. :—

Fellows.—T. Ballantine, W. R. Butler (Melbourne), A. L. Campbell (Edinburgh), F. W. Chancellor, F. W. Deas, M.A. (Edinburgh), W. E. Hazell, J. R. McMillan (Aberdeen), P. W. Meredith, S. V. North, H. D. Pearson, J. Sansom (Liskeard), J. N. Scott (Edinburgh), E. Summerhayes (Perth, West Australia), J. R. Sutton (Buenos Aires), A. Thornley (Liverpool), T. F. Tickner (Coventry), G. Watt (Aberdeen).

Associates.—A. J. T. Abel, W. T. Armstrong (Lancaster), T. S. Attlee, G. S. H. Bradford (Cape Town), E. B. Crossley (Nottingham), T. L. Dale, H. A. Dalrymple (Grays), N. J. Dawson (Chelmsford), A. C. Denny (Dumbarton), C. M. Drewitt (Southport), P. M. Fraser, J. T. Halliday (Stockport), J. H. Hargreaves (St. Anne's-on-Sea), D. P. Hayworth, J. R. Hobson, W. A. Hodges, J. N. Horsfield, jun., C. E. Howitt (Nottingham), S. Jaques, G. T. Jell, N. Jones (Southport), P. H. Keys, H. Langman (Southport), L. A. Loades (Morpeth), R. A. Loveitt (Coventry), C. E. Lovell, W. G. Milburn, P. Minor (Manchester), C. L. T. Morgan, A. E. Munby, M.A., N. T. Myers, G. Nott (Leicester), C. H. Perkins (Carlisle), A. P. H. Pierce, J. C. Reid (Glasgow), H. P. Roberts (Horsham), P. T. Runton (Hull), W. T. Sadler, I. T. Sifton, J. M. Smith, D. L. Solomon, A. K. Tasker (Newcastle-on-Tyne), R. W. Thorp (Headingley, Leeds), F. J. Toop, J. I. Tweedie (Annan), C. P. Wade (Yoxford), F. Wade (Bradford), A. F. Wickenden (Maidstone), W. B. Wyllie.

The Registration Question.

The following report of the Council on registration was adopted.

Section I.—The Council have had under their consideration the report and recommendations of the registration committee adopted in principle at the general meeting held April 3, 1906, and have the honour to report as follows :—

Section II.—The following principles were laid down in that report and agreed to :—

a. That the Institute should endeavour to obtain Parliamentary recognition of its membership.

b. That it be made compulsory after, say, 1912, that all architects, before receiving the diploma of membership of the Institute, must have passed through a definite course of architectural education.

c. That a temporary class of licentiates of the R.I.B.A. should be established.

d. That in future Fellows be elected—from the class of Associates; by the Council in special cases.

e. That disciplinary powers of the Institute should be increased, with power of appeal.

Section III.—The proposal that the name of the Institute should be changed to the Royal College of Architects was not favourably received by the majority.

Section IV.—In the application to Parliament for an Act the following were suggested as the essential points to be urged and objects to be attained :—

f. To declare that it is in the public interest to enable the public to distinguish architects recognised as qualified by a competent authority from those not so recognised.

g. To extend the present chartered privileges of the R.I.B.A., making it the statutory authority for the education and examination of architects for admission to the Institute.

h. To legalise a scale of charges.

Section V.—The Council have given careful consideration to all the principles above enumerated, and recommend that as a first step a revised or supplemental charter should be applied for, embodying as many of the principles set forth in Section II. as possible, and that when this has been done an Act of Parliament should be applied for as soon as practicable. They now proceed to deal with each principle in detail.

Principle A.—Parliamentary Recognition of Membership of R.I.B.A.

This is explained by Section IV. above.

Principle B.—Compulsory Architectural Training.

1. Your committee recommend that effect shall be given to this principle by altering the charter and by-laws so as to make this training a condition precedent to entering for the final examination qualifying for membership of the Institute, and legalise machinery for dealing with the subject from time to time, so as to get the advantage of experience.

Principle C.—Licentiatees.

2. It is intended that the period of entry into this class shall close twelve months after the date of the revised or supplemental charter; after that date no person shall be admitted a licentiate, and on the resignation or death of the last surviving licentiate, the class shall cease to exist. This new temporary class of licentiatees shall be a non-corporate one, *i.e.* a class having no corporate rights in the property of the Institute, no authority to control its management, and paying a subscription for a specified consideration; that is to say, they shall have the use of the Institute premises, the receipt of the Institute publications, the privilege of using the initials L.R.I.B.A. and the privilege of being present at all meetings of the Institute, except business meetings, and taking part in the discussions on papers read.

3. Licentiatees shall be persons elected by the Council within twelve months of the date of the revised or supplemental charter who have attained the age of thirty years, and who at the date of their application for admission shall have been—(a) for at least five successive years engaged as principals in the practice of architecture; or (b) for not less than ten years engaged in the study or practice of architecture to the satisfaction of the Council.

4. The Council are also of opinion that a special examination might be established for licentiatees, enabling them to enter the Fellowship class should they become in due course eligible.

Principle D.—Election of Fellows.

5. This is governed by a resolution of the Institute, June 6, 1904, as follows:—"After December 31, 1906 (extended by resolution of the Royal Institute at the general meeting of December 4, 1906, to December 31, 1907), every person desiring to be admitted a Fellow shall be required to have passed the examination or examinations qualifying him as an Associate, or shall be elected from the ranks of the Associates. But in special cases the Council,* by votes of three-fourths of such members of the Council as are present and voting at a meeting of the Council, shall have power to dispense with such examination or examinations."

6. The Fellowship is thus generally to be open only to Associates or those who have qualified for admission as Associates, but the Council recommend that it shall be also open to licentiatees under certain conditions. (See paragraph 4 of Principle C, Section V. of this Report.)

Principle E.—Disciplinary Powers.

7. The Council propose to increase the disciplinary powers of the Institute by obtaining authority to publish in the public Press the fact of the expulsion of a member of any class.

Section VI.—With regard to Section III. above, the Council do not recommend that the name "The Royal Institute of British Architects" should be changed.

Section VII.—Although such considerations are for the present outside the scope of the reference to the Council, they yet venture to suggest that the alteration of the charter and by-laws in accordance with the above recommendations might be a convenient opportunity for making other alterations, such as—

8. The modification of the by-law regulating the formal presentation of members at a general meeting.

9. The reorganisation of the machinery for filling the office of president or honorary secretary in the event of a vacancy arising from death or resignation during any session.

10. The abolition of the power given to the Council to elect direct to the Fellowship the president or president-elect of an allied society.

11. The consideration of the representation of the allied societies on the Council.

THE NATIONAL GALLERY.

THE following additions have lately been made to the National Gallery at Trafalgar Square and the National Gallery of British Art, Millbank:—

"Lulli and his Fellow Musicians at the French Court," by Hyacinthe Rigaud. Purchased by the trustees. Hung in Room XVI. at Trafalgar Square. The twenty-six pictures forming the "John Samuel collection," bequeathed by Miss Lucy and Miss Louisa Cohen, have been placed for the present in the Central Octagon and Room XIII. at Trafalgar

* The Council recommend that at least sixteen members of Council should be present.

Square. A picture by Frank H. Potter, entitled "The Music Lesson," has been purchased out of the Clarke fund. His Honour Judge Evans has presented a portrait study of Mr. John Gray, by Professor A. Legros. Mr. J. Moser has presented, through the trustees and committee of the Whitechapel Art Gallery, in commemoration of the Jewish Exhibition, 1906, "Jews Mourning in a Synagogue," by W. Rothenstein. Seven water-colour drawings by the late Mr. H. B. Brabazon have been presented, namely, two by Miss C. Atwood, on behalf of friends of the late Miss Ethel Parker, four by Mrs. Harvey Combe, and one by Mr. J. S. Sargent, R.A. These drawings, together with the three above-mentioned oil pictures, have been hung in Room VI. of the National Gallery of British Art at Millbank.

ROYAL ACADEMY LECTURES.

IN his third Academy lecture, given at Burlington House on Thursday afternoon in last week, Mr. Reginald T. Blomfield, A.R.A., dealt with the topic of "Architecture and the Craftsman." In his introductory remarks the lecturer referred to the attractive modern theory which would fain take architecture back to the days of the Mediæval guilds when the "architect," if such a person existed, was a craftsman working on the building himself, in the midst of his artistic, or at any rate building, brethren; and the very idea of a professional architect as distinct from the craftsman was out of the question. The theory was not without its fascination in these days of keen professionalism. Moreover it appealed to an instinct which an architect shared with other artists—the desire to get his ideas out at the end of his fingers, to translate them with his own hands into concrete form. That instinct, that irresistible feeling towards and for material, was an essential element in good architecture; and yet the author maintained that good craftsmanship in the sense of actual manipulation of bricks and stone, wood and metal, did not necessarily mean good architecture—that it was but an element in it, and not the whole. Mr. Blomfield proceeded to sketch the development of the theory in modern thought and by a consideration of the actual position in regard to the arts. In the earlier days of the Italian Renaissance the artist was almost invariably a craftsman of some sort, or, more correctly speaking, as an artist he practised architecture among the other arts, turning his hand indifferently to architecture, sculpture or poetry. Bramante, Raphael, Michel Angelo and Peruzzi were familiar examples. It was not until the middle of the fourteenth century that the architect detached himself from the general body of artists and specialised in architecture, as, for example, Serlio, Palladio and Vignola in Italy, Bullant and De l'Orme in France, Goujon alone drifting from architecture into sculpture. The inevitable results of this specialisation followed after a time. Not only did architecture lose a certain freedom of initiative, but it allowed the control of the decorative arts to slip into the hands of second-rate men, such as Giulio Romano or of accomplished improvisatori, such as Primaticcio. Architecture, in fact, abdicated her position as mistress of the arts. By the end of the seventeenth century the process of specialising in architecture, and, indeed, in all the arts, was complete. The architect designed his buildings and called in the painter for his frescoes and the sculptor for his images; all three were professors in one art, none of them capable of executing the work of the other two. The change was not altogether one for regret. Architecture lost the all-round craftsmanship of the Mediæval artist, but, on the other hand, it greatly advanced in technical skill and gained a deeper and wider conception of architecture as an art in itself, touching the other arts at certain points, yet having definite functions of its own to fulfil, which lay outside the provinces of the other arts. If one compared the work of the latter part of the seventeenth century with that of the earlier, the mature work of Wren with that of Inigo Jones, the designs of Mansard and of Cott with those of Lescott and De l'Orme, we found an immense advance in technique, and the result was that both in France and England, they accumulated an admirable tradition of workmanship, which lasted throughout the eighteenth century, and distinguished that century above all others in the history of modern art. Such a tradition could only have grown up from a long-continued common practice. At the end of the eighteenth century, however, a somewhat momentous change occurred. The solid inheritance of non-Classic was breaking up, the *décor* appeared on the scene and began

lay down the law in architecture, and for the second time in its history that art became a mother of literary fashion. In this case that literary fashion was a very different thing from that passion for scholarship which had influenced the renaissance of the arts. This literary fashion, which was to undermine Neo-Classic in the eighteenth century, was directed by such men as Horace Walpole, and translated into practice by Batty Langley and Capability Brown. This meant nothing less than the loss of that tradition which had kept the art of this country sane and sober for nearly 200 years. The more enterprising architects lost themselves in multifarious designs; Kent invented a lady's dress with decorations of the Orders. Robert Adam devoted his inexhaustible fertility to the design of anything and everything. In France the reaction against the frivolities of the old *régime* led to a pedantic affectation of purity, and in 1812 Perrier and Fontaine produced their collection of designs for decoration and furniture, all in the severest Classical manner, and all more or less unsuitable for the purpose. Designs which took no account of limitations of use or material had, or could have, no real vitality, and accordingly died the death, and left the way open for all the fads and revivals of the nineteenth century. In England architecture went plunging down the slope of puny Mediævalism, with Augustus Welby Pugin at the van, like the Pied Piper of Hamelin. Where the art still clung to tradition it scarcely ventured outside the limits of a Pugin scholarship, as if paralysed by the exuberance of the Gothic Revival. No doubt Classical tradition was somewhat anæmic, yet the debt we owed to such men as Decimus Burton and Cockerell should not be forgotten. It was to this last stand of the guard that we owed such battered fragments of the standard as we now possessed to guide us through the mazes of modern fashion. For the time they failed in the struggle, and English art sank to the lowest depth of degradation at the time of the Great Exhibition of 1851. Pugin died in 1852. The Exhibition marked a turning-point, and about this time there appeared on the scene that most interesting group of men the pre-Raphaelite brotherhood, and the movement had its influence not only on painting, but also on current ideas of architecture and craftsmanship. These pre-Raphaelite artists were very much in earnest, but the precise shape of their aspirations was vague. The two ideals of Mediævalism and of rabid realism seems to have been like oil and water in immediate juxtaposition, but never, in fact, in actual touch with each other. To these reformers the arts of design of the time appeared, not without reason, to be hopelessly vapid and meaningless, and it seemed to them that so long as design remained in the hands of tradesmen, among whom they reckoned the architects of their time, things must go from bad to worse. The remedy, in their opinion, was for the painter to take up the business. He was to apply the beautiful forms of nature to architecture and the arts of design, and also to learn from the visible facts of nature the principles of construction. How he was to perform that astounding feat was nowhere indicated, and nobody thought necessary to inquire, for fifty years ago architecture was not taken seriously as the art of building. The cant of nature was supreme, as was evident in Ruskin's "Seven Lamps," where he propounded many fancies which made admirable reading, but had very little relevance to architecture. It soon became evident that little was to be done by the brotherhood in the way of reforming architecture except in the minor details, in that its leaders considered architecture only from the point of view of the nomenclature. Meanwhile, Ford Madox Brown had inspired Morris and his friends. The famous firm was founded, and now the conception of architecture already referred to by the lecturer first clearly disentangled itself, and was developed into a system of life, involving fresh, social and political considerations. Morris himself, who had tried architecture and thrown it up in disgust, formulated a theory of art which boldly cut the knot. Architecture he looked upon as the occasion for a great assemblage of the crafts, in which none was to be before or after, and architecture was to content itself with the part of a vehicle for living and ornament, storied tapestries and beautiful glass. To the realisation of this view Morris devoted the last of his life, and he was no half-hearted advocate. Morris did not approach architecture from the standpoint of an architect, but from that of a craftsman and social reformer. Gothic architecture was to him the art of arts, and the art of the future beneath was believed to be the

work of guilds, because no man was supposed to stand head and shoulders over the rest, and because it gave liberal and ever undisciplined provision for the handicraft. Neo-classic, on the other hand, was hateful and unintelligible, wicked and without a soul. We owed much to William Morris, and though he misled us, his work among the arts which lie around architecture has its value. He taught us again to appreciate good workmanship, material and colour; to dislike empty-headed art and to aim high in all that was attempted. But his personal idiosyncrasy and his artistic creed led him to concentrate his attention on the handicrafts to the neglect of the larger considerations of art. The result was that the sense of the proportion between architecture and the crafts had been lost; the power of putting beautiful things together in their right relation had disappeared under a prolific growth of cheap accomplishment. The Pre-Raphaelite Brotherhood then narrowed itself down to a half-despairing championship of the handicrafts, and intensified a dangerous tendency for the production of pretty things without any necessity. We had escaped from the Scylla of Early Victorianism only to fall into the Charybdis of l'Art Nouveau. Architecture as the serious art of building did not enter into the consciousness of the pre-Raphaelites and of their successors. How else was it possible to account for the idea that it was possible to learn the principles of construction from nature? It could not be too often insisted on that architecture was not mere decoration or ornamental building, but something outside and beyond the various crafts which it called into play. The real science of architecture was the actual and practical knowledge of the means necessary to solve a given problem, and to realise a definite aim and the translation of this into beautiful building. The science of the architect was the technique that enabled him to express himself freely and faultlessly as an artist in building. In architecture, as in music, there was the deliberate restraint, the selection and play of motives, the definite and consecutive scheme in which each detail fell into its appointed place, the mastery and combination of all the parts, so that they united in this appeal to their imagination and their emotions. This quality alone justified the claim of architecture to be the most intellectual of the arts. In conclusion, Mr. Blomfield urged students to dismiss from their minds the idea that to be architects they must qualify themselves as handicraftsmen. The artistic problems to be solved were more profound; the craftsman was that which weaved all into one harmonious whole, not that of the mason or the bricklayer. Practical knowledge was indispensable, but all practical learning was only the foundation and groundwork of a higher art.

WATER-COLOUR PAINTING.

THERE are three kinds of water-colour—first, the water-colour pure, by washes of transparent colour, in which lights are obtained by getting down to the white paper again; next, the pure opaque system, in which all colours, instead of being made paler by dilution with water, are mixed with Chinese white; thirdly, the combination of the two systems, in which a work is usually begun in transparent colour and completed by the addition of opaque lights. The first resembles nothing but itself; the second has many of the qualities of fresco; the third sufficiently resembles one kind of modern oil-painting to be easily adopted by painters accustomed to that kind of work. Now an oil-painter has great difficulty in accustoming himself to transparent water-colour. A system of washes bears so little resemblance to any method possible in oil that it is long before an oil-painter can feel at home in it. On the other hand, pure body-colour has its own difficulties. It becomes lighter as it dries, in which it is exactly the reverse of oil, which darkens in drying; besides this, an oil-painter often finds it difficult to glaze over a material which, even when dry, is so easily disturbed as body-colour. But a combination of opaque and transparent colour avoids some of the difficulties of both, and the artist does first what may be most easily done in transparent colour, adding afterwards in opaque the details for which opaque colour offers its own facilities. The habitual English method of oil-painting is to paint thinly at first, often in glazing colour, and then touch the lights sharply and decisively in opaque, sometimes heavily loading, but rarely using thick colour everywhere, as many Frenchmen do.

A School of Decorative Art is to be established in Nancy by the French Government.



A Durable Building Stone.

SIR,—In answer to "J. J. M." we desire to say that the Hollington stone is without doubt one of the finest building and weathering stones obtainable, and has already attained a high reputation in our most trying and acid-laden districts, especially the red and mottled, which are particularly handsome in appearance. The dirt and smoke of our busy towns do not affect its bright and pleasing colour, which is the case with lighter coloured stones, and it may safely be relied upon to give the most satisfactory results, and can be obtained in large and reliable quantities.

JNO. STEVENSON & SONS.

Hollington, near Tean, Stoke-on-Trent.

SIR,—Our attention has just been drawn to the letter of your correspondent "J. J. M." in your issue of the 2nd inst. We would be glad to be allowed to say that we are now supplying the London market with our "Mountcharles" stone from our Mountcharles Quarries, co. Donegal, and we venture to suggest that it cannot be surpassed for city conditions. The handsome Letterkenny Cathedral, the Bishop's Palace, St. Eunan's College, Letterkenny, also demonstrate the utility and beauty of this cream-coloured building stone. It is not only the same material as used in many of the tenth-century churches, buildings and sculptured high crosses of Ireland, but also in a duplicate of one of these Celtic crosses executed and erected some fifteen years ago in St. Mary's Cemetery, Harrow Road, W.

We venture to suggest that if "Mountcharles" has so admirably withstood London conditions, as demonstrated by the perfect condition of the minute carving in this memorial, it would especially suit architectural and ornamental work in industrial centres. At any rate, we are quite prepared to submit our "Mountcharles" stone to any test required by your correspondent or any architect in England. Space does not allow us to quote details of chemical analysis, &c., which are absolutely complete and satisfactory. It may be added that our quarry equipment makes special and sufficient provision for the latest stone-steel requirements.

Thanking you in anticipation, and trusting we have not trespassed at too great length, we remain yours faithfully
(George A. Watson & Co., Ltd.), G. A. WATSON.

10 Little College Street, S.W.:

March 5, 1907.

SIR,—Replying to your correspondent "J. J. M." re "Duradle Building Stone," I have pleasure in stating that I am now, and have been for many months past, using in large quantities in St. Paul's Church, Newcastle-under-Lyme, the most reliable and beautiful building stone it has been my privilege to obtain during very many years experience in the building trade in all parts of the country. As proof of my assertion, I would mention the fact that Croxton Abbey was built of the same stone, and what remains after the havoc made by Oliver Cromwell is good to-day. The Roman Catholic church at Cheadle is another specimen of the same stone, and I know of gravestones 200 years old the reading upon which is quite legible now. This applies specially to the red and mottled quarries. The address of the owners is Messrs. John Stevenson & Sons, stone merchants, Hollington, Tean, Stoke-on-Trent.—Yours truly,

March 6, 1907.

J. TUNSTALL,
Clerk of works to St. Paul's Church.

GENERAL.

Mr. J. S. Solomon, R.A., and Professor Tilden, Dean of the Royal College of Mines, have been elected members of the Athenæum Club under Rule 2.

M. Fallières, the French president, has inaugurated the Salle Rembrandt in the Louvre, which already contains twenty-two paintings by the Dutch master.

The Court of Common Council have agreed to expend 350l. on the removal of paint from the walls and columns of the Guildhall. The work will be commenced early next year.

A Competition has been held in Paris for the position of "Architectes du Gouvernement," when the following were declared to be eligible:—MM. Albenque, Boudaud, Combaudon, Crouillard, Doll, Donaud, Durand (Félicien), Erlanger, Ferlet, Ford, Fournier (Maurice), Gangé, Giraud (Eugène), Grenier, Kunzi, Le Bel, Roger (Pierre), Schilli (Henri), Smith, Souque.

The Study for Mr. Holman Hunt's "May Morning on Magdalen Tower" has been presented to the Art Gallery Birmingham.

The Annual Meeting of the Photographic Survey and Record of Surrey will be held on the 6th inst. in the town hall, Croydon. An exhibition of the survey collection of 2,340 prints will also be opened.

The Glasgow School of Art is about to be enlarged from plans by Messrs. Honeyman, Keppie & Mackintosh, at an outlay of about 25,000l. The Treasury have contributed 10,000l. and the remainder will be obtained by local subscriptions.

Sir W. A. Golder, the assessor, has given his award of the sixty-three designs for the Welholme Church as follows:—First, Messrs. C. Bell, Withers & Meredith, London second, Messrs. Clark & Moscrop, Darlington; third, Messrs. Marshall & Tweedy, Newcastle-on-Tyne. Designs by the following are very highly commended:—George Baines & Son, London; F. Boreham & Son, London; Nicholls & Stockwell, Swindon.

The British and American Schools of Archæology in Athens (in co-operation) propose to organise a cruise of ten days, starting from the Piræus about the beginning of April and returning to the same port. The cruise is for students and any who wish to join should apply as soon as possible to Mr. A. J. B. Wace, British School, Athens, Greece.

We Regret to record the sad bereavement which has befallen Mr. J. T. Woodard, architect, of 13 Bedford Street W.C., by the death of his wife, which occurred on the 26th ult., after a short illness, at the age of seventy-three. The funeral took place at Highgate cemetery on Tuesday.

Castle Ashby, the old Northamptonshire seat of Lord Northampton, narrowly escaped destruction by fire on Monday night. Fortunately it was confined to the servant quarters.

A Selection of the paintings by Mr. Holman Hunt which were lately exhibited in Manchester and Liverpool will be lent to the Glasgow Corporation for exhibition in the Kelvingrove galleries.

A Fresco has been discovered in an oak-panelled room in what was once one of the old religious houses built in the reign of Edward IV., at Rye, Sussex. The fresco is 16 feet long by 6 feet high, with a frieze fifteen inches in depth. Just under the frieze are three panels, the first containing in five lines of Early English black lettering the opening of the Magnificat, another the second part, but the third has only the words "Glory be," the rest being obliterated. These panels are supported by cherubs.

The Designs submitted in competition for the Leavesden Road Baptist church, Watford, by Messrs. George Baines Son, 5 Clement's Inn, Strand, London, W.C., have been selected. The estimated cost is about 4,000l.

A Site has been purchased in a central position in Dundee on which a theatre is to be erected. The holding capacity of the new theatre will be between 2,000 and 3,000.

New Grove House, Hampstead Heath, which was for many years the home of George du Maurier, is to be offered for sale by auction at the Mart, Tokenhouse Yard, E.C., two o'clock on Friday, March 22, unless it is previously sold by private treaty.

Mr. Allen S. Walker, one of the hon. secretaries of the London and Middlesex Archæological Society, has been appointed by the University of London a university extension lecturer on "London Archæology and the History of Architecture."

The Paper advertised in the Brown Book, &c., of the Architectural Association for April 26, will not be read; Mr. Verity was unable to complete it in time. A paper will be read on the same evening by Mr. F. W. Simonds, F.R.I.B.A., on "Liverpool Architecture."

An Exhibition of Foreign and Colonial architectural periodicals (collected by Mr. Maurice B. Adams) will be open at the Architectural Association, No. 18 Tufton Street, Westminster, daily during next week, between the hours 10 A.M. and 4 P.M. Admission will be free.



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8th 1907.

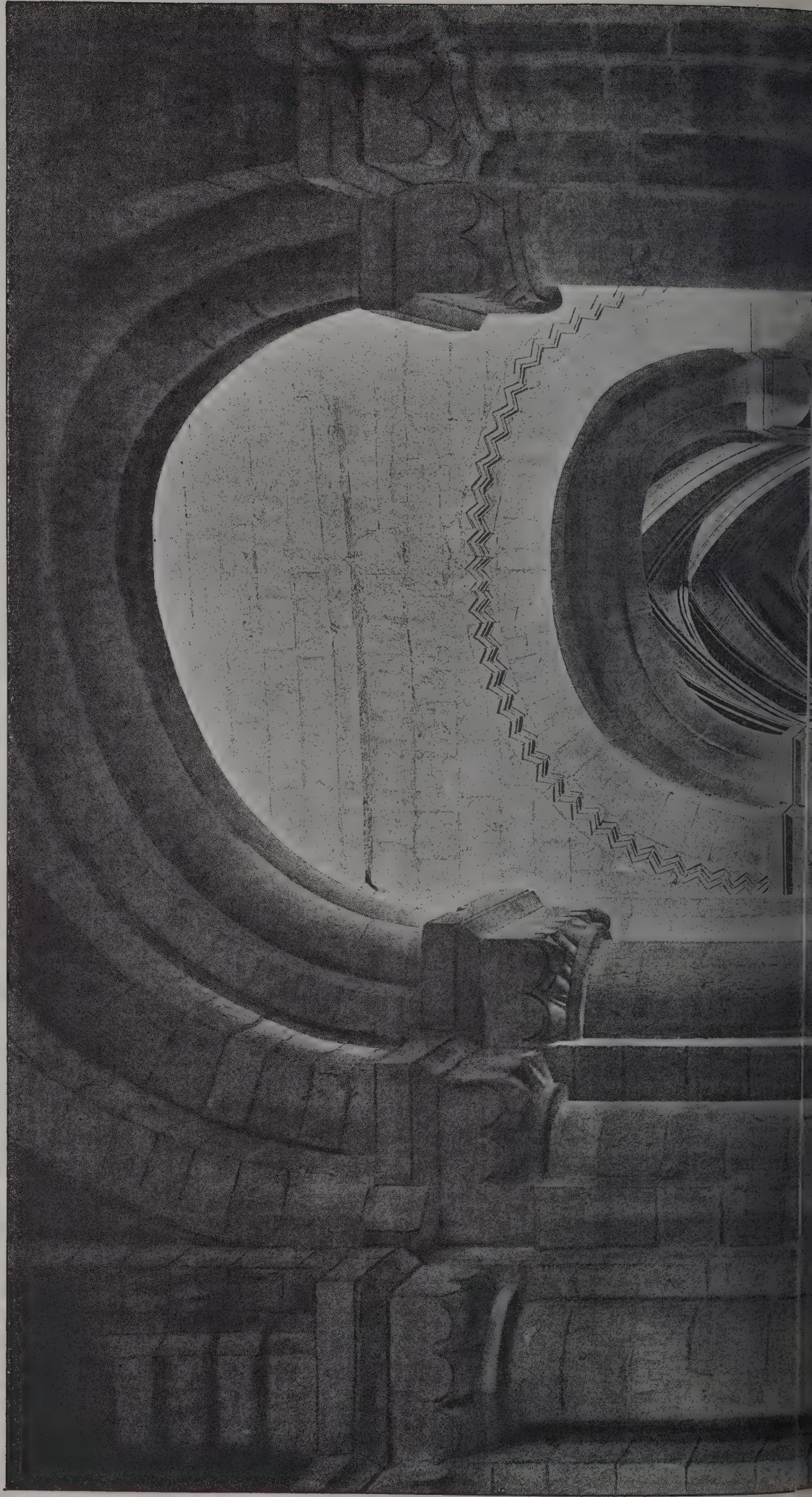


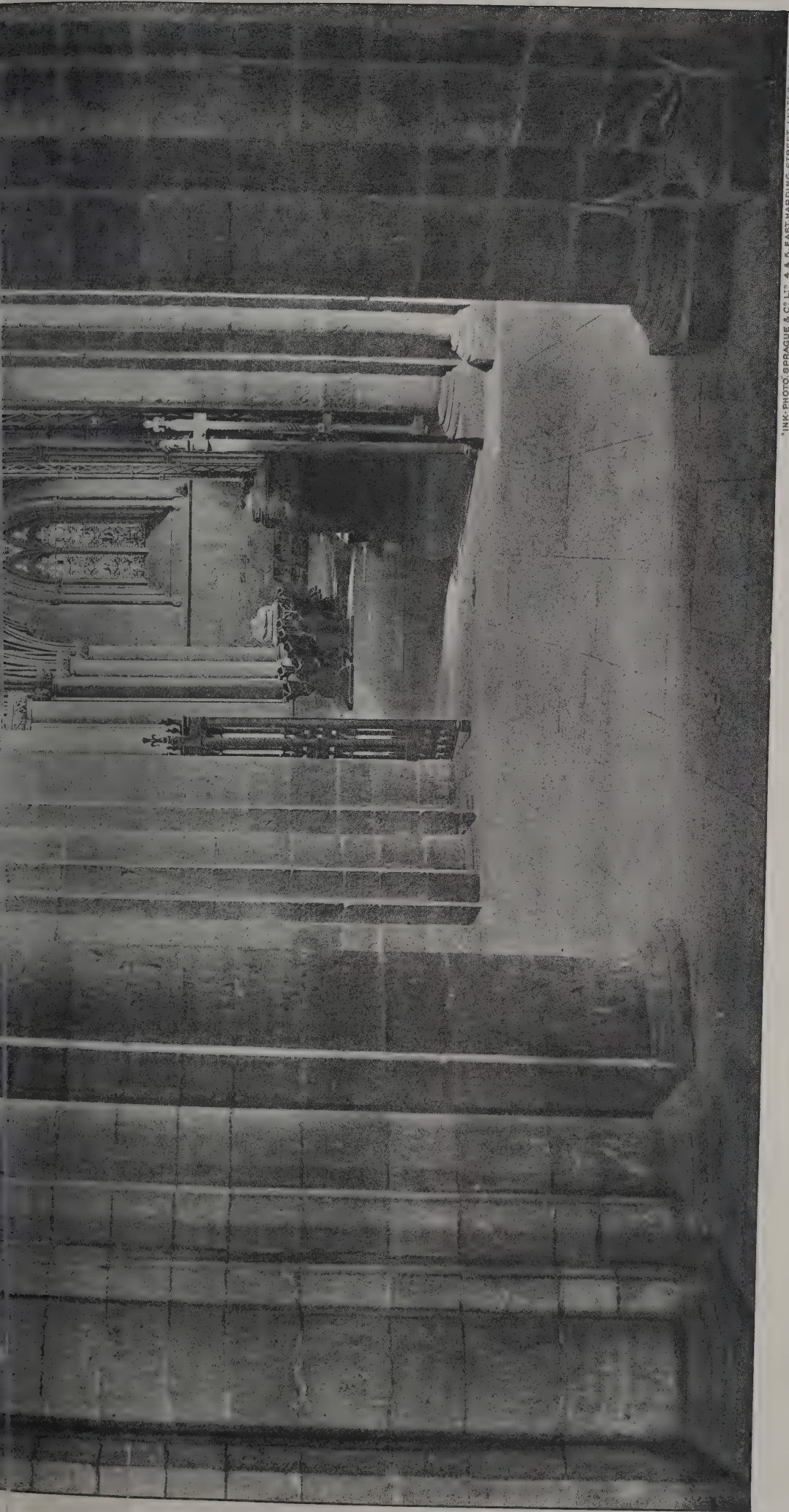
"INK PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

L. HATHAM.
NE BERRY, Architects.



The Architect, Mar. 8th 1907.





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CATHEDRAL SERIES, No. 595.—CARLISLE: SOUTH AISLE, LOOKING EAST.

The Architect, Mar: 8th 1907.



GROUND PLAN.





HOUSE AND STABLES FOR CHAS. R. BELL, ESQ., WESTCLIFF-ON-SEA.

Messrs. CABUCHE & HAYWARD, Architects.

The Architect.

THE WEEK.

must not be supposed that the decision in the COLLIS case will allow anybody to build as he likes, regardless of the inconvenience to a neighbour which may be caused by the increased height of the new buildings. A watchmaker in West Street, Horsham, recently applied in Mr. Justice WARRINGTON's Court for an injunction to restrain his neighbour, a draper, from erecting any building which would interfere with plaintiff's ancient lights or windows, and for a mandatory order for the pulling down of such parts of the new building as did interfere with the lights. The plaintiff said that the light to his workshop came solely from a backyard, and that his assistants worked at a bench placed at the window, and in order to gain additional light two reflectors were used. Since the building operations were commenced the light was affected in the workshop and dining-room. Evidence was given by Professor SMITH and Mr. CHATFIELD CLARKE for the plaintiff. For the defendant Mr. WHEELER and Mr. LEWIS DRURY were witnesses. Counsel for the defendant called attention to the judgment in the COLLIS case, when their Lordships said they did not regard with favour the law against interference with light and air being applied in such a way as to hinder the improvement of premises. Mr. Justice WARRINGTON said he found as a fact that, although the new building was not completed, it had affected plaintiff's dining-room, and when the building was complete plaintiff would have a diminished amount of light, and certainly would not enjoy such light as would suffice for the ordinary purposes and inhabitations of a house or businesses according to the general notions of mankind, having regard to the locality and surroundings. With regard to the workshop, the light would not be sufficient for ordinary purposes. His Lordship granted the injunction, with liberty to apply for a mandatory order respecting the taking down of such parts of the new building as are already erected, and also allowed the costs of the action.

WITH the title of the Scottish Modern Arts Association a society has been formed in Edinburgh for the purpose of ensuring the preservation of representative examples of Scottish art, more particularly by acquiring works of Scottish artists, and also to assist in the enriching of Scottish public art collections. These objects it is proposed to attain by (1) the acquisition of works of art by Scottish painters, sculptors, gravers, or other craftsmen; (2) the acquisition of works of art by artists other than Scottish; (3) the exhibition of works so acquired; (4) the endeavour to secure adequate representation of Scottish art in British national collections; and (5) the furtherance of any scheme which shall have for its object the promotion of modern Scottish art. It will be observed that the Association differs in principle from ordinary art unions, for it takes a larger view of what is desirable, and will enrich public galleries rather than the houses of the members. It was announced at the first general meeting last week that 250 members had been enrolled, that over 400*l.* had been received as subscriptions, and donations amounting to 750*l.* Sir JOHN BURLING-MAXWELL was elected as the first president, and the executive committee consists of twelve artists and twenty-three laymen.

AMONG the contests going on in cities and towns is that between residences and business premises. Trade is believed to be omnipotent and to be always able to get the upper hand; but that view is not taken by the higher Courts. We have already described the circumstances of the case *RUSHMER v. POLSUE & ALFIERI*, which was heard in the Court of Appeal as well as before Mr. Justice WARRINGTON, and we are there-

fore bound to follow its course to the House of Lords. Gough Square, off Fleet Street, is better known to Americans than to Londoners, for the former visit it because Dr. JOHNSON lived in it. Adjoining it is Wine Office Court, and a stranger would find it difficult to discover the separation between them. In Gough Square lives a dairyman, the house being used as a shop and as a dwelling-place. The defendants, or somebody for whom they were acting, became tenants of the ground floor and basement of the adjoining house, which is in Wine Office Court, and began to print newspapers. The work had sometimes to be carried on at night, and the dairyman applied for an injunction, which was granted to him. On appeal the decision was affirmed. The case was carried to the House of Lords with the same result, for the appeal was dismissed with costs. The argument of defendants' counsel was that the neighbourhood was not residential, for trades connected in some way with the production of printed matter were carried on in all the houses. Noise was inevitable, and it was maintained that as approved machinery was alone used, and care had been taken to limit noise and vibration, the additional noise must be unreasonable. The Lord Chancellor held that the noise was a serious addition to the prevailing noises, and that was quite sufficient to warrant the conclusions arrived at.

THE older representatives of criticism who are to be seen at the Royal Academy on Press days are now very few. During late years FREDERIC GEORGE STEPHENS rarely visited the galleries which he had attended for over forty years as the art critic of the *Athenaeum*. He died on Saturday in his seventy-ninth year. He was one of the earliest of the pre-Raphaelites, and his portrait appears in MILLAIS's *Lorenzo and Isabella*, which was painted in 1848, and now belongs to the Corporation of Liverpool. He also contributed to "The Germ," which was intended to be the organ of the new movement, and his portrait was drawn by MILLAIS. But circumstances compelled Mr. STEPHENS to seek employment as a writer rather than a painter. In addition to his regular contributions to the *Athenaeum*, he occasionally wrote articles for magazines; he also prepared some of the descriptive catalogues of prints and drawings belonging to the British Museum. His knowledge of English art was extensive, and he was painstaking and conscientious in all his work. Pre-Raphaelitism was not without its effect upon him throughout his life, for he believed he possessed a standard of art which was absolutely his own.

THE effort of the Ayr Auld Brig preservation committee to raise 10,000*l.* to carry out the necessary work was so praiseworthy, it might have been expected that the Town Council would approve of the proposals without hesitation. But it was suggested that if the final cost exceeded 10,000*l.* then the Council might have to meet the difference. Accordingly, the preservation committee were asked to guarantee the completion of the work whatever might be the cost. In reply they stated "that, having succeeded in fulfilling the terms of the agreement, nothing further can be required of them. The committee instruct us to say that they have gone very minutely into the cost with the engineers, and they have assured them, so far as this can reasonably be expected, that their estimate of about 9,000*l.* to 10,000*l.* will cover the cost of the necessary work. They, however, instruct us to say that, notwithstanding above, they will certainly, in the event of the necessary work costing more than anticipated, be agreeable to make some further efforts to raise further funds." The reply did not, however, satisfy the Provost of Ayr, and he proposed that the town clerk should again write stating that a guarantee should be given. As there was nobody found to second the proposal the terms offered by the preservation committee were approved.

REGISTRATION IN AMERICA.

ILLINOIS, of which the capital is Chicago, is one of the two American States having a law for the compulsory licensing of architects. In Illinois there are other towns or cities besides Chicago, and it may therefore be considered as a suitable region in which to make an experiment of the kind.

The Act to provide for the licensing of architects and regulating the practice of architecture as a profession came into force on July 1, 1897. Amendments were introduced in 1899 and 1905. The Act authorises the appointment of a State Board of Examiners of Architects consisting of five members. One of them is to be a member of the Faculty of the Illinois University and four are to be architects who have been engaged for at least ten years in the practice of architecture in the State. Two of the architects are to hold office for two years, and the other two with a member of the University Faculty for four years. After a limited time the appointments are to be made by the Governor of the State. A president, and secretary who is to act as treasurer, are also to be elected, the latter receiving a salary of 1,500 dollars a year besides travelling and other expenses. The remaining members are to be paid 10 dollars for each day engaged in the service. All expenses are to be derived from the fees received by the Board.

The examinations are to be held at least twice in each year. Any person over twenty-one years of age upon payment of a fee of 15 dollars is to be entitled to an examination for determining his or her qualifications to practise architecture. The subjects are to have reference to the construction of buildings, the strength of materials, the ordinary professional work of an architect, supervision of mechanical work on buildings and the laws of sanitation as applied to buildings. If the result of the examination appears satisfactory to a majority of the Board, the applicant, on the payment of 25 dollars, is to receive a license to practise architecture in the State. Should the applicant fail to pass the examination the fee is to be returned. Any person who by affidavit could satisfy the examiner that he or she was engaged in the practice of architecture on the date of the passage of the Act and who applied within six months was entitled to a license without examination on the payment of a fee of 25 dollars. In the case of a co-partnership each member whose name appears must be licensed. No stock company or corporation can be licensed to practise architecture, but may employ licensed architects. Each licensed architect is to have his or her license registered in every county of the State in which he or she practises, and the failure to register is to be deemed a sufficient cause for the revocation of the license. Every licensed architect is to have a seal containing his or her name, place of business and the words "Licensed Architect, State of Illinois," and all drawings and specifications issuing from the office are to be stamped with that seal.

The penalty for practising architecture without a license is to be not less than 10 dollars, and not more than 200 dollars for each and every offence. Advertising or putting out any sign or card or other device which might indicate that a person is entitled to practise as an architect is to be considered as an offence. A person is to be regarded as an architect who plans or supervises the erection, enlargement, or alteration of buildings for others, and to be constructed by other persons than himself. But draughtsmen, students, clerks of works, or superintendents and other employes of licensed architects are to be allowed to act under the instruction, supervision, or control of their employers. Any person, mechanic or builder is not to be prevented from making plans and specifications for or supervising the erection, enlargement, or alteration of any building that is to be constructed by himself or employes, "nor shall a civil engineer be considered as an architect unless he plans, designs and supervises the erection of buildings, in which case he shall be subject to all

the provisions of the Act and be considered an architect."

A license may be revoked for gross incompetency, recklessness in the construction of buildings or for dishonest practices by the unanimous vote of the Board of examiners. The holder is to be entitled to at least twenty days' notice of the charge against him and of the time and place of meeting for the hearing and determining of the charge. Notice of the cancellation is to be given to the county clerks where the license has been registered. After six months from revocation a license can be issued upon satisfactory evidence of proper reasons for reinstatement and payment of a fee of 5 dollars. The Board on those occasions is to have the power of a Court of Record, and can issue subpoenas and compel the attendance and testimony of witnesses. The accused can be heard in person or by counsel in an open public trial. Licenses are to be renewed annually on a payment of 5 dollars, and failure to renew within a month will be followed by revocation. But renewal is allowed after the prescribed time on the payment of 10 dollars.

We have received the fifth biennial report of the Board of examiners for the years 1905 and 1906. It appears that at the end of 1906 there were 704 licenses in force. Of that number 203 were licenses granted to those who passed the examinations, and 501 were granted without examination by reason of the applicants having been licensed to practise when the Act was passed. In other words, at the end of ten years two-sevenths of the practising architects in Illinois have shown their fitness to undertake the work of an architect. In another decade the proportion will be much larger, and the Board believe that by the end of thirty years nearly all the architects will be holders of certificates of qualification. An important point is the relation between the successful and unsuccessful candidates. In 1905 out of twenty-eight candidates examined in classes, eleven were rejected; while of seventeen examined at Board meetings sixteen passed. Out of twenty-two candidates examined in classes in 1906 eight were rejected, while the ten examined at Board meetings all received certificates.

One curious case is mentioned. In April an architect was convicted and fined for practising without a license, but that was only one out of ten charges which he was implicated. He appealed to the Criminal Court. But owing to the law's delays the case was not reached till December. It was understood that the applicant intended to attack the constitutionality of the Licensing Act. The Board of Examiners were ready to defend, but the necessary documents were not prepared in time. The case was accordingly dismissed without "privilege to reinstate." The defendant was in practice before the passing of the Act. He applied for examination, but failed to satisfy the Board. He was recommended to try again, but was found to be the lowest marks. In two years it appears there were only two convictions; but attempts were made to evade the Act in a larger number of instances, owing, it is believed, to ignorance of the law. The Board state that "it has been necessary in some cases to adjust the relations between architects and engineers employed by large corporations, which has generally been effected with satisfaction to all parties. Numerous complaints of supposed violations are received from licensed architects, but in many cases the offences are imaginary rather than real, and are due to an insufficient knowledge of the law on the part of the architects. For instance, the right of 'any person' (whether owner or builder) to prepare plans for and erect buildings for his own employes is not generally understood. It is often difficult to determine how much latitude is given to owners and builders under this provision." It may also be regretted that many licensed architects have been put on trial before the Board for recklessness, incompetency or dishonest practices. A number of licenses have been revoked, and some of them permanently.

stigations have also been made into cases in which architects were alleged to be connected with building or questionable practices.

The Board having doubts as to the extent of its authority in investigating or prosecuting, obtained the opinion of the Attorney-General. According to that opinion, the intention of the Legislature evidently was to raise the business of the selection and use of architects and the superintendence of the construction of buildings to the standard of a profession, and to prohibit against the employment of incompetent and unfit persons as architects." The Act, however, "makes no provision as to the manner in which gross incompetency or recklessness in the construction of buildings, or dishonest practices by licensees, are to be brought to the attention of the Board." The Attorney-General is of opinion that "the purpose was to avoid limiting the Board to any particular means of initiating the proceedings and to empower the Board to proceed in their own way to investigate alleged incompetency, recklessness or dishonest practices, and, if necessary, to formulate charges. Any other construction of the Act would destroy the efficiency of the Board."

The examiners say the opinion gives the Board even more powers than it anticipated, and should be a warning to all architects in the State of what they may have to expect from the Board. Although licensing or registration may be considered as inevitable in England, it is never likely that an English Attorney-General would tell the licensing authorities to go as far as this. For what is the meaning of the words if not that the same men are to be the detectives, the prosecutors and the judges in any case which they care to take up? There is laxity occasionally in the proceedings of American legislatures, but we cannot imagine that when the Licensing Act was put in force it was contemplated that an omission to describe procedure was intended to give unrestricted authority to a few laymen to proceed in their own way against architects who may be their competitors in business. The desire to exercise a power which would not be exercised in the ordinary courts of America is enough to suggest aims which are not inspired by an equitable and should serve as a warning to everyone in this country who while desiring to protect the practice of architecture from incompetency, should scorn any kind of inquiry which would not be endured at the same price.

THE STATUE OF COLLEONI, VENICE.

THE equestrian statue of BARTOLOMEO COLLEONI, the condottiere who commanded mercenaries himself, is one of the works in Venice which when seen are never forgotten. Mr. RUSKIN, who has taken a high rank in Renaissance work in general, which he believed to be inspired by the spirit of evil, made an exception in favour of it. "I do not believe," he wrote, "that there is a more glorious work of sculpture existing in the world than that equestrian statue of BARTOLOMEO COLLEONI." It is not to be supposed that although like OTHELLO he rendered services to the Venetian Republic, the memorial was erected out of gratitude. The old warrior bequeathed his fortune to the city on condition that a statue of him should be erected on the Piazza of San Marco. He did not know it was contrary to Venetian law to erect such a work in the public place. The Senate kept the money, and with a little that was characteristic set up a statue in front of the church of St. John and St. Paul, in what could be considered as the campo of the scuola of the confraternity of San Marco. COLLEONI probably performed many acts of evasion during his lifetime to be pardoned if intelligence of the transaction had reached another world.

The commission was given to ANDREA VERROCCHIO, Florentine. According to VASARI, after the sculptor prepared the model and was arranging for casting

it in bronze, a new arrangement was made in Venice. VERROCCHIO was expected to execute the horse, and the figure of the general was to be entrusted to VILLANO, of Padua. Naturally the Florentine sculptor was indignant. He destroyed a part of his work and left Venice. He was informed that if he ever re-entered the city he would be decapitated. In spite of this threat he was persuaded to return and resume the work. VERROCCHIO restored his model, and apparently had cast some part of it, but he caught cold on leaving the foundry and died after a few days' illness. He desired that the completion of the casting should be entrusted to his pupil LORENZO DI CREDI, but the Senate preferred that ALESSANDRO LEOPARDI should have the work. He completed it and designed the fine architectural pedestal which supports the equestrian figure. He took care to introduce his name in such a way that posterity might imagine he designed and modelled as well as cast the noble work.

The accounts given by VASARI of the final arrangements are not clear, and they would be sufficient to create some doubt about VERROCCHIO having been the sole creator of the statue. There is no doubt he was an able artist, and he had so much versatility that his great pupil, LEONARDO DA VINCI, could be considered as a magnified VERROCCHIO. Like so many of the Renaissance artists, he began his career as a goldsmith. Then he passed to sculpture, and executed works in Florence which were allowed to stand in the vicinity of the masterpieces of Ghiberti and Donatello. Next he took up painting. He was a mathematician as well as a musician, and of his varied skill sufficient evidence has survived. VERROCCHIO was an artist whose career upholds REYNOLDS'S dictum about nothing being denied to well-directed labour. But the majority of his works bear out VASARI'S suggestion, that "had he possessed the facility arising from natural powers to an equal degree with the diligence and industry where-with he was gifted, and which he bestowed on the arts he exercised, ANDREA VERROCCHIO would have been among the most excellent of masters." Evidently he recognised his own limitations. According to the legend, he ordered his pupil LEONARDO to paint one of the angels in an altar-piece for the monks of Vallombrosa, and when he saw the difference between it and one of his own angels he became so despairing that he renounced painting.

These circumstances are sufficient to excite doubts concerning VERROCCHIO'S part in the COLLEONI memorial. The latest authority who has taken up the subject is HERR EMIL JACOBSEN. He points out that the type of head adopted for COLLEONI is unlike any of those in VERROCCHIO'S earlier work. Similar types are, however, to be found in drawings by LEONARDO. The compositions which remain and which can be ascribed to the master are portraits or Holy Families which required beautiful countenances. But the engraving after RUBENS'S drawing from DA VINCI'S battle-piece, although it is only a translation of a translation, yet presents us with hook-nosed figures and the peculiar *diablerie* of expression seen in the COLLEONI statue. HERR JACOBSEN refers to one sketch in the British Museum in which a warrior has the head and neck of a lion, and it suggests that at one time the soldier of fortune from Bergamo had interest for DA VINCI, and he amused himself in forming a pictorial expression of the name Col-leon.

How far would dates allow of the co-operation of DA VINCI with his master for such a work as the Venetian memorial? COLLEONI died in 1475. The commission for the monument would not be given for four or five years afterwards, or say 1480. Now in 1472 LEONARDO'S name was inscribed in the red book of the debtors and creditors of the Florentine company of painters. As well as can be made out, he remained in Florence until 1483, when he wrote his famous letter to the Duke of MILAN announcing his capabilities as a painter, sculptor, architect, civil and military engineer. In the course of it he states:—"I can conduct and bring

to an end every kind of sculpture in clay, marble and bronze. I am able to execute also the equestrian statue of bronze which is to be elevated to the immortal memory of your father the Duke and the noble family of SFORZA." We may be assured that DA VINCI was always careful to base his knowledge on experience. Up to 1483 he was accessible to VERROCCHIO, and could have taken part in preparing models or in the casting of bronze with his late master. VERROCCHIO died in 1488; and, as we have said, his death was caused through the operations required for the completion of the statue. According to some accounts the work was not finished until 1495—a time when DA VINCI was engaged on *The Last Supper* in Milan. It was therefore quite possible for DA VINCI to have aided VERROCCHIO through all the stages of the commission for the COLLEONI memorial. From the elder artist's character, as exemplified by his abandonment of painting after his pupil had painted a figure, it is not likely that he would have copied one of DA VINCI's designs or models. We are therefore authorised in assuming that it was more likely DA VINCI modelled at least the head of the Venetian warrior. We might go further. COLLEONI is not represented as looking straight in front of him. The head and chest are partly turned on one side. It can be observed in DA VINCI's paintings that he often introduced a similar arrangement. And indeed we can see it in the works of his immediate followers.

It should be noted that in 1892 a view of the statue appeared in *The Architect*, and one of our contributors offered the following suggestions, which anticipated the speculations of Herr EMIL JACOBSEN and Dr. MACKOWSKY on the subject by several years:—

It is supposed by Cicognara that the statue was recast by Leopardi, from which it might be inferred that the impressiveness of the work is owing to the Venetian sculptor. What seems to be not unlikely is that the remarkable effect which is produced on all who look upon the figure is to be credited to Da Vinci rather than to his master or to Leopardi. Is there any reason to make the co-operation of Da Vinci improbable? When Verrocchio discovered that his apprentice could paint better angels than himself he may have suffered depression for awhile, but there could be no rancour, for the Renaissance artists were accustomed to victories of that kind. There was no obstacle in the transaction to make it obligatory that the master should not afterwards invoke the aid of his conqueror. Now there is nothing, so far as we know, corresponding with the head of Colleoni in any of Verrocchio's figures in Florence. As a sculptor he was more esteemed by his contemporaries for his industry than for his genius. On the other hand, Leopardi's stands or sockets for the masts in the Piazza of St. Mark are so excellent, we are not much surprised at his capacity to design the pedestal in the Piazza of St. John and St. Paul. That he had sufficient power to design the equestrian statue is not, however, indicated by any of his works. In fact, the Colleoni memorial is very suggestive of the interposition of a "ghost." It should be remembered that about the time when Verrocchio was occupied with the commission for the memorial of Colleoni, in Milan, Da Vinci was engaged on an equestrian statue of Francesco Sforza, who was one of Colleoni's rivals. Is it not probable that under such circumstances Verrocchio would have compared designs with Leonardo, and have availed himself of the aid of his pupil? The head of Colleoni is remarkable, but it is allied to some of those that are introduced in the *Last Supper* and to many that are seen in Da Vinci's sketches. The projecting brow which makes the eyes appear as sunk in a cavern, the aquiline nose which almost touches the upper lip, the capacious and merciless mouth, resemble details in the sketches which also show faces that are as truculent in expression as the old mercenary appears. It is now impossible to realise what sort of statue of Sforza was modelled by Da Vinci. The sketches which are supposed to relate to that work reveal the over-fastidiousness of the artist. The bronze statuette of a horse that is believed to be a copy of Da Vinci's does not express the strength which was necessary in an animal that was to bear the weight of a figure in heavy armour. Great as he was, Leonardo was often unable to put forth all his power. If we could, therefore, assume that Da Vinci helped in the realisation of the

Venetian work it would not be necessary to conclude Verrocchio was a mere looker-on; it is likely that strong common sense and his devotion to realism may have translated Da Vinci's ideas into the impressive form which seems to command in Venice.

The subject is deserving of investigation on account of the importance of the work, and still more because the world does not possess any example of DA VINCI's power as a sculptor.

ROYAL ACADEMY LECTURES.

IN his fourth and concluding lecture of the present course to the Academy students, delivered on Monday, March 12, Mr. Blomfield took as his subject "The Limitations of the Arts." He pointed out that there were far more difficulties in the theory of art than the differentiation of the end and province of the various arts—a subject that has been treated with some neglect in modern criticism. The critics of the school of 1850 were preoccupied with the moral qualities of artists or with the literary possibilities of their work. Their successors had devoted much attention to the minute discrimination of matters of technique in their application to pictures; but the connoisseur had not profited at the expense of the artist, and there seemed to be room for the old-fashioned dissertation on first principles, for an attempt to reach the artist himself, and an attitude that he was justified in assuming towards his work. An effort had been made, on the other hand, to grapple with the scientific study of aesthetics, to ascertain the mental grounds on which the æsthetic emotions were based. The results of these extremely scientific methods were, however, not convincing. The theory was that our æsthetic pleasure in objects was derived from our inveterate habit of imagining ourselves into those objects, and of conceiving ourselves as fulfilling those functions. Thus, our sense of the beauty of a well-proportioned column was said to be the satisfaction that we felt in imagining ourselves adequately discharging in our person the duties of a column. In short, that this æsthetic sense was only one phase of the anthropomorphic instinct of man. As practical artists, we do not think they would find this theory of material value in their work. They might leave it to the industry of German speculation, and start a little further on with the fact that certain human creations did raise within us a certain thrill of feeling. This fact might be taken as a datum for further researches into the past. He should attempt to get some account of what had been done in establishing the working purposes the relations and the differentiations of the various arts by the great thinkers of the past, and draw some conclusions from their teachings for practical guidance. In so doing he should limit himself to a rough sketch of the teaching of the three foremost thinkers on this subject—Plato, Aristotle and Gotthold Ephraim Hegel. The most remarkable fact in Plato's philosophy was, said the lecturer, his ingrained suspicion of art. Aristotle said Plato was merely an affair of imitation, and as such was to be eliminated from the training of his ideal state. Plato did not deal with art until the tenth book of his "Republic," and there the artist was dismissed with contempt. The appeal that the artist made being regarded as made to the lowest elements of our nature. Plato's words were severe in their emphasis:—"Imitative art is far from the truth when it discharges its function; and for no true or healthy purpose it attaches and devotes itself to that element in us which is far removed from wisdom." Such a principle as this, less matter as imitative art was not, therefore, to be discussed any further. Plato's conclusion seemed to the lecturer either a piece of superb irony or the result of too unyielding logic. Plato subordinated the arts to the music itself, to the over-mastering purpose of perfecting the soul. He banished all arts from his State, except such as had some ethical value, and this he retained not on its own merits but "ophelious eneka," for its use and benefit in training the soul. It was not easy to reconcile this with another view of Plato's, that each art should be perfect within itself. If a picture was perfect within its own intention it surely came illogical to reject it because of its failure in its ethical value. Plato's theory was distinctly disappointing. Aristotle, the scientific thinker, was far more sympathetic towards the first time he established the distinction between the fine and useful art, and though such a distinction was most irritating to those who maintained the unity of the arts, it was a distinction that had, in fact, always been obvious, and it was a great step forward to recognise the possibility

of a serious function in art. Aristotle admitted, under certain aspects, art had its proper place in the scheme of life, and this, not merely as a side issue, which might mean little or nothing as far as art was concerned, but as there in its own substantive right. When we come to Aristotle's treatment in detail artists were doomed to disappointment, for Aristotle in dealing with art was almost entirely occupied with poetry. The business of fine art was to show men in action; its end was to purify the emotions by exciting and discussing them. Sculpture and poetry might satisfy his purpose when stated in the general terms, but only in a very limited sense. As for architecture, as it was not supposed to interpret human emotion in action, it was implied not mentioned; no doubt being considered merely as a useful art. More than this, the end of art, with Aristotle, was the impression that it made on the spectator or the audience. There was thus a wide gap between the view of the ancient world that the artist was there solely to contribute to the wealth of true life, and the modern view that, in addition to that, the artist might also take into account the realisation of himself. They had thus advanced a very little way the modern standpoint. The existence of graphic and plastic art was now recognised by the Greek as worth consideration, but its creations simply entered into the scheme of his life as a citizen, and that was about all. In the ardour of his politics, his literature, and his philosophy, he did not attach the first importance to masterpieces which ever since his time had been the standard and canon of the world in the arts of architecture and sculpture. Nor had he considered very closely the relation of the arts to each other. It was perhaps fortunate that in succeeding ages literature left the arts severely alone. Mistakes were made, artists attempted too much; but, at least, they were not fogged by hasty theories of the relations of poetry to the arts, until in the eighteenth century the literary man arose in his might and annexed the whole domain of the arts as subject-writing, in which he was to lay down the law and the artist was to carry it out. A literary man and a philosopher, Gotthold Ephraim Lessing, once and for all overthrew the idea that poetry and the arts were convertible terms. Lessing was not particularly interested in any of the arts except poetry; but he possessed great learning and an active and intensely logical mind, and the fallacious thought of his contemporaries seems to have exasperated him into the writing of the famous "Laocoön." Lessing's memorable essay on the ends and limitations of the various arts was the most acute and profound piece of criticism ever written. Lessing's position was twofold:—(1) That the arts differed in subject and treatment; (2) that the end of art was pleasure. His method was desultory and apparently inconsequent, and he repeated himself; but the main weight of his criticism rested on the first principle. The gist of it was contained in a quotation from Plutarch, which Lessing applied to his own sense. The arts, he said, differed in the subject-matter and the methods of their imitation. The artist employed forms and colours in space; the poet articulates sounds in time. Therefore the right objects for the painter and sculptor were objects or bodies which co-existed, which were to be seen side by side, and whose impact on the senses were to be rendered at one given moment of time. The poet, on the other hand, had to give consecutive impressions; he could only express himself by a succession of sounds or words. His business, therefore, was to make us realise action—objects which succeeded each other in time. Given this principle, all sorts of consequences followed. Subjects which were legitimate for the poet were ruled out of court for the artist. Again, it was possible for the poet to make his appeal to the emotions by methods which were not open to the artist: the poet could deal with consecutive action, whereas the painter had to select some definite moment for his work. He had to deliberately forego much that was possible to the poet. Lessing argued that poetry, and even, generally, literature and the plastic and graphic arts, were not convertible terms; that it was wrong to transfer subjects and methods from the one to the other without recasting them mentally, without definitely realising the limits and conditions of the art in which the artist sought to express himself. For example (said Mr. Blomfield), in a recent prize competition, the palace of Bacon's "Essay on Building" was set as the subject of design. This was wrong in principle, for what might be legitimate enough in a prose picture, where the writer only attempted to suggest the idea of a certain building, became unintelligible and unworkable when literally translated into the lines of an architectural design. It was

for his insistence on this point that Lessing's work was of such permanent value for artists. Lessing himself seemed only to have taken a theoretical interest in the arts apart from poetry. Thus he regarded landscape-painting as an altogether inferior art, because it was not occupied with ideas in action. Dealing with invention, Lessing maintained that this was shown, not in the discovery of new subjects, but in the arrangement of old, inasmuch as the artist's work should be intelligible at the first glance. He had little sympathy with wayward artists, as indeed was shown in his other proposition, that the end of all art was to give pleasure—a position which left out of account the personal equation of the artist himself, whose object in his work might be to realise his own powers, to energise himself. Certainly the artist who set out in his career with the sole object of giving pleasure would be a desperate failure. Behind fine work in all the arts lay passionate emotion, which impelled a man to design architecture in one way, and one way only. The impulse was from within, and as such defied classification. Lessing seemed to ignore this: given the motive impulse which started the artist on his work, Lessing supplied certain leading principles by which the artist was to work in accordance with the limits of his art, or as Aristotle put it:—"It is not any and every pleasure that should be sought from tragedy, but the pleasure which was peculiar to tragedy." At this point Aristotle and Lessing left us to our own devices. What was the "peculiar pleasure" of painting, and sculpture, and architecture? The object of art was a somewhat complex affair. It was partly no doubt to give pleasure, partly the result of an irresistible impulse in the artist himself to render his ideas and emotions artistic and intelligible; partly, at least in architecture, to answer certain definite needs and conditions. Somewhere along these objects at any rate would be the end of art, but it was very material how that object was attained. The pleasure obtained in art was the pleasure of beauty—beauty of form, of colour, of light and shade, of rhythm and proportion. The beauty aimed at by the arts was no one standard and unalterable form—rather, one would say, there was in this world, in nature and in life, an inexhaustible reserve of beauty—beauty only to be seen by the seeking eye, and made visible and concrete by the skilful hand. Truth might be at the bottom of a well, but beauty lay everywhere for those who could see it. Yet everything was not beautiful, or rather in the existing state of our faculties we could only think of certain things as beautiful. Our sense of beauty, with all its limitations and imperfections, had been built up by countless generations, and through innumerable associations beyond the reach of any profitable psychology, and artists might be justified in taking it for granted that certain things would always be considered beautiful and certain things ugly. The quality of selection was surely at the root of the matter; the power to see for oneself what lay in a subject. Both sculpture and painting rested on a convention, in that we hoped to accept this as representing the objects that they purported to represent; but in so far as they appreciated direct and literal realism, this endangered their convention, and ran the risk of being estimated by students out of relation to art. Tussaud's figures were more like the originals than any marble figures could be, yet they made no appeal to us. The reason was that they had not passed through the fire of an artist's thought, and that, in so far as they challenge comparison with reality, they were obviously absurd. The difficulty was to know how far realism should go and when it stops. The full use of colour in sculpture seemed to the lecturer to be outside the true province of that art. Selection became doubly necessary in sculpture. Its method of expression was less obvious, and more a matter of abstract thought than that of painting. An artist would hardly select sculpture as the art in which to tell a story, although it had been constantly done by inferior men—*eg.* in the elaborate carved scenes round the outsides of the choirs of Amiens and Chartres. Here there were as many as five or six places of crowded figures, whose action was absolutely unintelligible without careful study, and whose value as an integral part of architecture as surface treatment was actually less than a drupe of ornament or a rusticated surface. The actual sculpture was extraordinarily skilful; but the failure in effect was due to a misapprehension of the function of architectural sculpture. Architecture was the Cinderella of the arts, the art that Aristotle considered not as a fine but only as a useful art, if an art at all; that others had recognised on moral or literary grounds, or had accepted as the more valuable of ornament. Architects would not accept this position, yet there was no doubt that

architecture to some extent stood apart from these other arts. It was, firstly, in no sense imitative. Architecture, indeed, followed nature—hardly in the sense that nobody could put up a fine building who had not mastered the ordinary laws of statics and dynamics, and acquainted himself with the materials he employed. Secondly, an architect did not select his subject. He had to work under the conditions of the problem he had to solve, of the site and the materials of his building. The architect was there to produce an organic composition—not some picturesque detail, but a whole in which those details combined for a united impact on the emotions. Picturesque details had not in themselves any relevance to architecture, but were merely the notes which the composer uses. They only ranked as architectural value by their relation to the other constituent parts of the design, and by the skill with which they were treated in regard to the whole effect. Architecture was not cabinet-building nor goldsmith's work, but a genuine masculine art, and its province was the handling of masses of material. This point was of vital importance, and had always been overlooked in periods of indifferent architecture. An architect should always have before him the effect of his building as a whole. All his ability and dexterity, the skill of his colleagues, the beauty of his materials, were wasted unless this was kept in view, and all his energies should be devoted to this unity of effect. Another limitation of architecture was to be found in the fact that in the lapse of ages there had grown up within us certain instincts of æsthetics, which were not to be set aside. The forms of architecture were now very old, in the same sense that the words of a language were very old. Nobody had yet asserted that the possibilities of the English language were exhausted, and it was equally so with architecture. The architect's invention and originality were best shown in the use he made of accepted forms.

SEVENTEENTH-CENTURY ARCHITECTURE.

ON Thursday evening, the 7th inst., a lecture on "English Architecture in the Seventeenth Century and the English Country House" was delivered before a crowded audience at Carpenters' Hall, London Wall, by Mr. C. R. Ashbee, M.A. He commenced by stating that the majority of the old monastic buildings were replaced by the country houses, and the local patronage and powers of the abbey were transferred to the new lord of the manor. The young aristocracy of Henry VIII. and Elizabeth were worthy followers of the monastic régime, and they left the mark of their generous life upon their houses, their gardens and the cottages of their tenantry.

At Penshurst, at Hatfield, at Burleigh and at Audley End we have the great central hall, where the whole household met at the common meal, where there was often music and recitation going on. The manner of living was simple and at the same time sumptuous; there was no luxury in our sense, but simple and generous fare, with a few finely made vessels to contain it and pewter or wooden platters to eat it from. In the centre of the table stood the salt, often a superb piece of work in silver or gilt. At many of the older halls, such as Haddon, there are chapels, where the whole community worshipped, one of the retainers acting as chaplain, and some of the great rooms were as a rule given to dancing and music and paintings. Among the earlier Elizabethan aristocracy the whole community lived and shared their life together. The people, like all English people, except they are enervated and degraded by industrialism and great cities, loved the open air and the sunshine; their life was out of doors; they hunted and hawked and coursed in common. One of the most beautiful and suggestive sights among the old halls of England is the open air theatre at Penshurst, where they acted Ben Jonson's plays in a half circle of grass sward dug in the park, with the trees and flowers and summer sky of England around them. If you read "Twelfth Night" and "As You Like It," you will get some idea of what went on on an August afternoon at Sir Philip Sidney's home. Life alternated between a picnic in the Forest of Arden, a musical masque at old Capulet's, and the healthy boorishness of the house of Petruchio, when he brought home the shrew; that was the life of the aristocracy of Elizabethan England. The truth of this is proved by the architecture. Haddon, Burleigh, Audley End, Newstead, Hardwicke, Longleat, Montacute, Bolsover, Knowle, Hampton Court, Welbeck, Penshurst, Hatfield, and many others, are the books in which we read the inner life of

England in the seventeenth century. From the laying out of the whole plan to the minutest detail the story of Elizabethan government and manners is told in them. Their peculiar charm is that they are English right through. The England of Elizabeth, moreover, showed an amazing power of assimilation. Everything flowed into her, and by the strength of her character everything was transmuted.

John Thorpe's book of plans is among the most interesting workshop records of the sixteenth century left to us. We have in it some of the houses he built, and many that were either never carried out or, being unnamed, cannot now be traced. Somerset House, Burleigh House, Holland House, Giddy Hall, Audley End and Kirby are among the number, and perhaps the most interesting is the house, the "whimsical edifice," as Horace Walpole affects to call it, that the artist designed for himself. The place is in the nature of a setting together of the two letters I . . . T. A corridor joins them in the centre. Scribbled in a marginal note at the side of the architect's design is the triplet:—

These two letters I and T
Joined together as you see
Is meant for a dwelling-house for me.

JOHN THORPE.

And it was just such a metrical conceit that the Elizabethan loved in architecture as in verse. We have in some of the houses great balustrades cut out in letters, of Latin inscriptions or verses, twisted scrollwork of stone with lovers' knots, half-timberwork with parqueting that bewilders you in its variety of pattern and subject detail, and every manner of playful and graceful arrangement in stone and timber. Utility was then as it always must be the basis of all sound and honest building, but there were other things in human life that were regarded as being equally necessary to the making of a citizen, and these the architecture brought out. Horace Walpole of a later and prosier age may call them whimsical if he will.

That the final architecture produced, if not so noble as that of the work of the Mediæval church, was great, goes without saying, but regarded as Domestic architecture the building of the house, the home, the shell of the family life, nothing has been ever produced that will equal the great Elizabethan hall for serviceableness of purpose, for beauty, and for the expression of the simple dignity of life. The ordinary plan of the Elizabethan house is either that of an E or an H, and if you wish to be whimsical you may trace that in compliment to Elizabeth or Henry; if you look closer into the manners of the time you will find that it was the most obviously practical and serviceable form of planning a mansion that could have been devised. The larger the house became, the more variations did the architect play upon the H motive, and the conditions of life necessitated largeness and roominess of building. Not only had the house to be planned for the ordinary use of my lord and his retainers, not only had there to be the common hall, chapel, kitchen and a few private rooms, with the all important stables outside—the house had to be planned too for possible royal receptions; there had to be state apartments, usually the suite on the first floor to the front; the queen might come some day, some day there might be a royal progress, and that was an event great above all others.

The central features of the seventeenth-century house then were hall, chapel, suite of state rooms, guest chambers, kitchen and offices, and stables. In plan these inevitably tended to group into courts, the stables being arranged outside in a separate block, but so that when you came to the house you rode through them first and got off your horse. And yet with all this the Elizabethan house would have been incomplete, the most important object of all would have been deemed wanting, and that was the garden which was often laid out before the house itself. The most beautiful house in England is Montacute in Somerset. Its peculiar beauty consists in that it is to-day just as it was in the days of Elizabeth; the family having been never too poor to sell it and never too rich to improve it. In closing his picture of the Elizabethan hall and the life that it expressed the lecturer recited a ballad, "The Old and Young Courtier," whose author is unknown, but which from the ring of it might have been composed by Raleigh in his last weary hours in prison, when he reflected how the great life of the Elizabethan age was passing away.

The lecture was illustrated with about twenty lantern slides of the large houses referred to, and at the conclusion a vote of thanks was accorded to Mr. C. R. Ashbee, as well as to Lord Addington for presiding on the occasion.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

At a meeting of the above Society on Thursday, the 7th inst., Mr. Percy Robinson, F.R.I.B.A., lectured on "Architectural Sketching in Yorkshire." The president, Mr. H. S. Chorley, occupied the chair. The lecturer remarked that this lecture being coincident with the revival of the Society's Sketching Club, it occurred to him that his remarks would be most useful if addressed more particularly to the younger members of the Society. Commenting on the necessity of studying the best old work, he said there was no better method than sketching in order to become thoroughly saturated with the spirit of it. Sketching entailed an almost unconscious analysis of the work, and many subtle beauties were thus revealed that in a more casual observation would pass unnoticed. The ideal method of study is a combination of sketching and measured work. Of method and materials little need be said; technique is largely a matter of temperament or individuality and will develop itself. Each man chooses the method and medium best fitted to his own particular feeling or the rendering of the subject. For diversities of technique compare the work of Raven Hill and Phil May; or in the domain of architecture compare the tricky suggestiveness of Herbert Railton with the restrained and archaic linework affected by what is known as the Birmingham School. As regards subjects, sketch old buildings for their architectural features as far as possible, but if these are not to hand you need never be at a loss; go further; broaden your views and enlarge your knowledge by extending your researches into the realm of nature; study the human figure, animal and vegetable forms of all kinds, remembering that nature is the basis of all design. Even landscapework is useful in training the eye and cultivating a feeling for mass, outline and colour, while at the same time it tends to correct that stiffness and lightness of drawing which the architect almost invariably acquires from the constant use of the T-square. The lecturer then gave a summary of some of the lesser-known subjects for the architect's pencil in Yorkshire, which he thought might be useful and suggestive to the Sketching Club in organising their summer excursion.

The lecture was illustrated by a collection of Yorks sketches by the lecturer and other members of the Society.

PEVENSEY CASTLE.

A MEETING was held in Pevensey on Saturday. The famous ruins of the Castle standing prominently at the entrance to the village were, says the *Sussex Daily News*, the subject of investigation and direct cause of the large gathering of antiquarians and archaeologists. In August last, it will be remembered, permission was obtained from the Duke of Devonshire to excavate in the Roman area of the castle. The meeting on Saturday was called by the principal workers to report to those interested the progress of the investigations since the work was commenced, this being with a view of enlisting additional support and to strengthen the financial position. Such a quantity of old curiosities and implements have been discovered that it was only possible to place samples on view to the visitors, who examined them previous to the meeting. Mr. Pears first gave the general history of the castle and the adjacent shore, saying the ruin was one of the Roman forts of the Saxon shore protecting the east and south coast from the incursions of the Saxon pirates. He pointed out that it should always be remembered that digging a Roman fortress was not the same thing as digging a Roman town, as the latter would supply many more interesting finds. The excavations at Pevensey Castle were an attempt to reveal the history of the village, which must be interesting and important.

The duty of entering into a full explanatory speech concerning the actual excavations was entrusted to Mr. Ray, who spoke with a clear and practical knowledge of the work, and gave a very lucid description of it. He said the work naturally divided itself into three parts, viz. (1) preliminary work; (2) excavation to expose the postern gate and foundation of the wall, and also the eastern gate; and (3) exploration work in the area of the castra. In order to ascertain the nature of the ground seven experimental shafts were sunk, it being hoped that one of these would strike a path which might have run across the castle from postern to postern, and also because that direction was apart from any previous excavation work. A dip was found westward of the line of boulders which indicated the sup-

posed path, which was found covered with black earth and a lot of animal remains. Operations were continued at the northern postern gate, but few finds were recorded, this area having been previously excavated in 1852. The main object was to uncover the foundations of the wall and the postern gate with a view to making an accurate plan. A trench parallel to the southern boundary proved very interesting, from the fact that it disclosed the depth of the tipped clay and indicated that the original surface in Roman times approached very nearly the level of the present surface. At the western end there was a considerable depth of black earth, where more articles were found, including a coin of the Constantine period and many pieces of distinctly Roman pottery. In a northern trench a coin of Carausius was found, and upon proceeding in a western direction, a peculiar arrangement of tiled patches were unearthed, the tiles having a carved surface. The trench running diagonally towards the Mediæval castle did not produce as much pottery or animal remains as other trenches. Mr. Ray had prepared a number of sketches which materially assisted in explaining his remarks.

Mr. Pears mentioned that real Samian ware had been found, and this was very uncommon, though there were imitations. The coins were of the latter part of the third century, which showed that the site was occupied at that time, though the walls might not have been built then. The walls were not necessarily evidence of the first occupation of the site.

In making an appeal for further contributions, Mr. Saltzman informed the company that work would shortly be started in the inner castle, and the keep would be explored, Mr. H. Sands having consented to assist. Altogether 65*l.* 12*s.* 6*d.* had been subscribed, and the expenses had amounted to 68*l.* 17*s.* 6*d.* He asked for about 20*l.* with which to again commence work.

TWO CITY CHURCHES.

A PARTY of members of the London and Middlesex Archaeological Society assembled on Saturday in London Wall for the purpose of inspecting the old church of St. Alphege. The building is comparatively modern, but attached to it is a dwarf tower, invisible from the street, forming a vestibule to the north entrance, which is said to date from the fourteenth century. This tower is the last remaining part of the priory of Elsing Spital, founded in 1329 by William Elsing, mercer, for the support of one hundred blind men. The church is a plain square hall of moderate size, and on æsthetic grounds alone no one would regret its threatened removal under the provisions of the Union of Benefices Act. Mr. Allen S. Walker, one of the honorary secretaries of the Society, in the course of an interesting account of the historic site, made out a good case for the retention of the tower, which he contended was the last piece of Decorated ecclesiastical architecture left in the City. Mr. Walker subsequently conducted some of the members into the tower, and pointed out the chief features which gave evidence of the early date of its erection. The company then walked past the remains of the old London Wall to St. Giles's Church, Cripplegate, where Mr. Charles Welch acted as conductor. The vicar, Prebendary Barff, and the churchwarden, Mr. Deputy Baddeley, to whom the recent alterations and improvements are so largely due, were unable to be present, but sent kind messages of welcome. Mr. Welch called attention to some of the objects of interest in the church, quoting largely from Mr. Baddeley's book; and the visitors afterwards had an opportunity of inspecting the ancient registers, in which are recorded the burials of Oliver Cromwell, John Milton, Foxe and others, while page after page testified to the havoc wrought by the Great Plague in the seventeenth century. Votes of thanks were passed to the clergy and wardens of the church and to the secretaries of the Society.

The Dundee Town Council last week considered the recommendations of their electricity committee that a new generating station with two sub-stations, along with all the necessary plant, at a cost of about 51,930*l.*, be constructed. The scheme was agreed to, and it was decided that Mr. Richardson, the electrical engineer, should carry through and superintend the work. On a division it was resolved by fifteen votes to thirteen to stipulate that the engineer should have no claim for extra remuneration.

NOTES AND COMMENTS.

WE have repeatedly called attention to the peculiar system adopted by the Dublin Corporation with respect to contracts, in order that our readers might be warned and take adequate precautions for their own security. Another remarkable example was afforded by a meeting of the City Council on Monday. The Corporation lately let a contract to Messrs. CRAWFORD & FRAME for the main drainage of Clontarf, which is one of the suburbs. Mr. FRAME was described as a respectable citizen who carried on an extensive business in the city. Mr. CRAWFORD was a Glasgow contractor. The meeting held on Monday was for the rescinding of the contract, although it appears it had not been sealed. The reasons for so sudden a change are remarkable. An Irish contractor had, we believe, sent in a low tender, but as the work was onerous he wished to have somebody with special experience to share the responsibility. Mr. CRAWFORD travelled to Dublin to inquire about the matter, with the result that in connection with Mr. FRAME he proposed to carry out the work. It was alleged that the Corporation were induced to believe that a new industry—the making of pipes—would be introduced in Dublin. As many men were unemployed in the city it was considered desirable that no delay should take place, and the sanction of the Local Government Board was asked to handing over the contracts. It was specified that stoneware pipes were to be used. But specimens of earthenware pipes were received and were rejected. It is quite possible that imaginativeness caused members of the Corporation to conclude that an inferior class of pipe would be used, when all that was done was an effort to discover the particular class which was desired. At all events, a meeting of the Council was summoned in haste, and all parties agreed to have the unsealed contract rescinded. It was then proposed to accept the tender of Messrs. BINNS, of Croydon, amounting to 46,342*l.* 7*s.* 9*d.* But an amendment was proposed that the work should be done by day labour, and it was finally resolved that the improvements committee should carry out the work, "provided that the amount to be charged against the Corporation for direct labour does not exceed Messrs. BINNS's tender, and that the consent of the Local Government Board be obtained." The consulting engineer's estimate for the work is 52,000*l.* The case should serve as an additional incentive to circumspection when English or Scottish contractors tender for Irish work.

THE abbey of Mont St. Michel was founded in 708, but the buildings have been altered, some removed, and others substituted for them at different ages. In 1607 a mill was erected, and near it a tower arose which was known by the name of the Tour de Moulin. Everyone is aware that there are a great many towers connected with the wonderful abbey. For indeed from a very early age it was necessary for the abbots as feudal lords to provide for defence, like a great many of the nobles of Normandy. The Tour de Moulin enjoyed the peculiarity in modern times of having a different authority to the other buildings. Mont St. Michel was regarded as if it were a single historic building, and was under the control of the French Minister of Fine Arts. But officialism decided that the Tour de Moulin was of a different character, and it came under the control of the Minister of Public Works. The arrangement caused more or less inconvenience, and it has been at length decided that the Minister of Fine Arts is to have supreme control over all the ancient buildings.

ILLUSTRATIONS.

NEW PREMISES FOR THE SCOTTISH PROVIDENT INSTITUTION, LOMBARD STREET, E.C.

A DESCRIPTION of this building appeared in our issue for February 15 last. It was designed by Messrs. DUNN & WATSON, and erected under their superintendence. Otis lifts of the very best modern

type have been adopted, electrically controlled and organised so that very few people need use the staircase. At present only two are fixed but there is space reserved for four. The floors of the staircases are of reinforced concrete on the KAHN system, executed by the Trust Concrete Steel Company. The marble &c., pavings are the work of Messrs. BURKE & CO. and the hot-water heating and hot-water supply (which is of a very special character) was carried out by Messrs. JEFFREYS & Co., of Queen Street, Westminster. The electrical cables were supplied by HOWARD F. GEERE. The ornamental ironwork at the entrance and some of the lift enclosures was done by Messrs. SINGER, of Frome, while some of the small ornamental work was by Messrs. MORRIS & Co., Westminster. A large portion of the ornamental ironwork, it may be added, was done by Messrs. CUBITT & Co., as well as the plumbers' work and the sanitary arrangements. The Standard Sanitary Manufacturing Company supplied the lavatories, and Messrs. DOULTON the urinals.

"FAITH"—A WINDOW IN THE TEMPORARY CHURCH OF ST. BARNABAS, MITCHAM.

ST. JUDE'S PAROCHIAL BUILDINGS, NEWCASTLE-ON-TYNE.

THIS building is to be erected in lieu of the present parochial buildings, in a ravine about to be filled in by the Corporation. The plans and designs were prepared by the diocesan architect, Mr. ARTHUR PLUMMER, F.R.I.B.A., of Newcastle and Tynemouth, and the building is to be erected on a site immediately opposite the basilican church of St. Jude, designed some years ago by the same architect. The new parochial buildings will be built in brick with stone dressings and slated with green slates. The facing bricks will be Messrs. LOWRY'S, of Newcastle, best red pressed bricks.

PLAN INDICATING POSITION OF ROOMS IN PROPOSED LONDON COUNTY HALL.

WE reproduce the approximate plan of the principal floor of the proposed London County Hall from the instructions to competing architects. There is to be a Council chamber, two lobbies, two committee-rooms and rooms for chairman of Council, secretary, waiting-room, vice-chairman and deputy-chairman. Suitable accommodation, amounting in the aggregate to an area of 16,000 square feet, for the general use of members is to be provided. The library is as conveniently situated as possible to the Council chamber, and the hall is to seat 800 persons. The whole of the principal floor is to be devoted to the accommodation as set forth in the schedule, and to the accommodation of the heads of departments, &c., who should be located as near the committee-rooms as possible. Such accommodation should consist of rooms ranging from 350 to 500 feet super. for the heads of departments, &c., a small waiting-room and also one or three rooms for each department, &c. The Council chamber is to have a gallery for the public, to seat 50 persons, and lavatory accommodation for both sexes, and entrances and exits, so arranged that the public do not traverse any portion of the building not set apart for their use. A gallery for the Press, with separate entrance to the hall, also arranged. A room of about 500 feet super. for the Press, with lavatory accommodation close at hand, is to be provided, but this accommodation need not be on the principal floor. There should be also provided ample cloak-rooms for members, fitted with lockers (the total number of members may be taken as 200), and telephone, &c., facilities easily accessible from the Council chamber and lobbies.

CATHEDRAL SERIES.—CARLISLE: EXTERIOR OF CHOIR FROM SOUTH-WEST.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last in the premises at Tufton Street, Westminster, Mr. Louis Ambler presiding.

The CHAIRMAN proposed a vote of thanks to Mr. H. Whiteman Rising for presenting to the Architectural Association two plaster casts of heads designed for the War Office building by Mr. Alfred Drury, A.R.A.

Mr. JAMES S. GIBSON was selected as an ordinary member of the Council to fill the vacancy caused by the death of Mr. A. Maryon Watson.

Mr. A. N. PRENTICE read a paper on

Spanish Architecture.

To attempt to describe the glories of Spanish architecture would be a task too stupendous and quite impossible within the limits of a short essay such as this; moreover, long descriptions are tedious. I have, therefore, thought it might be of more practical interest to illustrate, with lantern slides, some of the buildings which we will presently discuss, and I propose to confine my remarks to that period of Spanish architecture which had its birth about the time of the expulsion of the Moors from Granada, a period during which architecture flourished with extraordinary grace and vigour, and finally developed into a more severe and dignified form under the patronage of Philip II.

In Spain the student has a great deal to see and to learn. The number of existing buildings is very considerable, and should he penetrate into some remote part of the Peninsula at the cost of a certain amount of personal inconvenience, he will probably be rewarded for his trouble by the joy of some fresh discovery. I well remember before my first visit to Spain receiving inspiration on viewing some large detail photographs shown to me by Mr. Phené Spiers, and that, being influenced by the originality of the style, I was led to visit the country. Views of a similar kind I hope to have the pleasure of bringing before you to-night. Before doing so, I will briefly sketch the architecture of Spain from a historical aspect.

Great nations have always expressed themselves in their architecture in a distinct fashion, and nowhere more so than in Spain do we find the genius of its people stamped on its architecture, an art which, more than any of the others, conveys a better idea of the manners, thoughts and daily life of the people. When we consider the situation of Spain, adjoining Africa, surrounded on three sides by great seas, and protected on the north by a rugged range of mountains, a land bathed in sunshine, with a plentiful supply of the finest building materials, it is not surprising that from the earliest times mighty nations have fought for its possession. The Romans, the Goths and the Moors were all great builders, and during the centuries they occupied the land in turn architecture had the scope for its development. It is not evident that the Phœnicians or Carthaginians practised building to any great extent, as few traces of their handiwork remain; but during the Roman occupation the whole country was covered with buildings of all kinds. The Emperor Augustus founded a great military capital at Merida, consisting of a collection of buildings typical of a great city in the days of the Roman Empire. Here we find the remains of amphitheatres, public houses, aqueducts, thermæ, villas and a well-preserved bridge of sixty-one arches crossing the Guadiana, half a mile long and 21 feet wide.

At Alcantara there is another celebrated Roman bridge, also worth going to Spain to see. It stems in giant strides a wild gorge of the Tagus. The structure is built of colossal granite stones, without the use of mortar, and it is composed of six arches, the two centre being the widest with a span of about 100 feet, and rising to a height of 150 feet above the river bed. A number of Roman aqueducts still exist in Spain, designed on the same large scale as their bridges. The best known examples are those of Segovia and Tarragona.

With regard to Moorish architecture, I need briefly mention that the Moors first set foot in Spain in A.D. 710. Their efforts in the north appear to have been confined chiefly to the erection of castles and strongholds, but it was in the more congenial climate of the south that they developed their fancies and architectural genius. They used the materials left by the Romans, and in many of the early buildings, such as the mosque at Cordova, we find beautiful capitals and columns borrowed from Roman temples. The fascinating beauties of the Alhambra and the Alcazar at Seville are so well known that I need not attempt any description, but I am desirous of emphasising

the point that the Moors occupied the Peninsula for upwards of 800 years, and that after the conquest of Granada their workmen carried on the Moorish tradition under their Christian masters in buildings of the Early Renaissance period. Nor will I attempt to trace the development of the Romanesque and Gothic periods. As in Italy, the Church became the great patron of the arts, and Spanish architecture during the Middle Ages was confined to cathedrals, churches and convents; besides, under the feudal system public edifices were not required, when the people were practically slaves. I could not do better than refer the student to the late George Edmund Street's book, which contains an exhaustive treatise on the work of this period. A curious phase of architecture during the reign of Ferdinand and Isabella was the introduction of the Mudéjar style. Spanish Gothic during the latter half of the fifteenth century had developed from the severe geometrical forms into a more plastic and decorative treatment. The technical dexterity of their sculptors had increased enormously, and with the contribution of the Moorish element the result was the production of a remarkable group of buildings, such as the façades of San Pablo and San Gregorio at Valladolid, San Juan de los Reyes at Toledo, the patio of the Infanta's palace at Guadalajara and many rich retablos and tombs. On the discovery of the New World Spain was in a position to undertake the production of costly works of art. About this time great events were happening in Europe. Italy, which towards the end of the fifteenth century began to thirst for a knowledge of the classics, had found in the volumes of the ancient classic writers an altogether new field of mental culture. Spaniards flocked to Italy to study at the universities, and they returned later to their own country enthusiastic pioneers in an altogether fresh interpretation of art. This, then, was the artistic atmosphere into which Spaniards emerged at the conquest of Granada; and the services of Italian artists were sought at a time when Christian churches had to be not only erected but furnished.

The invasion of the Peninsula by foreign artists was hailed with satisfaction by the Spaniards themselves, who had naturally a predilection for rich and realistic ornamentation. Spanish sculptors who had studied in the studios at Rome also took part in the movement. Many ecclesiastical princes of Spain, such as the Foncescas, Mendozas and others, became patrons of the new style, and sculptors and architects like Berruguete, Diego de Siloe, Enrique de Egas, Diego Riaño, and goldsmiths like Arphes, created the new style which was nicknamed "The Plateresque." The name seems to have been conveyed from the notion that its surface ornamentation and arabesques resembled the carefully chiselled work of the silversmiths. The rich effect of this style carried out by some of the early artists might almost be described as dazzling. It is almost a misnomer to call it by the title Renaissance. As I have just pointed out, this plastic treatment had already been adopted by the late Gothic artists and the new birth was simply a change into Classic detail of Gothic ornament. The practice of covering large spaces with the richest ornament was common to both styles.

CATHEDRALS AND CHURCHES.

Granada.

One of the first great works to be erected in the Plateresque style in the south of Spain was the cathedral of Granada. Enrique de Egas, who was first commissioned to design the building, prepared plans for a Gothic structure, but in 1525, for some unknown reason, the Chapter transferred the carrying out of the building to Diego de Siloe, who no doubt conceived the idea of transforming the Capilla Mayor into a circular form some 70 feet wide and surmounting it with a dome 155 feet high. The effect of this large open space immediately over the high altar is exceedingly grand and imposing. The plan of the interior shows a nave with double aisles, flanked with chapels, and a coro encroaching on the nave, as is the custom in all Spanish cathedrals. Massive pillars formed of four Corinthian pilasters placed back to back, surmounted by a sort of attic stage, rise from the floor of the church and support the vaulting about 100 feet high. Fergusson considers that in respect of its plan the cathedral of Granada is one of the finest churches in Europe. I regret I am not able to give a view of the interior of the dome, but its position can be seen at the end of the nave. The choir has some richly carved stalls, and the trascoro—that is, the back of the choir facing the west doorway—is adorned with rather late Renaissance detail, dating from 1741.

Façade.

The treatment of the west front is extremely massive and dignified, especially for a Spanish church of this period. It is said to have been designed by Alonso Cano about the year 1650. Previous to this the lower stage of the north tower was added, in the Doric style, by one of Diego de Siloe's pupils, who succeeded him on his death, and afterwards the second and third storeys were erected, between 1568 and 1589, by Ambrosio de Vico, to a height of 185 feet. He also finally added an octagonal lantern, but that was shortly afterwards removed as unsafe. The south tower was never built, and its position is occupied by the chapel of the Sagrario, built in the eighteenth century.

Capilla Real.

By far the most interesting chapel of the cathedral is the Capilla Real, completed by Enrique de Egas in 1515, in the late Gothic style. It must have formed part of his original scheme, and was perhaps one of the first parts of the cathedral ordered to be built, as a sort of burial-chapel for the Catholic kings. On the death of Ferdinand and Isabella the Italian sculptor, Domenico Fancelli, was summoned from Florence to execute the royal monuments. They are placed in the centre of the chapel, and are amongst the most magnificent mausoleums in Christendom. On the tomb to the right are placed the recumbent effigies of Ferdinand and Isabella, and on the left that of their daughter Juana and her husband Philip of Austria. They are both superb monuments, and are decorated with delicate ornaments and statuettes. On the tomb to the right the four doctors of the Church are placed at the corners, and the twelve Apostles at the sides, all executed in a soft-looking marble of a delicate cream colour. In front a few steps descend to the vaults, in which lie the plain leaden coffins of the Catholic kings. Behind is the magnificent iron *reja*, by the famous ironworker Bartolomé of Jaen, dividing the burial-chapel from the rest of the building. Sir Digby Wyatt refers to this in his book as the best in design and the most imposing of Spanish *rejas*. The screen was produced between the years 1520 and 1530, and bears the inscription, "Maestro Bartolomé me fec." I cannot do better than quote Mr. Starkie Gardner's description of this fine masterpiece. "It is divided into three storeys, diminishing in height from the base, by two massive-looking friezes, the lower embossed with medallions and figures, the upper with a honeysuckle border. The vertical bars between are twisted iron, breaking in the centres into leafwork and open tracery in two of the tiers, and into cherubim and foliage in the third. The pilasters of the upper tiers are finished with canopies and statuettes of the Apostles. Over the door is an immense panel, containing the arms of the royal personages within, with their supporting lions and eagles and other insignia and a profusion of angels. In addition to all this richness the cresting is extremely lofty; it is formed of tall candelabra, connected by the richest possible arabesques, which form canopies over a series of representations of scenes from the life of Christ, the figures being beaten in the round and almost half the size of life." The *reja* to the royal chapel at Granada, although extremely fine, is only one of a magnificent series of examples to be found in the great cathedrals and churches throughout Spain. The internal planning of the cathedrals lent itself most happily to the use of ironwork, and nothing like the richness and dexterity of these screens is to be found in other European countries.

Screens, Seville Cathedral.

I will now refer to the two great gilded screens in Seville Cathedral, of even surpassing grandeur. That of the coro was wrought by Sancho Muñoz, of Cuenca, in 1519, and was almost totally destroyed by the sad disaster to the building in 1899, when a portion of the vaulting fell in. The screen is 50 feet wide and must be upwards of 60 feet high. The central mass is of twisted bars with large Corinthian pillars at intervals, of wood construction, sheathed with embossed metalwork. A frieze of highly-decorated work, comprising the heads of five of the Apostles in medallions, is surmounted by a heavily-moulded and fretted cornice, and above all by a cresting, representing the Tree of Jesse, intermixed with figure and fine scrollwork, divided by towering candelabra. Francisco de Salamanca, a Dominican friar, designed the superb *reja* to the Capilla Mayor, which faces the screen just described, and was begun in 1518 and finished by his pupil, Antonio de Palencia, in 1533. Of purely Plateresque design, it has three tiers of spindled balusters, divided by pillars sheathed in iron. In addition to the finely-modelled frieze a low and

equally rich border intersects the screen, while the crest is a truly marvellous work. There is, in addition, a large panel forming a central feature, with a representation of Entombment in embossed iron, comprising many admirably designed and quaintly-costumed figures. The iron pulpit by Francisco are dwarfed into insignificance by the tower height of this colossal *reja*.

Malaga Cathedral.

Returning to the subject of other cathedrals built in the Renaissance movement, Diego de Siloe was commissioned to build Malaga Cathedral in 1538. The work progressed but slowly, and in 1680 the building was partially destroyed by an earthquake; but in 1719 the work was again resumed, and progressed at intervals. The interior is very similar in design to that of Granada, and is built entirely in white limestone. Here also the choir block the centre of the nave, but the general effect is very imposing. It will be noticed that the construction of the pillars follows the Granada example, with the exception of a slight variation in the height of the attic storey. There is a difference also in the decorative treatment of the vaulting, which in this case is a sort of palm-leaf ornamentation. Jaen Cathedral is an important work of this age, begun in 1532 by Pedro de Valdelvira on the site of a Gothic church. It has a fine west front, flanked by two towers 200 feet high. Underneath are three entrances, surmounted by reliefs and rich detail of a later period than the Plateresque.

San Domingo, Salamanca.

The south having led the way in introducing the Renaissance style into their churches, the clergy in the north soon followed their example. In Salamanca, Diego de Deza, Archbishop of Seville, and formerly tutor to Philip Juan (the only son of Ferdinand and Isabella), had already founded the church of San Esteban, commonly called Santo Domingo, to which he added a Renaissance facade thoroughly characteristic of the period. The cream-coloured stone is worked into saints, apostles and canopies separated by long, straight pilasters richly decorated with arabesques. The martyrdom of the patron saint occupies a large panel over the central doorway, and is by Antonio Ceroni, of Milan, bearing a date 1610. The medallions represent David, St. George and others. The frieze on the second tier is very finely carved in high relief, representing heads and cherubs, while yet above is a carved panel of the Crucifixion, flanked on both sides with beautiful canopies. A mighty arch resting on projecting buttresses encloses the whole, and acts as a sort of frame to this extremely imposing and decorative facade. On entering the church the choir over the doorway is occupied by the choir, supported by a wide elliptical arch. The practice of placing the choir over the west entrance is a peculiarity of Spanish planning, and seems to have been common to churches connected with monastic buildings, such as San Juan de los Reyes at Toledo, Santo Tomás at Avila, San Marcos at Leon, the Escorial and many other edifices. The cloisters of Santo Domingo are also in the Plateresque style, intermixed with Late Gothic in a peculiarly pleasing and tasteful manner. Within a stone's throw of this noble church, and facing its western facade, stands the new cathedral of Salamanca, begun in 1515 from the designs of Juan Gil de Hontañon, in the Late Gothic style, and which probably was not finished when the Escorial was commenced. I mention this facade as it is interesting to note that, although buildings with Classic detail were very much in favour after the middle of the fifteenth century, the Spaniards still loved the beautiful Gothic style, and continued to erect many other churches long after the cathedrals of Granada and Malaga were begun. Segovia Cathedral might be cited as an example. It is also the work of Gil de Hontañon who received the commission after he had started Salamanca Cathedral.

San Marcos, Leon.

However, the Renaissance movement continued to spread further north, and we find Plateresque features introduced into the lofty dome or lantern of Burgos Cathedral, which replaced the prior one which fell in 1533, and again at the convent of San Marcos, Leon, the masterpiece of the architect Juan de Badajoz. This convent, founded in 1168 for the knights of Santiago, was rebuilt in the Renaissance. The extensive building forms an apse, and is composed of the church to the east, the most interesting filling the rest of the space. The facade is decorated with pilasters and friezes of charming execution, and the rich festoons and delicate carvings are remarkable. In the

lower frieze are projecting busts in large medallions, and mythical figures. Owing to the change of residence of the Order the works were interrupted from 1566 to 1602, when the Order was re-established and the entrance to the principal façade was completed. Over the door is an effigy of Santiago on horseback.

Stalls.

The interior of the church is lofty, with late vaulting, having been disused for many years, is devoid of colour or decorations, save the beautiful stalls dating from 1541. The coro is elevated over the western doorway, and contains the richly carved stalls by Doncel which were made in 1721 and missing ones added. In the upper row are full-length figures from the New Testament, and in the lower row are busts from the Old Testament, while the seats and the stalls are grotesquely carved after the manner of Berruguete. During Charles V.'s reign many more stalls were added to in the Plateresque style, and it was only after his abdication, and under the rule of Philip II., that homage was paid to the cinque-cento style in its purest form. The plastic art seems to have lost favour, and ornamentation was eschewed.

Architects and sculptors returned from Rome under the influence of Michel Angelo and Vignola. The taste for the Plateresque sculpture changed into a more severe and classic style. This second period of the Renaissance is commonly known as the Herrera style, called after Juan de Herrera, the great architect of the Escorial. Herrera originally came from Belgium, and accompanied Charles V. throughout his campaigns in Italy, and was no doubt employed on military fortifications, as was the custom with architects of those days. On the emperor's return to Spain, Herrera came to work at the Alcazar at Toledo, but the Court was then settled at Valladolid, and the next important work entrusted to him was to prepare designs for Valladolid Cathedral.

Valladolid Cathedral.

Herrera recognised that he had a superb chance, and set to work to design an edifice which, in his own words, was to be a *todo sin igual*. The church had already been begun in 1527 by Riaño, and carried on by Hontañón and others, but Herrera formed new plans and destroyed what had been already built, with the intention of erecting a new edifice bearing the character of the new style which he had studied in Italy. He prepared a magnificent model, which is still preserved, showing a church consisting of a nave and choir, furnished with aisles and separated by a screen, and covered transept; both sides were to be flanked with a series of chapels, and there were to be four towers at the corners. The building, however, was but partially built, the only completed tower fell in 1841. The interior is 110 feet long and 207 feet wide, and although exceedingly simple is most impressive. It contains the original choir stalls designed by Herrera.

Valladolid Exterior.

The exterior is very impressive as seen from the narrow street leading up to the western façade, which is upwards of 70 feet high. The Doric treatment of the lower storey is extremely grand and simple, and the deep arch forming the entrance, 24 feet wide by 50 feet high, adds much to the whole. In the second stage of the façade are niches for the doctors of the Church, and the deeply recessed doorway is heavily moulded, but not by the hand of Herrera. After the lapse of a few years it was called by Philip II. to Madrid and appointed architect to the Escorial. It would seem that after the lapse of many years this façade was still completed by that fantastic artist with the unpronounceable name of Churriguerra. He added the balustrade with large escutcheons on either side of the square window, and other decorative details, and I should say also the corner balls and pyramids which appear rather clumsy. Herrera's brilliant idea of planning a large cathedral with a dome and four corner towers was adopted 100 years later, when the great church of the Pilar at Saragossa was begun by Herrera el Mozo, but unfortunately, as in the case of the Escorial, only one of the angle towers has been completed, and we have therefore to fall back on our imagination to realise what an exceptionally fine effect the four towers would add to the already picturesque appearance of this church seen from the banks of the Ebro.

Tower of Saragossa.

Towers were much in favour with the Spaniards. The Spaniards will find most beautiful examples throughout the length and breadth of the Peninsula. Every little parochial

church has its spire or tower; indeed there are few countries which can rival Spain in this respect. The famous tower of the Giralda at Seville is too well known to be included in my series of views, but I will give an illustration of the Torre Nueva at Saragossa, which, like the Seville example, is enriched externally with delicate Moorish traceries, formed in brickwork. It was erected in 1504 by Moorish workmen, and belongs to the Mudejar period. It leans some 10 feet out of the perpendicular, owing to the sinking of faulty foundations, and consequently a heavy brickwork casing was added to the base to insure its safety. But alas! this beautiful specimen no longer exists. A few years ago it was condemned by the local authorities as a dangerous structure, after the manner of county councils in our present day. When I first visited Saragossa, in 1890, this charming tower was intact, and on another occasion, two years later, when I visited the city with the late Mr. Heber Rimmer, we obtained permission from the Mayor of Saragossa to ascend to the top and inspect the construction. By that time the tall slated roof had been removed. The city engineer then had a theory that the heavy bells hung in the upper stage in some way added to its stability and counteracted the inclination.

The Escorial.

We now come to the Escorial, and after a brief description we will pass on to the civil architecture of the Plateresque period. Architectural taste at the present day is somewhat more in accord with the traditions which led to the production of this mighty building, and, if I mistake not, architects are more disposed to favourably criticise its design and construction. Few buildings of the importance of the Escorial have been more universally maligned by the general critic. It has not only been pronounced a failure, but also considered devoid of any artistic merit. Even the late Mr. George Edmund Street did not deem the Escorial worthy of a visit, as indeed, being a great revivalist, his sympathies were entirely opposed even to its consideration. He refers to the Escorial in the following terms:—"As far as the building is concerned it is enough to know that Herrera designed it, to be satisfied that it will be cold, insipid and formal in character, and the glimpses I had of it as I passed in the train amply justified this expectation." No doubt this vast structure, stripped of most of its furniture and ornamentations, and deserted by the thousands of people who formerly thronged its apartments, cloisters and courtyards, strikes the ordinary visitor as being most depressing, but to the architectural student the study of the structure should be of intense interest. The masterly way in which the building is executed, the jointing of the masonry, the manner of vaulting the large areas, the means of carrying water off the roofs, the underground vaults and finally the elaborate system of conduits and ducts for supplying the building with water, are all subjects worth investigating.

After a careful consideration of its purpose one can only come to the conclusion that the building has never been properly understood. The character and genius of its founder is stamped on every stone. Philip II., that stern but deeply pious monarch, who looked on the world with a mind tainted with melancholy, founded the Escorial as a temple, a cloister and a tomb, and not a pile built for ostentation and show. His object was to carry out the will of his father, Charles V., in constructing a royal burial-place, as a solemn act of gratitude to the patron saint St. Lawrence for securing him the victory at the battle of St. Quintin, on whose day it was fought. For about two years he searched for some spot in the vicinity of Madrid possessing the desired quality of solitude, and at last fixed on the wild, rocky and scantily-wooded slopes of the Guadarrama, a suitable frame and background for such a structure, which seems to form as it were a part of the landscape in which it is set.

The building forms a rectangle measuring about 680 feet long and 530 feet wide. On reading the many authorities on the subject one is perplexed at the great divergency of opinion in respect to its size. No two authorities seem to agree as to its height, length or breadth. I have therefore taken some trouble to prepare a plan, which I believe to be fairly correct, to a scale of $\frac{1}{8}$ -inch to a foot, with the hope that it will convey some idea of its vast proportions. As a plan I consider it one of the finest ever created by man, and well worthy to rank with that of the Baths of Caracalla or the Palace of Diocletian at Spalato, which latter it equals in general dimensions.

The architect first entrusted with the design was Juan

Bautista, of Toledo, who had studied in Naples and Rome, and was summoned by Philip in 1559 to prepare the plans. In 1563 the first stone was laid, and the building was pushed on rapidly till its completion, twenty-one years after, while the cost was probably equal to about 10,000,000*l.* of our money. Perhaps the true designer was Philip himself, who was a man of great and simple taste. Besides being a generous patron of the arts, he went into every detail most minutely, and criticised and often docked the designs submitted to him of all that seemed over-rich or too showy. He used to come frequently from Madrid to watch the progress from the summit of a hill close by. The characteristics of the Escorial are beautiful grouping of towers, large proportions, admirable harmony and simplicity of design, massiveness and grandeur. It is almost impossible to put one's finger on any detail and say it is out of place or unnecessary. In the centre is the church with its great dome and two western towers, facing the large internal court known as the Patio de los Reyes. To the right is the convent and to the left is the seminary; while the palace courtyard, a palace proper, lies to the east and north-east of the church. The interior is divided into many courts, from the centre of which rise two smaller towers with slated roofs. In addition to this, four massive square towers mark the angles of the building. The west and north sides have a fine paved lonja or platform and are flanked by extensive ranges of outbuildings, built at great cost to provide accommodation for strangers.

The block facing the western façade of the Escorial is called the Compañia, of which the most remarkable feature is a spacious cloister 200 feet square. The building is taken up with cells for lodging strangers of rank. The upper part contains an infirmary. In the lower part are shoe-wards and storehouses and large refectories, besides mills and granaries. The other range of houses on the north side to the left contains apartments for officers and servants attending the court. Each of these houses is divided into three interior courts, and adjoining is an elegant chapel for the spiritual advantage of those who live in the neighbouring buildings. On a closer inspection of the Escorial the windows appear small and devoid of any ornamentation, but they mostly light unimportant apartments ranged on the outer walls of the four great façades. Herrera probably considered the designing of the general mass of the building of more consequence than the grouping of the windows; besides, the heat of the summer and intense cold of the winter had to be considered. The main features are accentuated in an appropriate manner, and the Doric order is introduced to mark the centre of the western façade, and forms the main entrance to the court of the kings.

Shortly after the foundation-stone was laid Bautista de Toledo, the architect, died, and his pupil, Juan de Herrera, succeeded him. This no less eminent architect made numerous happy alterations, but without deviation from the original design to any great extent. He was also assisted by Antonio de Villacastin, and the building, rapidly progressing, was completed on September 13, 1584. On the same day of the same month Philip II. died here in 1598, having lived in this vast convent fourteen years. A dreadful conflagration happened in 1671. According to Francisco de los Santos it first began from so small a cause as a chimney taking fire, but the wind unfortunately carried the sparks to the roofs and the fire began and continued fifteen days without intermission, during which much of the structure, together with four grand towers, fell, but the church, the royal apartments, the principal library, together with many paintings and pieces of furniture, were saved. The whole was rebuilt with superior magnificence by Charles II., to be again divested of many of its treasures by the French during the Peninsular war. Other restorations followed, and the interior still contains many beautiful objects of interest.

(To be concluded.)

WINCHESTER CATHEDRAL.

THE Dean and Chapter of Winchester Cathedral have decided to carry out the recommendations of Mr. J. B. Colson, the cathedral architect and surveyor, for the treatment of the west front, as contained in the following report:—

The spires, which form such important features in the design of Edington's west front, and originally formed of Beer stone, received treatment at the same time as the whole of this façade underwent restoration about the middle of the last century. Originally constructed of Beer stone

wholly, portion of which presumably has been decayed the upper parts were pieced and patched with Caen stone and the cornice and pinnacles at the base and the finials were altogether renewed with this stone, and it is to the decay of the Caen stone that their present deplorable state is due.

Much of the original Beer stone remains on the sides of the slopes, and retains a true and weathered surface; the whole of the Caen stone is, however, much disintegrated and decayed.

The suggested treatment is that the whole of the Caen stone should be cut out, together with any decayed Beer stone, and replaced with a stone of more durable quality. This will entail the renewal of:—

(1) The battlemented cornice moulding at the base together with the shafts and crocketed portion of the pinnacles springing therefrom. (2) Probably about two-thirds of the angle stones running from base to spire. (3) The apex stone and finials to about 3 feet below the latter. (4) The ashlar of the slopes where found decayed and defective.

It is anticipated that the whole of this can be effected without taking down any excepting the extreme points, although cracks and fractures occur, these latter can be grouted in and cross-banded, and all made secure.

In the execution of the work the greatest care will have to be exercised in the cutting-out process, so as to insure that there shall be no undue weakening of the supports of the upper structure, and only small portions can therefore be executed at one time; all stones will be fixed in place by pebble or slate dowels, and the pinnacle points secured to the main structure by copper cramps. The weathered surface of the old stones that will be allowed to remain will be carefully preserved, and all the old Beer stone that is sound will be allowed to remain. The whole, when completed, should receive a treatment by sprayings and coatings of preservative composition such as is being used by the Professor Church at Westminster and other buildings in London.

The scaffolding has not yet been carried up around the central pinnacle on the west gable, but from what can be seen from the platform below it appears to be much in the same condition as the spires, *i.e.* partly composed of Beer and Caen stone, with much of the former and all the latter in a decayed state, the northern side being in this respect worse than the southern. It is anticipated that much the same treatment as recommended for the spires should be applied to this pinnacle.

Many of the string-courses and mouldings on the west front generally, whether of Beer or Caen stone, are now decayed on the surface, and some portions may require renewal.

As no structural defects are apparent, the general treatment recommended is that of the removal by brush of the eroded parts and a complete application of the preservative composition before mentioned. The process of the latter is laborious and expensive, as succeeding coats have to be applied by a spray and brush until the stone is impregnated to some depth with the solution; the cost, however, would be much less than that of new stonework.

LONDON COUNTY COUNCIL ARCHITECTS' DEPARTMENT.

THE necessity of reorganising the department of the architect, especially in the section of education has been recognised. In the latest report of the general purposes committee it is stated that the clerk of the Council in a report on the question, directs attention to the unsatisfactory manner in which the staff are accommodated in four buildings, which arrangement does not make for expedition, control or efficiency. He points out the apparently unnecessary subdivision of the department into a considerable number of sections, and comments on the arrangements which obtain for the execution of the work of structural alteration and repair, the cost of which approaches 200,000*l.* a year. The clerk of the Council strongly regrets that the whole staff should, if practicable, be concentrated in one building, and he calls attention to the difficulties which the present arrangements involve.

The clerk of the Council particularly calls attention to the repair work which is carried out at present partly by local contractors, partly by workmen directly employed under clerks of works engaged by the Council, and partly by the Council's works department, and he states that the

s by no means satisfied that the present arrangement is economical or trustworthy, inasmuch as it is entirely in the hands of officials who do not appear to him to possess the qualifications for initiating, controlling and certifying for this large amount of work.

For the purposes of repair the Council schools are grouped in twenty-two districts, each under the superintendence of a clerk of works for repairs, and in each district there are about twenty-five schools. The areas of these twenty-two districts are based upon the number of schools; they are not fixed geographically or in accordance with the boundaries of the electoral divisions or the London boroughs. A stock of the necessary materials is stored at the office of the clerk of works in each district, and in fourteen districts the Council employs a staff of 141 workmen to execute repairs up to the value of 15*l.* Works from 15*l.* to 50*l.* in estimated value in these districts, and all works up to 50*l.* in value in the remaining districts are executed by contractors. For structural alterations and other work exceeding 50*l.* in value competitive tenders are obtained from the selected list of contractors. An experiment is being carried out by which repairs to schools in six selected districts are executed by the Council's works manager without the intervention of a contractor. Small repairs to furniture are still being done by the Council's own workmen in connection with the repairs to school fittings under the supervision of the local clerk of works for repairs in each district.

For this repair work there are at present twenty-two clerks of works for repairs; of this number thirteen are on the established staff and receive salaries ranging from 50*l.* to 220*l.* 16*s.* 8*d.* a year; the remaining nine are on the unestablished staff and are in receipt of wages ranging from 3*l.* 10*s.* to 3*l.* 3*s.* a week.

The clerks of works inspect the school buildings and prepare draft orders and estimates for orders; they check accounts and measure up the work, but where the cost exceeds 5*l.* in measured work and 15*l.* in daywork, the measuring surveyor (Mr. Murray), who is in charge of a section of Mr. Bailey's department, undertakes the duty. The clerks of works also attend to serious urgent repairs; for instance, if a small fire occurred the clerk of works would prepare for and undertake the necessary repairs immediately after the fire.

Careful consideration of the present arrangements raises the question whether, now that the works committee are establishing in various parts of London local dépôts for works of repair, &c., it would be possible to arrange that a future all-repairing work should be undertaken by the works manager. This principle is being adopted by many committees of the Council, the chief reason being to secure that work done by one department of the Council shall be certified not by the same department but by another department.

From a careful consideration of the whole subject, it seems that there can be no question that reorganisation of the work is urgently called for, and the committee are unanimously of opinion that the first step to be taken is to place it as soon as possible under the architect of the Council, Mr. W. E. Riley. It has been suggested that it would be unreasonable to increase the heavy responsibilities which now devolve on Mr. Riley, and that the extent of the work in question requires that it should be dealt with by a separate staff. We have conferred on these points with Mr. Riley, who has pointed out to us that, although the work of his department under the Building Acts has greatly increased, so happens that the amount of constructional work, of working class dwellings and fire brigade stations, has substantially diminished, and the staff engaged on such work has been correspondingly reduced; and he has shown that it will be a comparatively easy matter to incorporate the staff of Mr. Bailey's department with his own, and to organise the work in such a way as will enable better results to be achieved.

Mr. Riley has prepared a report in which he outlines the reorganisation which he proposes to effect if the work is entrusted to him. He agrees with the clerk of the Council that Mr. Bailey's department is unnecessarily subdivided, and he suggests that the construction work falls naturally into three divisions—(a) elementary schools, (b) secondary schools, and (c) special schools. The projected capital expenditure during 1907-8 under these three heads is 200,000*l.*, 78,000*l.*, 27,000*l.* respectively; and the maintenance expenditure (structural alterations and repairs) during the same period is estimated at 110,000*l.*

Mr. Riley proposes to allot the work of elementary schools to the "special structure section," and he states

that even with this addition the section will not have in hand more work than has sometimes been in hand in connection with housing alone. To his general construction section, which, in addition to other buildings, has in the past dealt with technical schools and similar buildings projected by the late Technical Education Board, Mr. Riley proposes to allot either special schools or secondary schools. To the establishment and maintenance section of his department which has been responsible for fire brigade stations and for repairs and maintenance, Mr. Riley proposes to allot the repair and maintenance of school buildings and the execution of small structural repairs, with the addition of special or secondary schools as experience may lead him. The staff of the measuring surveyor's section can easily be amalgamated with that portion of Mr. Riley's staff now engaged on similar work.

Mr. Riley has made it a practice that such of his assistants as are engaged in designing buildings shall assist in the superintendence of their construction. A different practice appears to prevail in Mr. Bailey's department, in which the buildings have been designed in the office, whilst an outdoor staff superintends their erection. The committee have no hesitation in saying that they think the former method is the better, alike in the interests of the Council and its officers.

The general purposes committee therefore recommend:—
(a) That the office held by Mr. T. J. Bailey be abolished as from June 30, 1907. (b) That Mr. T. J. Bailey be informed that upon delivering his claim and statutory declaration, pursuant to Section 120 of the Local Government Act, 1888, the Council will forthwith take the same into consideration and assess the amount of compensation. (c) That the work now performed by Mr. T. J. Bailey be undertaken as from April 1, 1907, by Mr. W. E. Riley, the architect of the Council, and that the staff of the department of the architect (education) be transferred on that date to the department of the architect.

GUSTAVO GIOVANNONI AND CURVES IN PLAN IN THE TEMPLE AT CORI.

By WILLIAM A. GOODYEAR.

(Concluded from page 151.)

THIS is the proper point at which to close this paper, for it is not my purpose to explain these concave curves. As long as it appears certain that the facts now known are sufficient to compel new explanations, it seems hardly worth while to figure as a theoriser. It is mainly my wish to show that previous explanations of the Classic curves are insufficient to cover the facts now known. I may, however, add that Professor Giovannoni's announcement of the curves at Cori was made to the Roman Society of Architects in a report of a favourable nature regarding my own observations of Mediæval asymmetries and deflections. Therefore, I may add that the closest Mediæval analogy to the façade at Cori is that offered by the lower façade of St. Mark's at Venice, which curves concave to exterior from the foundations up, with a deflection of 10 inches at the foundations.

It appears improbable that the façade of St. Mark's was curved expressly for effects of concavity in the upper line, and especially so for the reason mentioned later in text that the cornice line appears to the eye to be built with slight obliquities rising from each end toward the centre, so as to correct the effect of concavity.

It is rather probable that the entire surface of the façade was considered. As regards line effects they would, below the level of the eye, produce the optical effect of rising curves in vertical planes. Above the level of the eye they would produce the optical effect of descending curves in vertical planes. These line effects are optically contradictory and therefore optically illusive. They must therefore give to the façade an effect of "life" or of optical mystery and vibration.

As regards views slanting along the façade of St. Mark's from left to right, or *vice versa*, the perspective effect is enlarged very considerably in the way of magnitude if the terminal upright lines rather than the upper horizontal lines be considered. But here again it appears more likely that an effect of optical mystery and vibration, rather than a direct increase of size in perspective, was considered. It may be that the varied effects of light and shadow which are involved in a curved surface were the dominant consideration.

As regards the façade of St. Mark's, it should be remem-

bered that only the lower façade is in question and not the upper façade, which stands back of a wide platform, bounded by the cornice of the lower façade. Although this cornice has not been levelled or plumbed, it appears to rise from the extremities toward the centre so as to correct the effect of concavity at the roof line. In the upper façade the pinnacles are arranged in descending heights from the centre towards the extremities.

In simple language, and aside from optical explanations, the façade of St. Mark's, in my opinion, gains vastly in artistic charm by its delicately and imperceptibly curvilinear surface, as well as by its subtle variations in the dimensions of the arcades. If Mediæval curves be admitted to have been constructed at all, it must be conceded that the lively effect of the curved line or surface was held to be superior to the rigidity and greater formalism of the straight or plane surface, and that no other universal explanation can be offered. Whether or no this lively effect is physiologically due to optical mystery, which is again due to an optical vibration between the contradictory optical effects which must always be found in delicately distorted architectural surfaces or lines, or whether it is due to varied effects of shadow, is hardly worth debating. It may be that both explanations have to be considered. I offer the suggestion for what it is worth, with the remark that the concave curve in plan at Cori demands some kind of explanation.

As regards the façade at Cori, we cannot assume that Mediæval curves would assist us to understand it unless two things be admitted, viz. the constructive intentional existence of certain Mediæval horizontal curves, and, second, the fact that they are historical survivals of the ancient curves. Both of these theories have been contested, and scepticism regarding them is very pronounced in some quarters. Therefore it is desirable not to diminish the incontestable and far-reaching importance of Professor Giovannoni's observations by laying too much stress on the analogies with Mediæval curves which are offered by the curve at Cori. For Classic art the discovery is certainly epoch-making, and for Mediæval studies of architectural refinements the discovery is, at least, far from disappointing.

If Mediæval analogies be excluded it is still evident that some explanation similar to those which have just been offered for them must now be sought for such ancient curves as are found at Cori. This involves further reference to the concave curves in the Parthenon and at Paestum, if for no other reason than the one that other experts than Hoffer have already been inclined to admit their constructive existence. Thus Reber (*"Kunstgeschichte des Alterthums,"* p. 207), a German authority of high standing, considers the concave curves of the Parthenon to be constructive. His explanation is significant for the fact that the optical effect, in front view, is that of a descending curve in a vertical plane, which equals the amount of the curve in plan at the angle of 45 deg., which decreases in amount from further points of view and which increases in amount on nearer approach. Reber holds that the concave curve was intended to contradict and decrease the excessive curve in elevation due to the combination of the optical perspective effect in elevation, on close approach, with the constructive curve in elevation. The interesting feature of this explanation (although it cannot be applied to Cori) is that it realises the two effects as being contradictory. Hauck quotes the explanation of Reber with tentative approval (pp. 109, 144, op. cit.) as an explanation, but expressly affirming the principle that the effects of a rising curve in elevation and of a concave curve in plan are contradictory, and that the optical effect of the concave curve is that of a descending curve in a vertical plane. It is of course understood, as Hauck points out, that the contradictory effect is insignificant and almost disappears from distant points of view. It would disappear entirely when the eye is on the level of the concave curve. Here the concave curve appears as a straight line. It is also understood, whereas the rising curve in elevation has its greatest relative effect from a distance, that the optical perspective curve is far the greater on close approach, so much so that on close approach the constructed curve in elevation is not an important addition to its amount. Neither Reber nor Hauck have considered the possibility that the concave curve might have been considered desirable for its effects from the slanting side view, and Hoffer is at a loss for any explanation.

Although the constructive facts in the Parthenon may be held to be doubtful, the above explanations are of value as showing the difficulties which have hitherto surrounded

the explanations of concave curves in plan, and also as showing that the effects of concave curves in plan above the level of the eye are recognised by optical experts as being those of descending curves in elevation for the front view.

The concave curves at Paestum do not appear to be exposed to suspicion on the score of constructive existence, and here again there are also rising curves in elevation at each end of the temple.

If either the Temple of Neptune concave curves or the Parthenon concave curves are admitted to be constructive, it must also be admitted that contradictory effects exist for certain points of view, and it remains to be debated whether the side effect was not the one which was considered for the concave curve.

For the Temple of Cori the question is not complicated by the existence of curves with contradictory effects, but it still remains to be debated whether the side effect was not considered as much as the front view. The Temple of Cori stands on a high elevation and the front view from below would on near approach much increase the optically descending effect toward the centre of the curve. For such points of view it could only be presumed that the curve was considered more agreeable than the straight line, without reference to the question whether it was a rising or a descending curve. For side view the effects would be optically contradictory as regards perspective; an effect of increase if the vertical terminal lines be considered, and an effect of decrease if the upper horizontal lines be considered.

It is a natural result of our interest in the surviving ancient monuments that we overlook their actually very small number and the enormous number of those which have utterly disappeared. The discovery at Cori makes it probable that curves were employed in ancient art to a much greater extent and in much greater variety than has hitherto been supposed.

In a paper which I published in the *Journal of the Archaeological Institute of America*, vol. vi. No. 2, new series (1902), "Architectural Refinements in Italian Churches," I discussed the optical effects of the cloister curves convex to the centre of the court at Verona and Bologna. I pointed out that the line effects were contradictory above and below the level of the eye inside the corridors, and that they were again contradictory, but in the reverse sense, as observed from the exterior. From this I argued that the curve must have been preferred for its own sake and independent of any definite particular perspective effect. It has since occurred to me that an effect of vibration, or of optical mystery in such curved lines or surfaces, must result from the shifting of the eye to different lines or planes of sight, or from the inclusion, at points more distant from the eye, of such contradictory effects within the limits of fixed vision in a single direction. In churches like S. Apollinare Nuovo at Ravenna, which have true parallel curves in plan in the alignment of columns, continuing in the walls of the clerestory, it is evident that the optical effects must be contradictory on the two sides of the nave, because the columns and wall surfaces are concave to the nave on one side and convex on the other.

In the Pisa Cathedral, moreover, where the gallery parapets are built in parallel curves in plan (which continue in the walls above) the same parapets also have constructive rising bends in elevation. (*Architectural Record*, vi. 4.)

Thus, from the pavement below the curve in plan increases the effect of the bend in elevation on the south side, where it is convex to the nave, and it decreases it on the north side, where it is concave to the nave. For the north side of the nave the facts are analogous to those in the Temple of Neptune at Paestum and in the Parthenon, where contradictory effects are found in the cornice. It may also be pointed out that, wholly aside from curves it has always been contended by the writer that effects of optical mystery were studied at Pisa. The explanation is offered for what it is worth, and any others would be equally satisfactory to the writer which cover all the constructive facts.

Finally, as regards relationship in feeling if not in continuity of historic practice, as between antiquity and the Byzantine Romanesque monuments of Italy, the authority of Jacob Burckhardt may be cited. Ernst Foerster, in his "Guide Book for Italy," was apparently the first to announce intentional irregularities of line in the Pisa Cathedral. He held them to be "die unbeholfensten Aeusserungen des romanischen Kunstgeistes." Jacob Burckhardt's footnote to the Leaning Tower in his "Cicerone" (in the first an-

second editions this footnote was subsequently removed from the text) quotes Foerster's idea as follows:—

"For the history of art Foerster's opinion about the relation of the Leaning Tower to the irregularities of measurement, oblique and bent lines, irregular intervals, &c., would be much more important [than his opinion about the tower itself]. In all these things he sees a dislike of mathematical regularity and of exact symmetry; these are said to be the clumsy expression of Romanesque endeavour" ("die unbeholfensten Aeusserungen romanischer Bestrebungen"). "Since we must unconditionally admit something of the kind in Greek temples, this view has something very attractive. I believe, however, that the given phenomena must be otherwise explained, and, namely, not by want of dexterity—which could not be suggested for the noble Pisan buildings—but by an inference to mathematical accuracy, which was peculiar to the earlier Middle Age."

Burckhardt then proceeds to give examples of this inference (which certainly also existed). The footnote just quoted inspired me to make a personal call on Jacob Burckhardt at Basel in 1870. I showed him the measurements and drawings which I had just brought from Pisa. He advised immediate publication, and professed his previous ignorance of the facts thus brought to his notice. Thus my own contact with Burckhardt shows that he was not familiar with the constructive facts at Pisa, whereas to him belongs the original suggestion that if the constructive facts exist they would be analogous in feeling to the deflections and asymmetries of Greek temples. (Burckhardt's matter on the Temple of Neptune at Paestum, to which he refers in this footnote, has been retained in later editions.) So Foerster, on the other hand, belongs the original suggestion that obliquities and bends were intentionally constructed at Pisa. He can hardly, however, have noted the true and delicate curves which are also found in the cathedral, for these can certainly not be called "unbeholfen" or clumsy.

As a final suggestion for façades like those of St. Mark's and Cori, it appears that the varying effects of light and shadow may have been the important consideration. Since these varying effects of light and shadow were notoriously studied with the greatest care in the profiles of Classic architecture, why may they not have been considered for the surface of the façade at Cori? The same explanation may be sufficient for the concave curves of Paestum and of the Parthenon.

THE TEMPLE LIBRARY OF NIPPUR.

IN the preface of vol. xx. of his "The Babylonian Expeditions of the University of Pennsylvania," which is just been published, Professor Herman V. Hilprecht, the Assyriologist of the University of Pennsylvania, for the first time explains his reasons for keeping secret all information as to the contents of the Temple Library of Nippur, which caused criticism in university circles two years ago, and ended with an official investigation of Dr. Hilprecht's discoveries and his justification at the hands of the university trustees. He gives as reason for his silence the perishable condition of the unbaked clay tablets has made it impossible for him to examine, classify and translate them as should be done.

Dr. Hilprecht, when asked by the New York *Evening Post* if the preface of his book is meant to be a reply to his many critics, replied:—

"No, no. Emphatically no. I have written from a purely scientific standpoint. I would not deign to notice the criticisms appearing in the newspapers. How could I? I do not know who my critics are. All that I have to say is the book. I write plainly. All can understand."

The preface to Dr. Hilprecht's book is in part as follows:—

The cuneiform texts here published form a very small part of a large collection of tablets and fragments once constituting the Temple Library of Nippur. In order not to give rise to any doubt as to the real meaning of my words, I emphatically state once more, I do not mean the Temple Archive, or the Temple School, or anything else but the Temple Library of Nippur. Enough of the cruel and unadvised advice received during the last two years in signed and unsigned American newspaper articles, journals, &c., to what should constitute an old Babylonian temple library, and what I should call the epoch-making discoveries of the University of Pennsylvania's expeditions to Nippur. I must resent it the more, as I happen to be the only

Assyriologist who (however hastily in many cases) has examined all the—more than 50,000—cuneiform inscriptions thus far excavated there, and who from its inception to the present day has been connected with this great scientific undertaking. What a Babylonian temple looks like, according to the facts furnished by the spade, and not according to more or less confused theories, I have attempted to set forth in chap. I of vol. xix., part I, "Model Texts and Exercises from the Temple School of Nippur." This chapter was written to form part of the present book; but finding that the new mathematical and chronological tablets here edited required a fuller discussion than originally planned, I was obliged to reserve it for the next volume, in which the Temple School and Temple Archive are treated in their relation to the Temple Library.

It is a very natural desire on the part of scholars to see published as early as possible what is left of the scientific and literary activity at the oldest and most renowned Babylonian sanctuary and seat of learning. At the same time, it is not my nor anyone's fault that the various results of our excavations could not have been submitted more rapidly to Assyriologists. All the members of the Babylonian Section of the University of Pennsylvania are taxed to the utmost with constant work on the material to appear in our expedition series. At the best a cuneiform volume is no novel which may be written from day to day. Before the rather pleasant task of "bookmaking" can begin the numerous fragments preserved in two museums, separated by more than 5,000 miles, must be cleaned, minutely examined, catalogued, divided into groups and subdivisions, and as far as possible joined to other pieces of the same tablet (often excavated at different times by different expeditions), that the scholar entrusted with the editing of a volume may receive his material properly prepared.

Peculiar circumstances arose which made my task even more exasperating. Towards the end of May 1900 the antiquities excavated by the fourth expedition and packed at Hilla under Haynes's personal supervision, were sealed and delivered to the representatives of the Ottoman Government at that place for shipment to Constantinople. The way around Arabia is long; numerous delays were unavoidable and frequent transfers of the precious material necessary. The boxes were often exposed to the inclemencies of the weather and roughly handled by inexperienced native workmen. Their Excellencies Hamdy and Halil Bey (to whom again I express my warmest appreciation of their continued interest and loyal support of our work) did everything in their power to secure the early arrival of the antiquities at the Imperial Museum; but more than a year elapsed before they were landed at their place of destination.

In 1901 I went twice to Constantinople, personally unpacking, examining and repacking more than 20,000 inscribed tablets and fragments within four months. A large portion of the Temple Library was presented by His Majesty the Sultan to the writer for his past services in connection with the organisation of the Imperial Ottoman Museum. It happened that large masses of antiquities from other excavations arrived in Constantinople that very year, while the magnificent third building of the Sultan's museum was still in course of construction. It was impossible to provide proper storage for all the boxes in the spacious cellars and vaults at the disposal of the authorities. Wooden sheds had to be erected in the courtyard of the museum to give temporary shelter to whatsoever could not find a place behind stone walls. The fall and winter rains of 1901 to 1902 were extremely severe, and these sheds proved a very insufficient protection for our own antiquities. Thoroughly wet and partly rotting, the boxes given to the writer arrived in Philadelphia in the summer of 1902 when he was absent in Germany.

Upon my return to Philadelphia, end of September, 1902, the antiquities received were presented to the board of trustees of the University of Pennsylvania, and a series of public lectures delivered, in which for the first time a summary of the history and scientific results achieved by all the Babylonian expeditions of the university were submitted to the numerous friends and supporters of this great undertaking. At my earliest opportunity I also opened some of the boxes from Constantinople. They were still so wet that their contents of unbaked inscribed clay threatened to be lost to science for ever. Energetic measures were necessary to save the broken remains of the Temple Library, destroyed by the Elamites, and 4,000 years later brought to light again by so much personal sacrifice on the part of the committee and the members of the expedition.

Accordingly, strict orders were given not to move or touch any of the tablet boxes (stored in a moderately heated large room of the museum), until the writer was satisfied that their contents had become hard enough to be handled with safety.

About two and a half months after my arrival I had to leave Philadelphia again (December 16, 1902) for Constantinople, where I spent over five months in 1903 (February and March, September to December) in cataloguing cuneiform texts, and assisting in the arranging of antiquities for the opening of the new museum building. On December 24, 1903, I was back in Philadelphia examining at once into the condition of the tablets left wet and soft in the previous year. Having convinced myself that the antiquities had been saved by the precautions taken, I commenced to catalogue the large number of tablets remaining from the previous expeditions, for until the present new archaeological museum of the university had been opened (end of 1899, when the writer was *en route* for Babylonia), there was no suitable place for cataloguing and storing the thousands of antiquities already obtained after the limited space temporarily assigned to the Babylonian section in the library building had been used. Many of the boxes then in our possession could not be opened at all; others, after a hasty examination of their contents, were repacked and stored with the rest in the cellar of the library building.

About 6,000-7,000 tablets and fragments have been catalogued by the writer in Philadelphia since January 1904; several other thousands of cuneiform texts in Constantinople during the same time. My impatient critics must not forget that, with all the well-known energy and enthusiasm displayed by the authorities of the British Museum, Sir Henry Rawlinson and his intelligent and hard-working assistants, nearly fifty years elapsed before Assyriologists could obtain a tolerably accurate idea of the contents of the beautifully inscribed baked fragments of the infinitely better preserved Library of Ashurbanapal! I plead for only ten years for my associates and myself to demonstrate the rich contents of the badly preserved fragments of the Temple Library of Nippur. Apart from the mathematical, meteorological and chronological specimens submitted in the following pages, and the first part on the Temple School, already in press, four more volumes on hymns and other religious Sumerian texts, syllabaries and lexicographical tablets, and the official correspondence between the Temple officers and the Babylonian kings are already in the course of preparation, to say nothing of four other volumes on dated documents, including the series on the Temple Archive recently successfully opened by Professor Clay.

The writer is only human, and cannot do more than devote his entire life and the strength left in him (after eighteen years of continuous hard work and frequent deprivations of the ordinary comforts of life in behalf of a scientific undertaking) to the resurrection of ancient Nippur. The power of every man has its limits set by nature, even when he is ably supported, as the editor finally is, by half a dozen enthusiastic pupils and associates in the great work of deciphering and publishing the results of the University of Pennsylvania Babylonian expeditions.



A.A.S.B.

SIR,—In your notice of the Architectural Association Sketch Book the remarks on the subject of the title-page might perhaps lead some to suppose that the building was designed by an Englishman, which would not appear to be correct. The Very Rev. James Moore, in answer to my inquiries, wrote that "It is after an Italian chapel which took the fancy of a rich family who inhabited this place over 100 years ago. An Italian architect, who drew designs for some beautiful buildings about Dublin, gave a sketch of the Italian ruined chapel, and after this model our ruin was built. The Cassel family used it as a summer-house for tea parties. It is now the entrance to our cemetery."

As to how closely it followed the original, and whether it could be called a design, I do not know.—Yours truly,

WILLIAM G. B. LEWIS.

28 Chatham Place, Hackney, N.E. : March 13, 1907.

GENERAL.

Mr. Reynolds-Stephens, sculptor, is engaged upon a large war memorial for the Cape, to be erected at East London. It is equestrian in form, being a mounted Afrikaner scout in the act of watching the enemy.

Mr. Edgar Dudley has been selected by the Local Government Board to serve as land agent for the western district in connection with the War Office.

Sir Ernest A. Waterlow, R.A., F.R.W.S., was elected president of the Royal Birmingham Society of Artists at their annual meeting on Saturday, in succession to Sir Aston Webb, R.A., whose term of office has expired. Three new Associates were elected, namely, Mr. Ernest A. Chadwick, Mr. Alfred Priest and Mr. E. K. Brice. The officers and professors were all re-elected. Mr. W. H. Bidlake, M.A., was elected deputy-treasurer.

The Royal Institute of the Architects of Ireland have decided, in view of the unsatisfactory manner in which most architectural competitions are advertised and assessed, that a simple code of rules suited to Irish circumstances should be drawn up and circulated amongst the practising architects and clerks of public bodies throughout Ireland.

The Birmingham City Council (baths and parks committee) were unable to come to a decision on the 8th inst. concerning the competitive drawings submitted for public baths for the Nechells district.

The North Riding county education committee have approved of the erection of a proposed new Council school at South Bank at a cost not exceeding 10% per head, and that competitive plans be invited from seven architects.

The Streets and buildings committee and sewerage committee of the York Corporation recommend that body not to advertise the vacant position of city surveyor, but to appoint Mr. F. W. Spurr, the deputy surveyor, for six months on probation at a salary at the rate of 300% per year. A proposal to advertise the post at 500% per year was discussed at considerable length, but was defeated.

Mr. A. Chevallier Tayler and Mr. W. Elmer Schofield have been elected members of the Royal Society of British Artists.

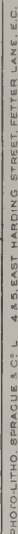
It is Proposed to offer to the University of Cambridge a replica of the statue, by Mr. Goscombe John, A.R.A., of the late Duke of Devonshire, Chancellor of the University. The Council of the Senate have resolved to propose a Grant for the acceptance of the statue if offered to the University. The sculptor has given his model, executed for the statue at Eastbourne, and the only money required is for casting it in bronze and for a marble pedestal.

Mr. George Watson, for many years architect and surveyor at Penrith, died last week. He was nearly eighty-three years of age. He was a keen archaeologist, and wrote much on Cumberland and Westmorland antiquarian and historical questions. He probably did more than anyone else to preserve the historical records of his district.

The Annual business meeting of the architectural section of the Royal Philosophical Society of Glasgow was held on Monday. Mr. Alexander Davie, honorary treasurer, reported that, with a balance carried forward of 190%, the income for the year was 223%, and that after meeting the expenses the funds on hand amounted to 200%. Mr. Alexander Gardner was elected president, Mr. Alex. Cullen and Mr. Samuel Smith were appointed vice-presidents, Mr. Robert Miller and Mr. Alexander Davie were re-elected honorary secretary and honorary treasurer respectively. Mr. R. Sandilands, the retiring president, was elected an honorary member of Council.

A Register is now being kept by the St. Pancras Borough Council of all buildings within its area which have historic interest, the necessary work being carried out by the historical records sub-committee.

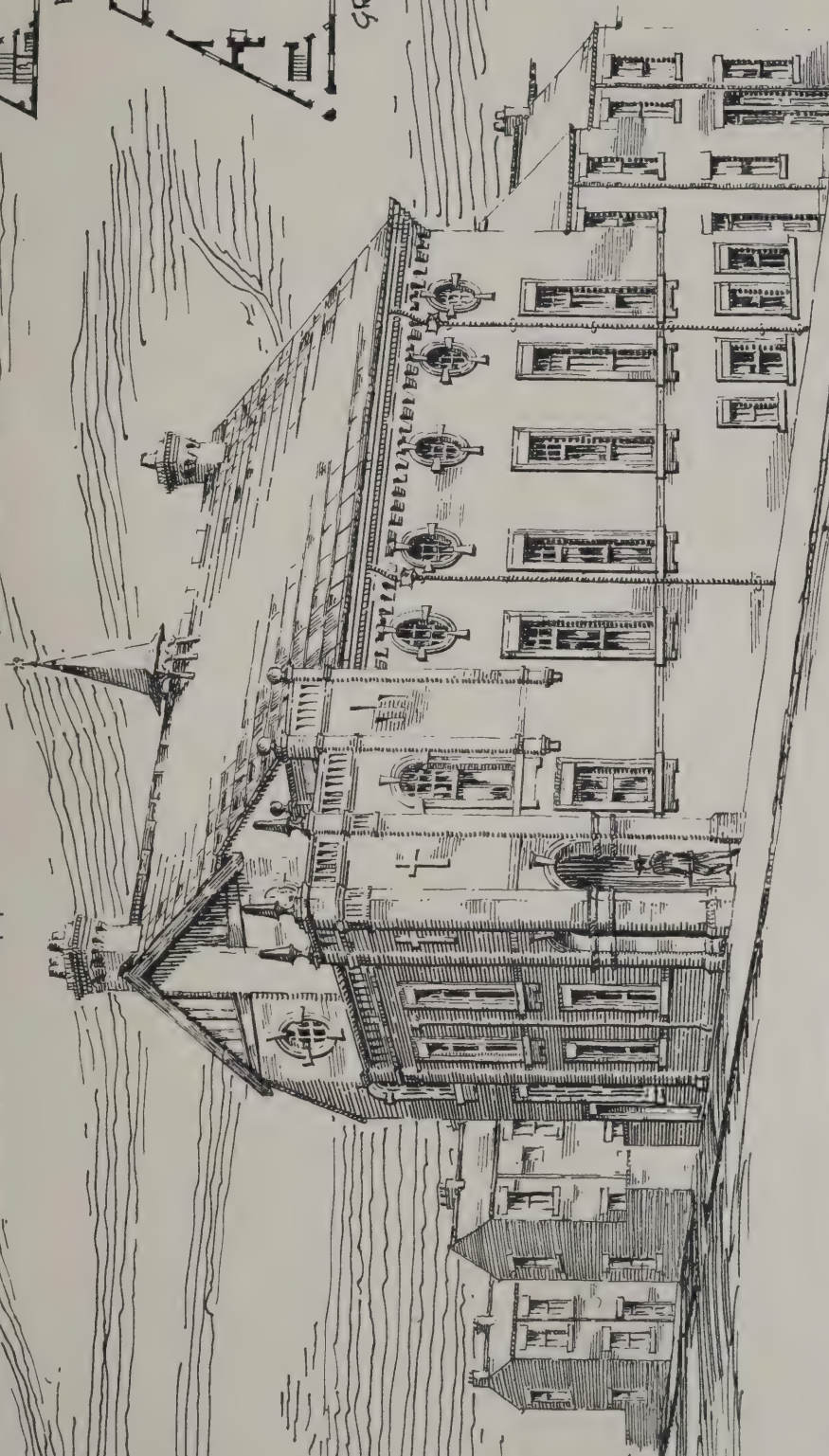
Dr. J. J. Dobbie, director of the Royal Scottish Museum, in his annual report to the Department mentions that the windows in the south wall of the west wing of the museum have been fitted with iron shutters as a protection against fire. This cannot be regarded otherwise than as a temporary means of dealing with the grave danger to which Dr. Dobbie has already repeatedly drawn the attention of the Education Department. In his opinion nothing short of the removal of the buildings which immediately adjoin the museum on its south side, or their conversion to some less dangerous purpose than that for which they are now employed, can adequately provide for the safety of the museum.



PLAN INDICATING POSITION OF ROOMS IN PROPOSED LONDON COUNTY HALL.

From "Instructions to Competing Architects." W. E. RILEY, SuperIntending Architect.

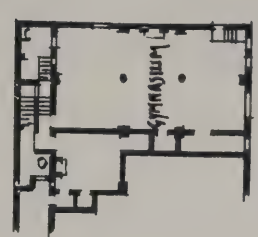
ST. JUDAS PAROCHIAL BUILDINGS
NEWCASTLE-ON-TYNE.



FIRST FLOOR PLAN

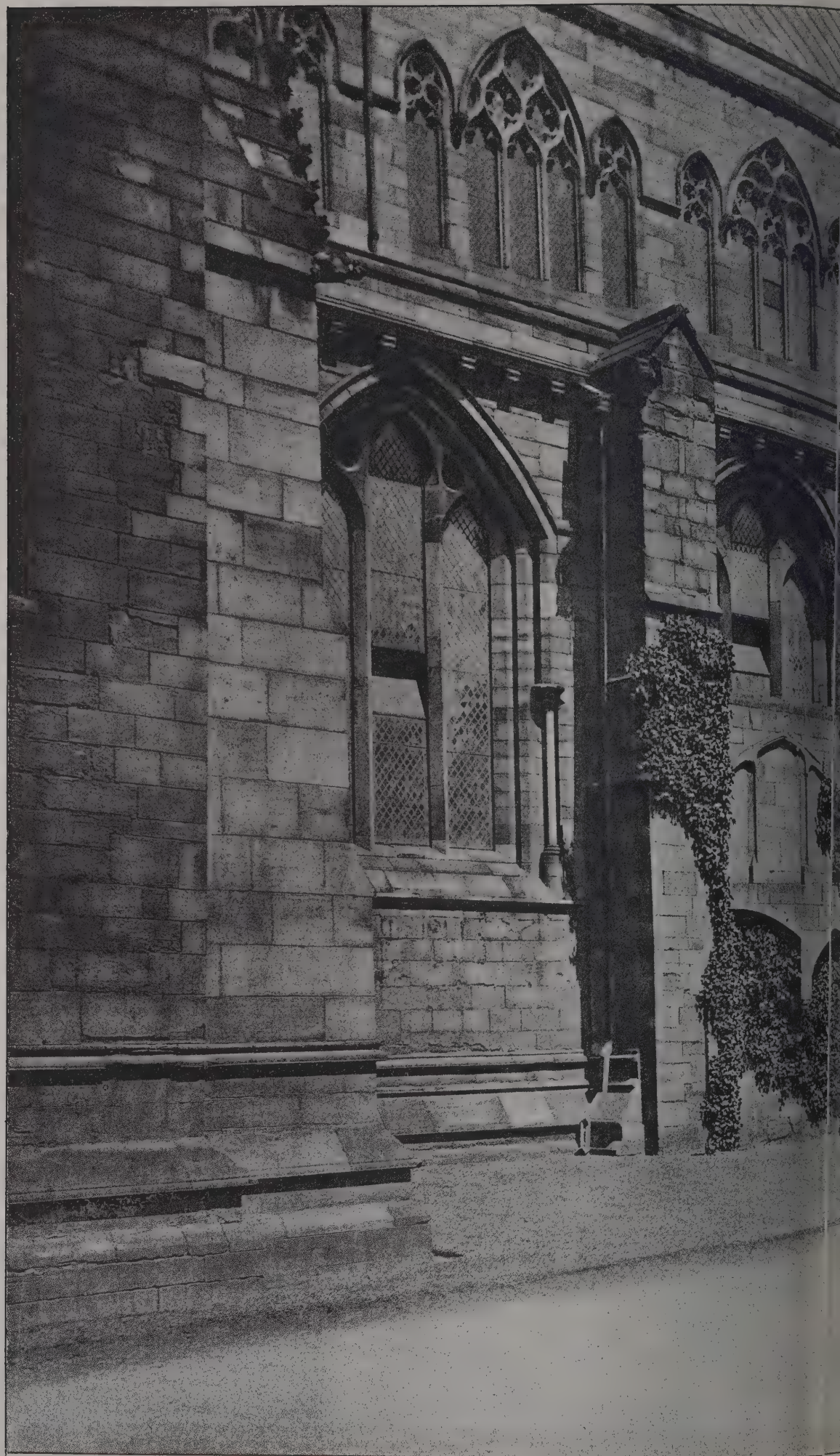


GROUND FLOOR PLAN



BASMENT PLAN

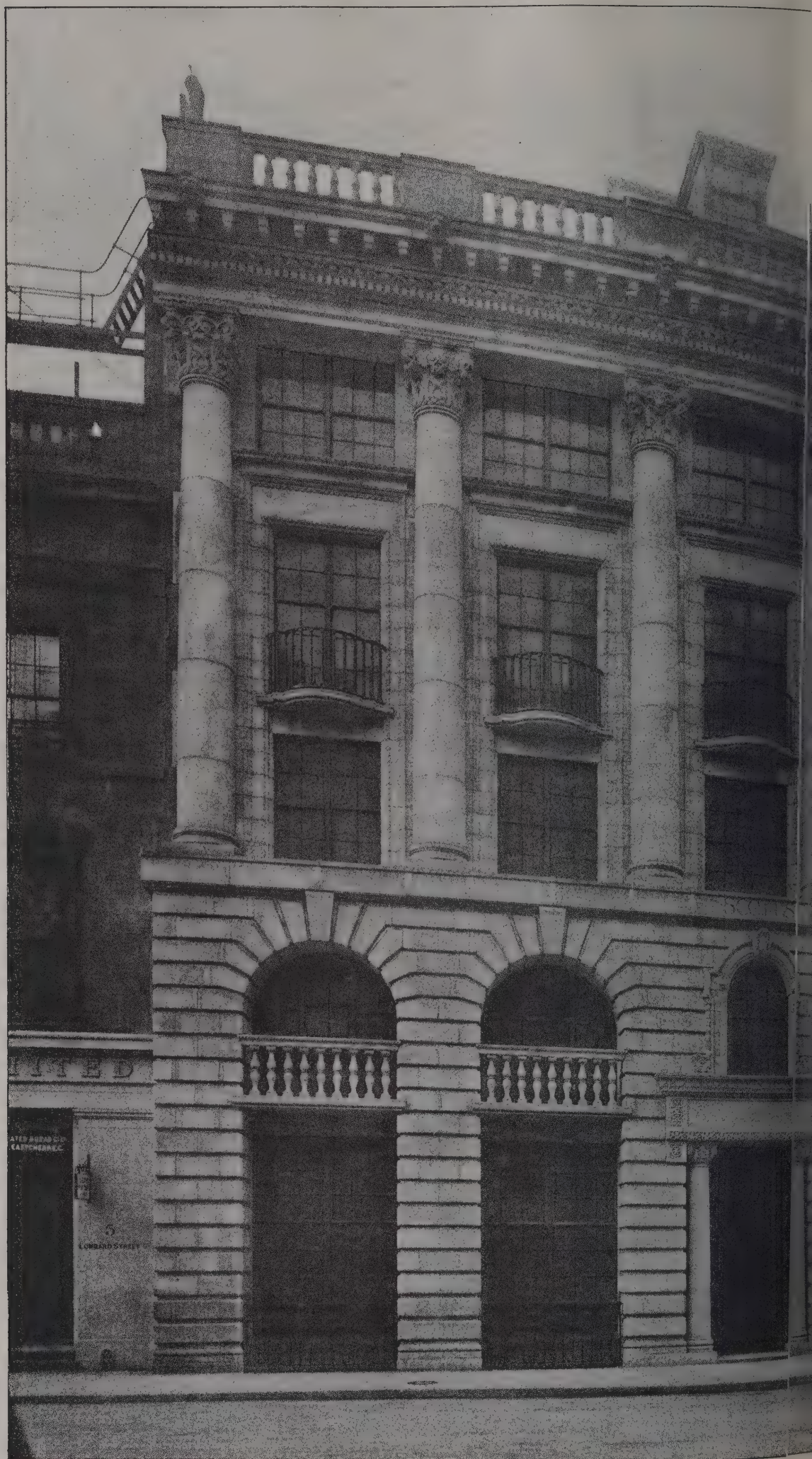
ARTHUR B. PLUMMER
ARCHT.
DIOCESAN ARCHT.
NEWCASTLE-ON-TYNE.





"INK-PHOTO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

EXTERIOR OF CHOIR FROM SOUTH-WEST.



PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

NEW PREMISES FOR THE SCOTTIS PR
Messrs. DUNN

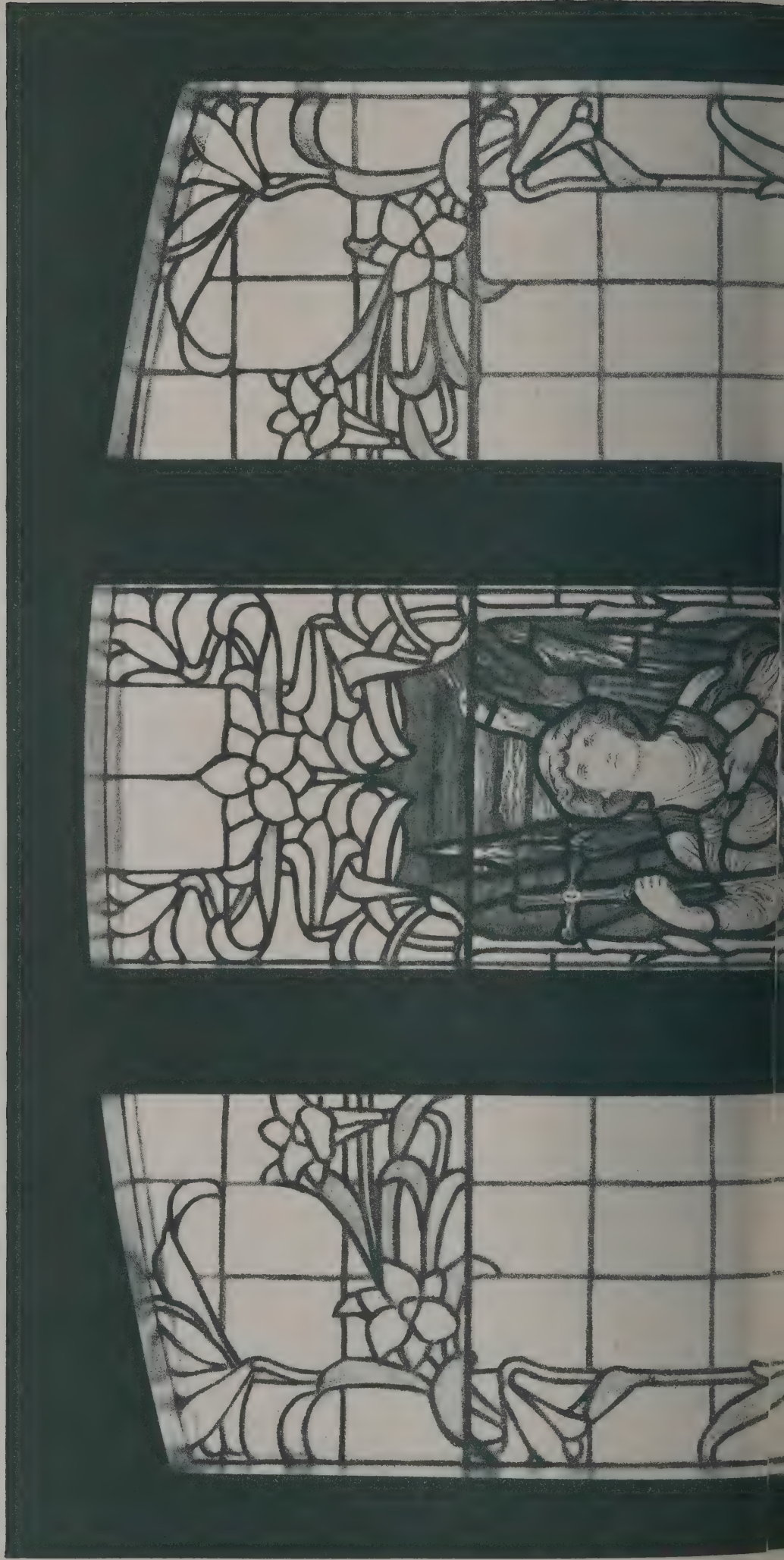
15th 1907



INK PHOTO PRAGUE & C. L. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

INSTITUTION, LOMBARD STREET, E.C.
S, Architects.

The Architect, Mar. 15th 1907





"INK-PHOTO" SPRAGUE & CO. L^Y 4 & 5, EAST WARDING STREET, PETER LANE, E.C.

"FAITH": A WINDOW IN THE TEMPORARY CHURCH OF S. BARNABAS, MITCHAM.

H. P. BURKE DOWNING, F.R.I.B.A., Architect.

The Architect.

THE WEEK.

WE lately spoke about the strange situation which the equestrian statue of JOAN OF ARC occupies in the city of Nancy. It was a gift of M. OSIRIS, the stranger who displayed so much munificence towards his country. In his will he announced that as he was not able to acquire the humble house in which the heroine was born, he desired that the statue should be removed from its present position, and that a more suitable site should be found for it in the centre of the city. M. OSIRIS also expressed the desire that the memorial should be surrounded by a screen of artistic character, and that every year, on the occasion of the fête of JOAN OF ARC, a crown of immortels should be placed in his name at the base of the statue. M. OSIRIS left the sum of 4,000*l.* to defray the necessary expenses. He also bequeathed a sum of 2,000*l.* for the erection of a chapel at Lausanne, which is to recall the patriotism of WILLIAM TELL, and a similar sum towards the erection of an Israelite temple. A sum of 4,000*l.* was left to the city of Paris for a memorial of Mdme. BOUCICAUT and the Baroness DE HIRSCH, who are to be represented as Goodness and Charity.

AFTER-DINNER speeches should not be criticised with too much severity. But men who hold responsible positions should on those occasions adopt the advice of placing a gate of prudence before their lips. The Mayor of Brighton, we believe, is a member of the medical profession, and any suggestion which he should offer about building is likely to be taken seriously. His Worship was the guest of the local Master Builders' Association on Monday, and informed them, according to report, that "they built too well. No house should be built to last more than twenty-five years. Tastes changed in a less period than that. A little while ago the ideal was a dignified edifice of many storeys and a basement. Now people wanted red bricks and smaller houses with more modern comforts. Builders might do more than they did in the way of modernising existing houses. People did not want basements; fill them up. They wanted smaller houses; cut off a storey or two." It is sometimes proposed that hospitals should be conflagrated periodically, as the only way to exterminate microbes, and ignorant people may imagine the Mayor was of opinion that a similar process is needed with dwellings, especially when they are let to a succession of lodgers. At present it is difficult to restrain the evasions of jerry-builders, and they may suppose that flimsiness is an aid to the promotion of the public health and adapt their houses for no more than a quarter of a century of existence.

FROM a report which was presented to the Glasgow School Board the accommodation in the schools is considerably in excess of the number of children who are of school age. Two causes have operated in producing this result. One is due to recent legislation, which raised the age of compulsory school attendance to fourteen, and in consequence an increase of accommodation had to be immediately provided all over the city. The other cause was in consequence of the tendency of the population to remove from the central part of the city. The change in the relative density of the population of the different districts made it necessary to have a rearrangement of the situations of the schools. Should the tendency continue it will be imperative for the Board to consider the advisability of closing some of the older schools in the Central, Gorbals and Anderston districts. By the new regulations rooms in the older schools are inadequate in size. The Board in anticipation of the future demands have been able to secure several sites in outlying districts. It is believed that although

any additional schools will not be required in the main part, provision for them will have to be made in outlying districts.

AILSA CRAIG is a familiar object to those who travel by sea from London to Leith or other of the northern ports. Rising to a height of 1,100 feet, and having a circumference of about two miles, its isolation makes it appear as a survivor of some great geological movement, which could overcome the hardest syenite. Many artists have made the islet a study, but not always with success. The rumour that Ailsa Craig was to be made the subject of a quarrying enterprise was therefore not heard with satisfaction. From the character of the stone, which is volcanic, it is not adapted for some purposes. What has been done is not likely to deprive the rock of its picturesqueness. A lease of thirty years has been entered into with Mr. WILSON, of Glasgow. Its operations will be confined to the south and south-east faces, and not more than fifty men are to be employed. A long time would be necessary before sufficient rock would be removed to make the solid mass of Ailsa Craig seem as deficient. It may even be believed that the operations will be advantageous, for there will be more opportunities for a play of light and shade.

FORTUNATELY for the world the United States make war on their neighbours only under exceptional circumstances. It is, however, necessary to keep up a military organisation. Those who attain rank in it, however, apply themselves to pursuits of a peaceful kind. And this fact is shown by the selection of Lieutenant-Colonel GEORGE W. GOETHALS for the post of chief engineer of the colossal works of the Panama Canal. He is no novice in hydraulic works, for he has been for several years connected with the improvement of rivers and harbours. A large section of the Tennessee river works was carried out under his direction. He also took a share in military operations during the Porto Rico campaign, and he has served as professor at the Military Academy. Colonel GOETHALS, as a reward for his services, was promoted to a place on the general staff. His duties as a member of the Isthmian Canal Commission will be onerous. But one lesson is afforded him by the failure of his civil predecessors, and for the honour of the Military Academy and the War Department he is bound to make efforts to bring the works to a conclusion without regard to difficulties.

A REPORT has been prepared by the Surveyor of Chichester on the old building in the Priory Park which is known and used as the Guildhall. Mr. LOBLEY says he cannot admit the building to be safe. But it has been in a similar condition for many years, and if not interfered with in any way might remain as it is. He considers that the west end of the building at least requires repair and underpinning. Apparently the hall is not creditable to Mediæval builders, for the Surveyor reports that the buttresses are ornamental rather than useful, and the foundations tend to overturn the walls rather than resist the push from the roof. The buttresses will have to be underpinned, and four steel tie-rods will be required to run across the hall at the tops of them. The materials of the roof could not be reused, and a new roof would be costly. Apart from the roof the repairs are estimated to cost between 300*l.* and 400*l.* And the Surveyor says:—"The suggested repairs are only from a utilitarian point of view, and would in no way add to the architectural beauty of the Guildhall. In dealing with such old buildings it is impossible to estimate with any real accuracy, but the work itemed cannot be done in a satisfactory manner at a lower cost. At the same time, it would be very easy to exceed the sum named, and in dealing with the building from an architectural point of view the difficulty would be to know where to stop, as so much requires doing." The City Council propose to borrow 500*l.* for five years.

ARTIFICIAL RUINS.

THE interesting letter from Mr. LEWIS which we published in our last number suggests a subject which at one time was closely connected with the practise of architecture in England. Indeed it might be said it was also connected with the two theories of gardening which alternately prevailed in this country, for it subserved the purpose of the artificial garden or the landscape garden. We refer to the creation of artificial ruins. Ireland is a country which unfortunately abounds in them. Remains of abbeys and churches, baronial castles and much else are to be found in most parts of the island. Yet in the eighteenth century we find a family who resided outside Dublin obtaining a design of an Italian chapel from an Italian artist in order to erect an ornamental ruin as well as a summer-house on their estate.

The selection of the artist is noteworthy. At the time there were English architects in Dublin who were erecting noble works in the Italian style, and yet the CASSEL family preferred to give the commission to an Italian. The reasons which determined the choice are unknown. But it may have been dictated by a belief that a foreigner's design for an Italian ruin was likely to be more satisfactory than one by CHAMBERS, GANDON, or COOLEY. The erection of ruins in gardens was really inspired by examples which were seen in Italy. The creators of Italian gardens, who in most cases were architects, were supposed to have had advantages in the possession of the genuine ruins of historic buildings which could be worked into their compositions, or in sites which recalled one or other classic work of literature. Italian paintings alone were also believed to present the true features of a beautiful landscape. When VANBRUGH declined to give a plan for the gardens at Blenheim, and recommended that a landscape-painter should be consulted, he was likely to be thinking of an Italian artist. A builder was supposed to be competent to plan and erect a town house. But for a country mansion it was suggested to the English gentleman that an *architetto-pittore* alone was competent to make the house adapted to the peculiarities of the scenery of the site. Tivoli was taken to be an example of what could be done by utilising the natural conditions. Every projecting rock or coign of vantage was occupied to advantage, and the buildings appeared to advance or retire according to their situation. If, said the opponents of Capability BROWN, a man could have existed among the ancient Romans resembling that innovator, his first step would have been to impart monotony to the place by removing rocks from one part and transporting them to another, on the principle of equalising practised in laying out cuttings and embankments on railways in later times.

That the power of utilising opportunities which characterised the architects of Tivoli continued to exist among the Italian architects in the eighteenth century is suggested by the practice of ANTONIO ZUCCHI. He was closely connected with the Brothers ADAM, and if he did not design at least decorated several of their buildings in England. In 1770 he was elected an Associate of the Royal Academy. He was also the second husband of ANGELICA KAUFFMANN, R.A. He is supposed to have been only a painter, but in Italy he was better known as an architect. An Englishman who was acquainted with him gave the following account of his practice:—"He was a great castle maker, and his mode of composing them was to draw first a bold and varied outline of the rock, mountain or eminence upon which his castle was to stand. He then, with according lines, added his castle; and you would be surprised to find how the imagination is assisted by this practice, and what towers, battlements and projections are suggested by it which would not otherwise have been thought of. I always observed that his building was more varied and picturesque in exact proportion to the taste and happiness with which the foundation-line was struck." Much else could be cited as evidence of a

belief among amateurs that for certain classes of structures which were to be set up in parks or gardens it was necessary to have recourse to Italians for designs, as the buildings would then appear to have been inspired by the site. One of the causes of the prejudice against works of the kind may be due to the fact that they owed their existence to foreign inspiration.

We see examples of the strength of this prejudice in Dr. JOHNSON. In 1774 he visited Hagley, where Lord LYTTLETON realised the new ideas about supplementary buildings in grounds and the creation of cascades to excess. He described the park as one artificial ruin. "He was enraged," says Mrs. PROZzi, "at artificial ruins and temporary cascades, so that I wonder at his leaving his opinion of them dubious; besides, he hated the LYTTLETONS, and would rejoice at an opportunity of insulting them." JOHNSON was no doubt a good hater. But there was in him much of the utilitarian of a later time. He could not see any advantage in the kind of adjuncts to an estate which were becoming fashionable, and he may have thought that if cascades were necessary nature would have created them. JOHNSON was, moreover, too prosaic to be able to realise the charm which such a building as has survived at Stowe, and which may be called a circular Classic temple in an unruined form, can confer upon grounds which are well laid out. WASHINGTON IRVING, coming from vast expanses of land which were to be found in America, was nearer the truth when he said that a rustic temple or a sylvan statue gave an air of classic sanctity to the seclusion of a great English park.

Another reason for the dislike to such buildings which arose among men like JOHNSON was that curiously compound character imparted to them in many instances. It is very hard to contrive a building which must pay a double debt, which shall be at once a summer-house for tea-parties and a ruined chapel like the Drumcondra example. It was believed in the latter part of the eighteenth century that landscape-paintings by Italian artists owed much of their attraction to the introduction of ruins rather than of buildings that could be inhabited. CLAUDE especially relied so much on his ruined towers, and RICHARD WILSON, who was the first important English landscapist, so faithfully followed his example, it was concluded that the picturesque was inseparable from decay. If an English gentleman wished to impart a sense of pathos to his grounds and to charm the eyes of sentimental people all that was necessary was to introduce ruins. By the same effort he improved his estate, pleased his friends, or at least the ladies among them, and exalted himself into a man of taste and sentimentality. Anyone who has seen the systematic series of ruins erected by the first Lord HOLLAND at Kingsgate, between Margate and Broadstairs, will be able to understand the peculiar influence which one class of men supposed such things were able to exercise. Fox was a strong-minded if not an unscrupulous politician at a time when corruption was tolerated. He attained the office of Paymaster-General and leader of the House of Commons. He purchased the votes of members on liberal terms, and in that way secured a majority in the House of Commons for his party, and gained a peerage for himself. Then, as GRAY, the poet, said, being abandoned by each venal friend, he formed "the pious resolution to smuggle a few years and try to mend a broken character and constitution." The place was dreary, but art was invoked to increase its dreariness:—

Here mould'ring fanes and battlements arise,
Turrets and arches nodding to their fall;
Unpeopled monast'ries delude our eyes,
And mimic desolation covers all.

If Lord HOLLAND wished people to imagine that he was or had become as unworldly as a Trappist, and that his thoughts were no longer occupied with parliamentary struggles, he deceived himself, for GRAY, no doubt, expressed a general sentiment when he suggested that

the ruins were typical of the destructive tendencies of his Lordship's mind, and expressed the form his revenge was to take:—

Purged by the sword, and purified by fire,
Then had we seen proud London's hated walls;
Owls would have hooted in St. Peter's choir,
And foxes stunk and litter'd in St. Paul's.

When structures which at Kingsgate, as in other places, were mere scenic decorations could be misinterpreted so easily, people must have hesitated before they set up imitations of old buildings.

It was supposed that the power of pleasing which ruins afforded was mainly derived from irregularity of surface. Whoever adopted them for the decoration of ground was therefore advised to let the breaks in them be as bold and abrupt as possible. If there were hills with sudden descents on the property, that dictated the employment of feudal castles. If there were fertile vales near wood and water, or if there was a spot abounding in large oaks, then nothing was more suitable than sham Gothic abbeys and religious houses. An occasional cottage, although a very inferior object, might be employed to suggest tranquillity. But whatever kind of building was introduced it must be placed in such a way that the eye would not tire in looking at it. Building must not balance building, but could be contrasted by a large oak. Whoever is curious concerning the subject will find many strange observations in the literature which appeared in the latter part of the eighteenth century.

The French Revolution and the wars which followed were unfavourable to the increase of sham castles and temples. People had to face realities which were troublesome, and land became valuable in proportion to its productive nature. Sir WALTER SCOTT was able to say with a sort of triumph that the mummery of temples and obelisks was abolished. And yet if by some fatality Melrose Abbey had been doomed to disappear, there is no doubt he would have purchased every stone that remained, and have re-erected them on some spot near Abbotsford, even if he had to write a special poem or novel in order to obtain the necessary funds. SCOTT loved buildings of an approved style in connection with gardens or estates as much as anyone, and he describes his enjoyment of a garden of seven or eight acres with no larger residence than a cottage, but which had "seats and trellis walks and a banqueting-house" as if the entertainment of friends was of primary importance to the owner.

Unless they were subjected to regular supervision garden-houses were likely to suffer from atmospheric influences far more than ordinary dwelling-houses. Rain might find its way through the roof of a Corinthian temple, and the absence of doors in some cases, although suggestive of welcome in summer, was a sure cause of dampness. Climate which was generally favourable to similar structures in the South played havoc with those in England. Decay therefore in some cases led to the removal of garden buildings, or, as in the Irish case, where the Italian chapel became the entrance to the cemetery, the structures which once were so pleasing within and without had to serve a different purpose and were utilised as tool-houses or stores for roots. The history of artificial ruins in England and of the buildings which were closely allied to ruins in the imagination of country folks is so melancholy that surviving examples would probably excite the pity rather than the rage of a JOHNSON.

Artificial ruins like those to be seen at Kingsgate are not likely to be imitated. Land has a pathos of its own which needs no increase. But not only enhancing effects can be produced by the aid of architecture, but utility can likewise be served. In so changeable a climate as ours shelters have their advantage, and casinos like those which CHAMBERS designed in the neighbourhood of Dublin, and which were sound solid structures in a Classical form, are much more rational

than an Italian church which is partly ruins and partly a tea-room. They would as well aid in suggesting the sanctity of seclusion as any mongrel structure for which a precedent was supposed to exist somewhere on the Continent. Such outlying buildings could easily be made to enlarge as it were the influence of the principal mansion. If the base of that building can appear extended by the arrangement of an architectural garden it can likewise be said that outlying buildings carry out that idea still further. It is advantageous in a painting to have a particular colour repeated, although the portions may in some cases be very small. And in the same way a mansion which, as WOTTON says, is to the possessors an epitome of the whole world, merits to be recalled throughout whatever area immediately appertains to it.

STREET WIDENING WITHOUT COMPENSATION.

IT is often a puzzle to determine on what principle the streets in the majority of towns in this country were laid out. There seems to be no doubt about indifference to the geometric definition of a straight line being the shortest distance between two points. That neglect might be overlooked if the crooked street were equal to all the traffic which passed through it. But generally it is found that the older a street is the more inadequate is its width. It is easy to point out a remedy, only the cost is usually supposed to be out of proportion to the advantages which are to arise. Compulsory sales are authorised by law in certain cases, but to seize on property for the benefit of the public without paying compensation is not sanctioned by any precedents, or at least by any which are modern. Corporations are therefore in a difficulty. They are expected to improve streets and roads, and are sure of abuse if they neglect that duty. Yet they rarely find an owner who is ready to sacrifice a strip of land or other property for the general good.

The attempt of the Glasgow Corporation to secure property for the widening of the streets without payment will therefore be considered by other authorities as ingenious and deserving of commendation. The judgment of the House of Lords, which was delivered last week, doomed it to failure, but nevertheless it was a courageous effort which in other towns would be certain of imitation if the result were different. The circumstances can be shortly described.

Strangers who visit Glasgow, although they may only remain for a few hours, are likely to become acquainted with Buchanan Street, which many consider to be Glasgow's principal street. The continuation of it at one end, although not in a direct line, is known as Port Dundas Road. It is a street which is far from being uniform in its architecture. It contains a station of the Caledonian Railway and several manufacturing concerns. Originally it was a turnpike road, and it came under an Act of 1793 which dictated that buildings were not to be erected within 40 feet of its centre. Very wide roads, on account of the expense of construction and upkeep, were not always approved by citizens, and Port Dundas Road became not more than 48 feet in width, although in some old plans attached to deeds the width is shown as 72 feet. That stipulation is worth remembering when judging of the action of the Corporation.

A couple of years ago some firms residing in Port Dundas Road applied for permission to enlarge their buildings. The Master of Works objected on the ground that the additions would project beyond the general building line. New plans were then prepared to meet his views. The Master of Works again opposed. This time he based his objection on the Glasgow Building Regulation Act of 1900, by which he was authorised to define the width of the streets. The width of Port Dundas Road he had fixed at 72 feet. In that way ground 12 feet wide which could be utilised by the

applicants became part of the street. There was an appeal to the Dean of Guild Court, which confirmed the action of the Master of Works. The case was next brought before the Court of Session, which for the occasion was strengthened by three additional judges, and their seven lordships decided in favour of the applicants. The Master of Works then appealed to the House of Lords, where the case was heard on October 25 of last year.

More consternation was, however, caused by the possibilities which were expected to arise under the Glasgow Building Regulation Act. The Master of Works was authorised by it to prepare a register of every street, showing the distance between the centre line and the properties on both sides of it. It was also to be supplemented by Ordnance maps on which the width of the streets, not as actually existing but as fixed at the discretion of the Master of Works, was to be coloured. In Glasgow, as in other towns, there was laxity in carrying out the regulations about streets, and owners and occupiers of property which they considered as standing on sites which were legally obtained found themselves in the position of squatters. Notices were given of appeals in between 5,000 and 6,000 cases. Among others, the Caledonian Railway Company discovered they were liable to have lines of rails and parts of their buildings appropriated, for they were comprised within the new street lines. They lost no time in taking an action. The conditions in their case differed from those of the applicants for authority to extend premises. The latter had an actual grievance, for they were refused permission to build. But no action had been as yet taken to the injury of the railway company or the thousands of citizens who entered appeals. All the company could plead was that their property appeared to be included within the limits of an ideal or imaginary street in a certain register belonging to the Corporation. The Glasgow Building Regulation Act allowed an appeal to the sheriff. The judges of the Court of Session considered that the action of the railway company was premature. But the company were eager to have the question settled at once by the highest authority, and, without regarding the sheriff, appealed to the House of Lords. Their case was heard on December 3, 1906. The points to be considered were so important the judgment of the House of Lords was not delivered until March 13. It is not necessary for us to enter at any length into some of the questions which were raised. We have simply to regard the two cases from the point of view which would be taken by an architect, engineer, or surveyor.

In the first place, it can be asserted that a street line or line of regular frontage is a comparatively modern creation. In terraces the architect would in most cases adopt a continuous line for his frontage. But there are few towns without evidence that the same line was not always adopted for properties which were raised at a later time. In such streets it is impossible to define a continuous centre line. If such a line is desirable it should be laid down before a building is commenced. When a street is irregularly built the actual centre will have to vary according as the frontages advance or recede from an imaginary line. As Lord JAMES said, the centre depends on the width between the houses at any point, and it is from the width the centre must be determined. But the Corporation lawyers argued that by law the central line was to be the line laid down by the Master of Works, and it would not be altered, although the street was widened on one side several feet and not on the other. The legal centre line was not to be discovered by the aid of any measurement with a tape, which drew from Lord ROBERTSON the remark that while measuring seemed to be suitable employment for a Master of Works, judicial decisions were hardly within his province. Another argument employed by counsel was that if the part of a building site which fell within the lines of a street which never existed were appropriated, it was an

advantage rather than otherwise to the owner, because he could then build a higher house. In a street 50 feet wide a man could only erect a building 75 feet high in Glasgow, but if the width were 60 feet, then the building could be 90 feet. The effect of that argument would be, the Lord Chancellor pointed out, that strips of a man's land could be obtained without paying for them, a method of dealing which was not recognised in the Act.

There is no doubt street improvements would be facilitated if the principle upheld by the Corporation could be established. Whenever premises which were affected by imaginary lines were to be enlarged or altered in any way, it would be easy to refuse permission until the applicant had come to terms with the Corporation. In London the widening of a thoroughfare bit by bit as leases expire is a costly process, and the results are for a long time unsightly, while in Glasgow owners would have to submit to confiscation, and there would be no use in rebelling. If the property of ordinary individuals alone had to be considered, the new process of acquiring might be overlooked. But to take a small part of a railway is recognised as a serious affair, because it may affect a long line of rails.

Courts of justice generally prefer to occupy themselves with realities rather than with abstractions, with substantial structures rather than with designs for them. The majority of the members of the tribunal of the House of Lords were likely to be acquainted with Port Dundas Road as it is at present and has been for many years. On that account they must have experienced a difficulty in trying to create its appearance in the future, when it would have a uniform width of 72 feet throughout its length. The decision given in the Court of Session was therefore confirmed, and we suppose no difficulty will be offered to the enlargement of the premises which gave rise to one action. The Caledonian Railway Company will have to apply to the sheriff for any relief they may seek. But as the ideal streets of the Master of Works are likely to be confined to the maps and plans of the street register, it is doubtful whether the company will have to surrender any of their property to give symmetry to a street, and the five or six thousand people who were in the same position will likewise be spared from disturbance.

ARCHITECTURE AND MUSIC.

THERE is no art which so fully and so extensively admits of the exhibition of passion and feeling in all their phases, from the simplest and mildest emotion to the most furious gusts of terror and anger, and hate and love, as does music. And these throes it serves to describe with animation and with vigour; it is also able efficiently to bring out, as it were, all the dark shadows by which their features are marked. Architecture also admits very fully of a character being given to its compositions, and of much expression and feeling, if not of passion, being exhibited in its designs. There is, moreover, a very great and, indeed, almost infinite variety of character in the different styles of architecture and in the several edifices which are erected according to its principles. Castles, cathedrals and palaces have each a peculiar and marked individual character of their own, which should be expressed in the style of their construction, and which corresponds with the purposes they are designed to serve. Solemn temples and courts of justice should, moreover, partake of the solidity which distinguishes the object for which they were raised; while, on the other hand, villas and places of entertainment may in their style be more lively and light. Regard should also be had in determining the character of an architectural edifice, not only to the actual object which the building is intended to serve, but also to the local position it is meant to occupy, both as regards the nature of the country about it and also the buildings which stand around it. And as temples to the Creator should vary much in their character and expression from halls of commerce, so buildings which stand on plains or near rivers should differ greatly from those erected on or near mountains or in great cities.

ST. MARGARET PATTENS CHURCH.*

THIS church is a rectory in the Ward of Billingsgate, situated at the south end of Rood Lane, the present paved court on its south side in Eastcheap having been the churchyard.

Rood Lane was formerly known, according to Stow, as St. Margaret Pattens Lane, "because of old times pattens were usually there made and sold; but of late time this is called Rood Lane, of a rood or cross there placed in the churchyard of St. Margaret, whilst the old church was taken down and again rebuilt, during which time oblations made to this rood were employed towards building the church."

St. Margaret, to whom the church was dedicated, was a

but there is a record of the parish in the will of John de Wyteby, dated 1275, which mentions his tenement in the parish of St. Margaret Pattens; Ralph de Coventry is mentioned in a deed dated 1305 as having been the rector, and he had his "antecessores;" and in 1324 Isabella Carpenter gave directions in her will that her body be buried "in cemeterio Sanctæ Margaretæ de Patyns." The advowson of the church was in 1324 in the family of the Nevils, Hamo de Chyrch having been collated thereto by them on June 14 in that year. The last presentment made by this family was by Lady Alice, widow of Sir John Nevil, Kt., on January 2, 1392. It then came into the hands of Robert Rikenden, of Essex, and Margaret his wife, who in 1420 transferred it, together with the manor of Leaden Hall, the appurtenances thereof and the advowson of St. Peter's, Cornhill, to Richard Whittington and other citizens of London, who conveyed the same to the Lord Mayor, aldermen and commonalty of the City of London in 1411. In 1424 the City made its first presentation, to William Gyles.

The old church was pulled down and rebuilt in 1538, and the rood above mentioned was set up in the churchyard, being "blessed and privileged by the Pope, with many indulgencies, for the pardon of the sins of those who came to pray before it and make their offering towards the rebuilding of the church."* Stow relates how "in this year (1538), about the 23rd of May in the morning, the said rood was found to have been in the night preceding (by people unknown) broken all to pieces, together with the tabernacle in which it had been placed."

The church was destroyed in the Great Fire of London in 1666 and the present edifice built in 1689—excepting, however, the tower and spire, which were not completed until 1745—from the designs of Sir Christopher Wren at a cost of 4,986*l.* 10*s.* 4*d.*

During the interval the services were held in a tabernacle erected in the churchyard of St. Gabriel Fenchurch, which had also been burnt down. Tabernacle Alley, leading into Fenchurch Street, still records by its name the circumstance. The church of St. Gabriel was situated in what is now Fen Court. A stream, known as the Langbourne, ran down Fenchurch Street, and the district was more or less a bog or fen, hence the name of the church. After the fire the two churches of St. Margaret Pattens and St. Gabriel Fenchurch were united by Act of Parliament, 22nd and 23rd of Charles II., the tithes being then valued at 120*l.*, increased in 1804 to 200*l.* The presentation

of St. Gabriel's belonged to the Priory of Trinity, Christchurch, within Aldgate, and at the Dissolution reverted to the Crown. Since the union of the two parishes the right of presentation to St. Margaret Pattens has been alternately with the Lord Chancellor and the Corporation of the City of London.

The church is Classic in its architectural design, and consists of a nave, chancel, north aisle, with gallery over, vestibule at the west end the full width of the nave, over which is a gallery containing the organ, and a tower surmounted with a spire at the north-west angle. The



ST. MARGARET PATTENS CHURCH.

holy virgin and martyr, born at Antioch, in Pisidia, her father being Ædesius, sometimes called Theodosius, a famous priest of the Gentiles. Olybrius, President of the East, being greatly enamoured of her beauty, desired her in marriage, but, finding she was a Christian, strove to turn her from her faith, and persuasion being of no avail he subjected her to most cruel and unheard-of tortures. These not prevailing, she was at last beheaded on August 30, A.D. 292, during the reign of the Emperor Diocletian.

The date of the building of the first church is unknown,

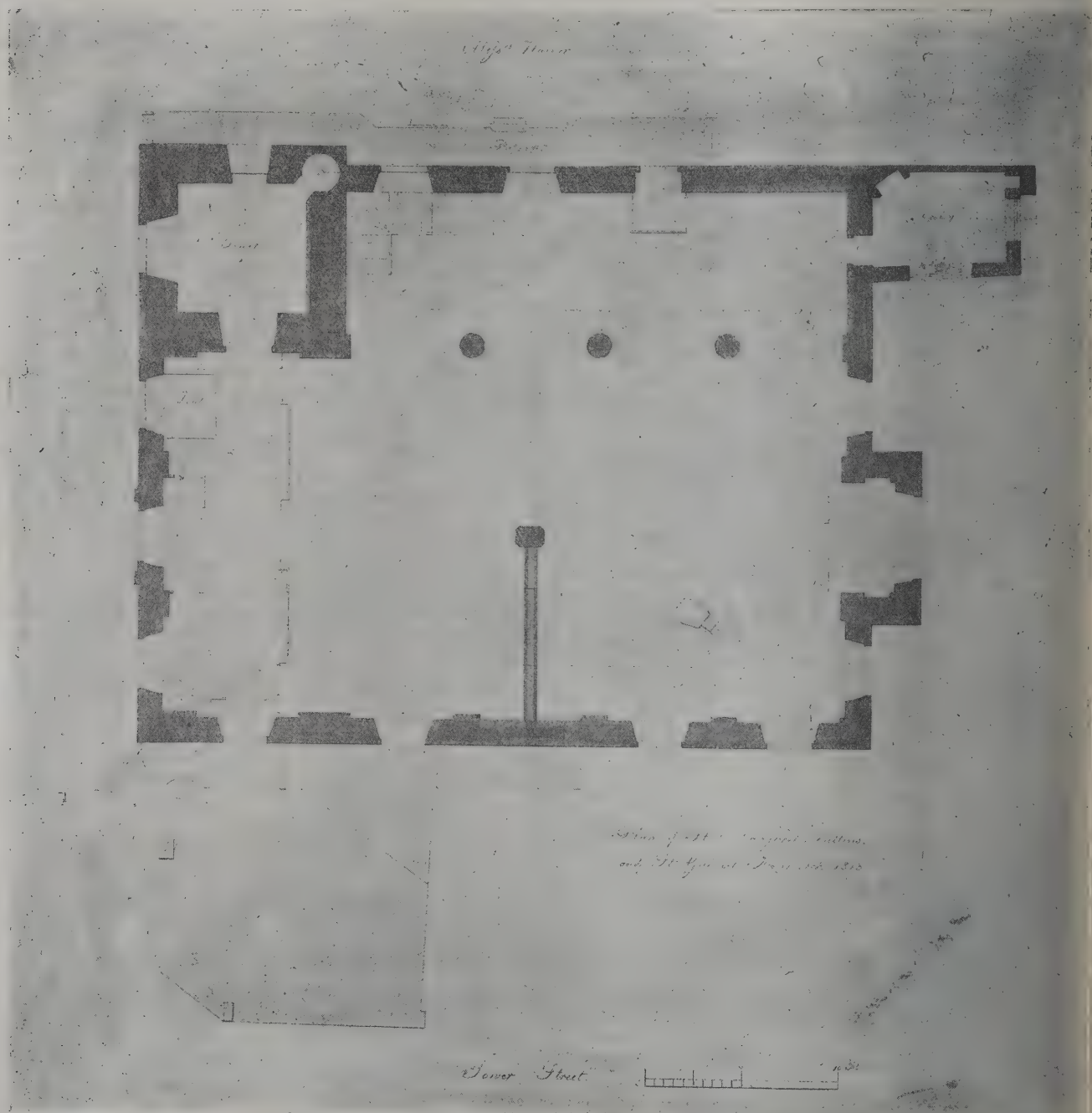
* A paper read by Mr. Frank E. Spiers before the members of the Woolwich Antiquarian Society.

* Northouck, *History of London*.

dimensions of the church are—length, 66 feet, width, 52 feet, and height 32 feet, the tower and spire being 215 feet. It is built partly of stone and partly brick, with stone quoins. The ceiling is flat, with a coved cornice which is groined to give space for circular windows. The groins spring from an architrave supported on three Corinthian columns with high bases on the north side and pilasters on the south, east and west walls. Between the pilasters are large windows. The east end is in three divisions, the centre recessed for the altar, the reredos consisting of two Corinthian columns of oak, with entablature and pediment, enclosing a fine piece of tapestry, on which is represented "The Supper at Emmaus." The carving

the church, and is quite worthy of notice; the cover is of later date. There is a good eagle lectern of carved oak.

The west end was formerly an open vestibule with rich carving over the doorway, and served as the baptistery. In 1745 the gallery with its organ was erected, afterwards being expanded to its present width during the rectorate of the Rev. H. J. Newbury (1804-66), who, being a popular preacher, attracted a large following. Other alterations were made by the late rector, the Rev. J. L. Fish, "at first," as he writes, "in face of much opposition, but, as time went on, with helpful forbearance and kindness." The reseating took place in 1880, the woodwork of the old pews being used for the purpose. The three-decker



over the high altar, of fruits, palms, foliage, &c., is exceedingly fine and is attributed to Grinling Gibbons. The walls of the church are wainscotted in oak 7 feet 6 inches high. Originally the church was fitted with large pews of oak, each seated on three sides, and there was a three-decker pulpit. The two churchwardens' pews at the west end still remain. They are canopied, and in one of them the initials of King James, "J. K.," and Sir Christopher Wren, "C. W.," with the date 1686, are inlaid. The fronts have delicately pierced panels carved in oak. The royal arms in front of the west gallery and the lion and unicorn on the churchwardens' pews are particularly well carved. The font, of white marble, carved with cherubs and foliage, supported on an octagon column of the same material, enriched with the acanthus, dates from the rebuilding of

vanished in 1886, leaving only the present pulpit, which is a very fine specimen of inlaid woodwork with carved panels. The two eastern bays of the aisle under the side gallery were partitioned off in 1890 to form a vestry, and at the same time the two western bays were fitted up as a side chapel, the reredos being formed out of the rich carving formerly in the vestibule over the doorway. It is surmounted with a valuable Luca Della Robbia plaque, representing the "Blessed Virgin worshipping Her Divine Child," presented to the church and placed there in 1899 to the memory of Thomas Wagstaffe, formerly a rector of the church, who was deprived for his loyalty in 1689. The sword-rest, of wrought iron, bears the Royal arms, those of the City of London, of Sir Peter Delmé, Lord Mayor in 1723, and of the Fishmongers' Company, of which he was

master, with their recognition of a noteworthy fisherman, St. Peter, viz. his cross keys thrice repeated. There is also another by its side of oak. Some good paintings are hanging in the church, viz. the one on the north side of the chancel, which was formerly over the high altar, representing "The Angels succouring Our Lord after His Temptation," by Carlo Maratti (died 1713); that near the font, which is a copy of Carravaggio's "Entombment of Christ" in the Vatican, given by Mr. Howard Gilliat; and the two hanging on the columns representing "The Angel Gabriel," given by Mr. Buttery, and "Our Lord bearing His Cross," given by the Duke de Moro.

Among the communion plate is a silver-gilt chalice dated 1521, a paten 1600, and two flagons, one given by Rev. Henry Lamb in 1708, and the other by Sir Henry Thorald, Kt. and alderman, in 1710.

The following are the chief monuments in the church:—Ægidius Vanderput, of Antwerp, died March 24, 1656, æt. 70, and Sarah, his wife, of Ipres, died 1666, æt. 67; their son, Peter, died 1668-9, and his wife, Jane, daughter of Theodore Horle, merchant, died 1672; and Sir Peter Vanderput, Kt., died April 24, 1708, who set up this monument in memory of his parents. Sir Peter, as sheriff of the City of London, stood on the scaffold on Tower Hill, with Bishop Ken, at the execution of the Duke of Monmouth. He gave 100*l.* to be laid out for the benefit of the poor of this parish.

Susanna Batson, daughter of Mr. Chaplin, a merchant in Rood Lane.

Sir Peter Delmé—according to Malcolm, the greatest merchant of his time—Lord Mayor of London in 1723, Governor of the Bank of England, and Master of the Fishmongers' Company, died September 4, 1728, æt. 61. This monument is the work of Rysbrack.

John Birch, many years an eminent surgeon in London, died February 13, 1815, æt. 69. He was a descendant of Willhelms de Bichis, who obtained the family arms—three fleur-de-lys argent on a field azure—for seizing the bridle of King John of France and making him a prisoner at the battle of Poitiers. He was afterwards appointed one of the knights in attendance on the king at the Savoy Palace.

Thomas Birch, D.D., rector 1746-66, historian and antiquary, at one time secretary to the Royal Society, of which he wrote a history; one of his best-known works is his "General Dictionary, Historical and Critical."

Mrs. Penelope Birch, spinster, and her sister, Ann, daughters of Dr. Thomas Birch.

The records of the church have been carefully preserved and are of great interest. They contain inventories dating from 1470, and throw a light upon the rich ornaments of the church of the time, including chalices, pyx, censers, chrismatory, reliquary set with stones and "a pece of the holy crosse within," an "imagine" of St. Katherine, a monstrance, altar cross, silver basins and a spygge (incense bowl). Also the "bokes," missals, breviaries, graduals, antiphones, ordinals, processionaries, psalters, hymners and manuals. A large stock of latens and pewter, copes, vestments, chasubles and the coverings of four altars, viz. the high altar, Our Lady's altar, St. Mary Mawdelyn's and St. John's, as well as banners and streamers.

The churchwardens' accounts date from 1508 and the registers from 1559.

Beside the authors mentioned, I have obtained valuable information from the following works:—W. Maitland's "History of London," R. Seymour's "Survey of London and Westminster," Newcourt's "Repertorium," Thos. Allen's "History and Antiquities of London," Geo. Godwin's "Churches of London," H. W. Clark's "City Churches," and "Notes" written by the late rector, Rev. J. L. Fish, in his "Parish Magazine."

SHEFFIELD SOCIETY OF ARCHITECTS.

AT the last meeting of the Sheffield Society of Architects and Surveyors Mr. C. F. Innocent lectured upon "The Architectural Treatment of Metalwork." Mr. W. C. Fenton (vice-president) was in the chair. The lecturer said the metals chiefly used by the builder were iron and lead, and both had been mined in this district from the beginning of the historic period. Evidences of the early working of lead and iron remain all over the neighbourhood, and in the Little Don Valley were slag heaps so old that all memory of their origin had been lost. Carvings of blacksmiths' tools on Saxon crosses, as at Leeds parish

church, showed that the tools were the same a thousand years ago as they are to-day. A Saxon carving at Halton of Regin forging a sword for Siegfried was probably the oldest illustration in England of a smith at work, and some of the tools were precisely the same as may be seen in use in Sheffield to-day. There is surprisingly little of old wrought ironwork in this district: the early seventeenth-century railings round the Scott tomb in Ecclesfield Church were an interesting example, and Mr. Innocent conjectured that they were designed by a Netherlander who had been to Venice. A great impetus was given to the designing of wrought ironwork by the arrival in this country of a great French smith, Jean Tijou, in 1670, who later did work at Chatsworth. The earliest use of cast-iron, architecturally, in the district appeared to be in fire-dogs; towards the middle of the eighteenth century the old open fireplaces were superseded by cast-iron stoves, and great numbers of these still exist in Sheffield; they are excellent examples of design appropriate to the material, and some of them appear to be by the celebrated Brothers Adam. Passing to lead, the lecturer alluded to the beautiful silvery appearance of old lead, which was due to its not having been desilverised as was now done. It was said that there was nothing new under the sun, and the Romans used also to desilverise the lead which they obtained in Derbyshire. Old lead was cast and not milled as modern lead, and the old plumbers took advantage of this to leave their names for the information of posterity, as may be seen upon the roofs of Sheffield parish church. On the old roof of Darnall Hall was the following:—

This lead was cast for

Mr. Samuel Staniforth as you may see 1723.

Also ye truth you may hear

This house was built in one year.

JOHN CLARKE PLUMER (sic).

And no doubt he plumed himself as much upon his verse as upon his plumbing. The lecturer pointed out that the designs in any material should always be appropriate to that material, and vary with the methods of manipulation. The lecture was illustrated by a large number of beautiful and interesting lantern slides.

At the conclusion a vote of thanks was accorded, on the proposition of Mr. C. F. Longden, seconded by Mr. W. J. Hall.

LICENSING IN AMERICA.

APPARENTLY there is a fair chance that, before long, the architects' license law will be pretty thoroughly tested in one State at least, says the *American Architect*, for besides the organised movement amongst San Francisco architects to test the constitutionality of the California statute, sporadic opportunities of getting the matter before a court seem to be springing up. Thus, last month, Mr. F. L. Soper, of Los Angeles, was haled into a police court for practising architecture without having taken out a license so to do. Naturally, his lawyer set up in his defence a plea that the license law was itself illegal, and so null and void. Amongst several points he makes in his plea is one that alleges that the statute nullifies itself, in that it excepts from prosecution those architects who take the trouble to notify their clients that they are practising their profession without having secured a certificate; another and, it seems to us, a probably stronger ground is the allegation that the statute is illegal because it confers upon the examining board an arbitrary power. It is interesting to know that the unfortunate architect was brought into court on the complaint of a revengeful contractor, and from this it can be inferred that spying, jealousy, revenge and all uncharitableness are to be found amongst the fruits of the thrice-blessed license laws.

The Glasgow University Court at their meeting last week considered a report presented by the committee on the proposed archæological lectureship. The committee recommended that Mr. Dalrymple's offer to provide the salary of a lecturer on archæology for five years should be accepted; that the course should consist of five or six lectures, to be delivered at the University at such time as may be arranged; that the appointment be in the hands of a body of curators, to consist of four to be appointed by the Court and three by the Council of the Archæological Society and Mr. Dalrymple during his lifetime. Although the arrangement was only for five years, it is believed Mr. Dalrymple will set aside money to make it perpetual.

NOTES AND COMMENTS.

THE necessity of a Government Commission to arrange the remaining watersheds of the country for the use of the towns which are likely to require them has been exemplified in a remarkable way in Harrogate. It was feared that Leeds would get hold of the source of supply, and the Council of Harrogate therefore sought for powers with immature plans and estimates. One false step in connection with construction is sure to lead to many others. We suppose it was owing to a knowledge of the character of the plans that instead of trusting the work to a contractor an effort was made to dispense with one. Authorities who believe in the economy of a works department would do well to consider the surprise which awaits the Harrogate ratepayers. Although much is said about the wonderful saving, especially in small matters, the Corporation are about to apply for authority to borrow 100,000*l.* to complete one of the reservoirs. The dam was to cost 15,000*l.*, while the actual cost was 26,308*l.* For the safety trench 1,995*l.* was supposed to be sufficient, but the outlay was 16,475*l.* The filling-in rose from 7,020*l.* to 33,180*l.* Masonry which was estimated at 44,950*l.* cost 71,506*l.* The increase on one part was no less than 89,127*l.* There was a difference of about 7,000*l.* between the estimate and the cost of a tunnel. The land for reservoirs was put down at 10,625*l.*, while the sum paid was 27,225*l.* It is supposed that the difference between the estimate and the expenditure amounts to 125,544*l.* 16*s.* The figures read like those of the London Works Department. Town councils should not be allowed to imitate railway companies and to become rivals, for losses fall on people who have no desire for competition. If the supply was convenient for Harrogate, then Leeds should not be allowed to use its wealth in order to monopolise the ground. It must also be admitted that even eagerness to secure a source of supply did not warrant a procedure which has become so costly to the people of Harrogate.

FROM the report of the United States Consul-General the German cement makers appear to have been more successful last year than in 1905. The joint-stock capital of thirty large works, representing approximately 22,000,000 *dols.*, yielded, roughly estimated, from 2,300,000 *dols.* to 2,500,000 *dols.* interest, or 10.7 to 11.4 per cent. In the year 1905 the dividend amounted to about 8.5 per cent., calculated on a capital of 21,200,000 *dols.* Dividends of the companies in question in the last eight years, 1899-1906, were as follows:—14.3, 11.25, 5.24, 4.41, 5.14, 6.58, 8.5 and 10.7 to 11.4 per cent. respectively. The reason for this favourable development was chiefly the building activity throughout the country in 1906. Although during 1904 and 1905 a similar activity prevailed, prices suffered in those years from the consequences of over-production. Notwithstanding the fact that in 1905 such an over-production did not make itself felt so much as in the preceding year, the production during the year 1906, although a number of new works were put in operation, did not in general exceed in a marked degree the demand. This supposition is confirmed by the statistics of the imports of cement during the last year.

BURNTISLAND parish church is interesting from its massive piers. Prior to 1822 they were adorned in colour with designs and the lettering of the Commandments, LORD'S Prayer, Creed and Beatitudes. On the front of the galleries were emblazoned the emblems of the trades or guilds of those who possessed the pews—hammermen, sailors, weavers, tailors, shoemakers, fleshers, bakers, &c. Most of the ornamentation has been obliterated by encrustations of paint and varnish,

though some parts are still dimly visible. A proposal of a member of the congregation to restore, as far as possible the original appearance of the interior has been approved, and Sir R. ROWAND ANDERSON has undertaken the direction. He is not sanguine of success in restoring the insignia on the galleries, but expects to bring the pillars to something like their original appearance. The oak-panelled magistrates' seat, with the date 1606, is still used, as in the past, for the "kirkin" of the Council.

WE mentioned last week the proposal to have the main drainage works at Clontarf carried out by direct labour under the direction of the officers of the Dublin Corporation. It was, however, premised that the cost was not to exceed the amount of the tender of Messrs. BINNS, of Croydon. On further consideration the onerous nature of the task which for amateurs seemed so easy became apparent. It was recalled that the cost of laying water pipes was 16*s.* 7*d.* per lineal yard by the Corporation labourers, while a contractor had offered to carry out the work for 5*s.* per yard, or less than a third of the sum expended. Then it had to be recognised that the Corporation did not possess the plant which was indispensable for extensive drainage works, and if it were purchased it would have, whenever the works were completed, to be sold at a sacrifice or to remain as an incubus in the yards. The consulting engineer declared that direct labour would be more expensive than contractors' work. Besides, there was a possibility of a law-suit for delay by the residents of Clontarf. Eventually twenty-eight members voted for handing over the work to Messrs. BINNS, who should have obtained it in the first instance, while sixteen voted for extravagant direct labour. Dublin is a favourable place for any system where money can be wasted, and when we find the supporters of direct labour have failed it may be taken as a sign that the bubble has burst.

ILLUSTRATIONS.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—ELECTROLIER ON FIRST FLOOR, CENTRAL HALL—DETAIL OF DOORWAY—REFRESHMENT-ROOM.

ANNFIELD PLAIN PUBLIC LIBRARY.—FIRST PREMIATED DESIGN.

THIS design was submitted in the competition for the above by Mr. EDWARD CRATNEY, of the firm of DAVIDSON & CRATNEY, 50 Grainger Street, Newcastle-on-Tyne, and 22 Fawcett Street, Sunderland. The plan is simple and straightforward, and was set out with the view to working it with as small a staff as possible. The principal rooms are grouped around the entrance-hall, which gives access to all parts. The public counter is so placed that the librarian whilst at work has a view of all the doors to the main rooms, and he has also complete control over the news-room and reference-room, with a service counter to the latter. The staff-room and lavatory are placed in the basement, which also contains stores and heating chamber. The elevation will be built of local stone, taken from the quarry at the rear of the site. The more important joinery to be in oak of simple detail, and the floor will be of maple-wood blocks. The entrance-hall and lobby will be paved with 6-inch by 6-inch black and white "dull" tiles. The windows will be filled with lead glazing set in wood frames and painted white. The building will be heated by low-pressure hot water. Tenders have been received and the work is to be proceeded with shortly.

CATHEDRAL SERIES.—CARLISLE: EXTERIOR FROM SOUTH EAST.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. Leonard Stokes, vice-president, in the chair.

Mr. Henry T. Hare, F.R.I.B.A., and Mr. J. Duff Brown, chief librarian, Islington Public Libraries, read papers on

Libraries.

Mr. J. DUFF BROWN, treating of library planning as affected by modern library policy and interior arrangements, and discussing the question of finance, lamented the fact that the English Libraries Acts do not specify the amount which shall be borrowed for building purposes, as in the case of the Scotch Acts, which provide that only one-fourth part of the income from the library rate, capitalised at twenty years' purchase, shall be borrowed, thus putting a definite check upon the mistakes and extravagances of committees. In most cases throughout England this reasonable proportion of the library rate has been enormously exceeded, with the result that many of the buildings possess architectural merits, but as libraries are failures. The craze for over-building, because the money is easily obtained, has been responsible for numerous cases of library buildings which are collections of bricks rather than of books, and whose equipment is so meagre and funds so scarce, that the hours have to be shortened in order to avoid a gas bill which would extinguish the penny rate.

The author went on to consider the following points, which he put forward as suggestions for discussion:—Is it advisable in the interests of progress and efficiency to standardise library plans and methods by adopting one uniform system for everything? The author hoped that the factors which were being sought to bring about this uniformity would never be discovered, and that architects would continue to design and librarians to invent fresh solutions of every problem presented. Systematic classification, by introducing more scientific methods of arrangement, will necessitate some alteration in the structure and pacing of book-shelves. Exact classification has brought about changes in the height, spacing and adjustability of book-cases, and has had some influence in bringing into use the "open-access" system, which the author predicts will within the next few years become all but universal. The "open-access" system has been the means of important modifications in planning. In both reference and lending departments the book-cases must be easily accessible from the floor without the use of steps, and the pacing of standard book-cases when facing each other must be arranged so that readers can stand back to back at the shelves and still leave sufficient gangway for others to pass. This extra space is very nearly balanced by throwing into the room the lobby usually reserved in front of indicators and similar closed systems. If the library is periodically freed of obsolete books, congestion only arises in a few cases and for a brief period. The best shelving for a public library is the homes of the borrowers, and for that reason elaborate efforts to find accommodation for books which are generally in circulation is a mistake.

Another department in which great changes are certain to happen is the reference library. Its function in the past has been to collect books rather than to utilise them for purposes of research; it has become rather a book museum than a literary workshop. The author advocated complete isolation for students in the reference library, so that everyone should have a reserved self-contained place at a table, with plenty of accommodation for spare books and table space sufficient for the arrangement and spreading-out of reference works and papers.

Another matter which may influence planning is the question of limiting the supply of newspapers. Many libraries have cut down the supply. In some the provision is limited to the exhibition of the "situations vacant" columns cut from the morning paper; in one place newspapers are not taken at all. By limiting newspapers considerable economy is effected in the cost of space, stands and fittings, lighting, staff, &c.

Mr. HARE said that the public library had been the occasion for many competitions, and it might have been expected that, with so much effort concentrated on a comparatively simple subject, some very brilliant type of plan or design would have been evolved. This, however, had not been the case, for none could claim to be the last word in library design. If the problem were dealt with from the initiatory stage (*i.e.* the selection of the site) under proper advice a much better result might in most cases be attained. Often in a library for a moderate-sized district accommoda-

tion was asked for twenty or thirty thousand books in the lending department. This needed a very large room, and was quite unnecessary. A large proportion of the books, particularly fiction, quickly go out of date. Shelving for ten to fifteen thousand volumes would generally be sufficient for an average district; it might be supplemented by an adequate store-room, where books could be economically housed. The reference library also is often over-sized: for an average library accommodation for from twenty to thirty readers is ample. The bulk of the books might be housed in a stack-room adjoining the reference-room. The usual treatment of the reading-room is susceptible of much improvement. The ideal reading-room should partake more of the nature of a hall, with probably an open roof, or at all events considerable height. It should permit of the spacing of the furniture very widely, allowing ample gangway for persons to move about without disturbing the readers.

The author suggested that the lending library might be included in the reading-room, so reducing the typical library to two main public rooms, *viz.* a general reading-room and library, and a smaller room for reference readers opening out of it. This arrangement would obviate the necessity for passages, entrance-halls and staircases and all available funds could be devoted to those parts of the building actually used by the public. The author touched on the "open access" and "indicator" systems, and showed the manner in which the adoption of either the one or the other must influence the design of the building. The necessity for the supervision of the lending library in all its parts from a central fixed point appeared to suggest as the ideal plan for this room a semicircular form with radiating book-cases. On confined and irregular sites such a plan, however, is very difficult, if not quite impossible. The importance of supervision by the staff should not be exaggerated as the public using the library largely supervise themselves.

A recent development in the direction of rendering libraries more widely useful as educational centres, where lectures can be given, has introduced a new element in the planning, separate entrances and exits having to be provided. From this point of view it is open to question whether the familiar news-room, with its costly fittings, is really a necessity. In the new libraries being built in Islington no newspaper-room is being provided, but only a large general reading-room containing magazines and periodicals.

The author, in conclusion, urged the desirability of re-considering our views of the necessities of a public library in the direction of a much more simple type of building, *viz.* one large hall with very ample space both in floor area and cubic capacity. This would be economical, comfortable and convenient, and would lend itself also to dignified architectural treatment—the latter of the first importance from an educational point of view.

Mr. MAURICE B. ADAMS, in proposing a vote of thanks to the authors, said he was in entire sympathy with both papers and the observations brought forward. As he had read a paper himself on the same subject, he fully realised how difficult it was to say anything fresh with regard to libraries. There seemed to be a discrepancy between the two speakers. Mr. Hare wished to simplify and co-ordinate the planning of libraries, and Mr. Brown urged that such buildings should not be made similar, but adapted always to the localities they served. He sympathised with many of Mr. Brown's views, and agreed with the opinion that the space given up to newspapers in public libraries could be minimised. The newspapers had deteriorated so deplorably during the past few years that the majority of them could be dispensed with, and he doubted whether they exercised the influence they used to do on public feeling. Realise just for a moment, said Mr. Adams, the condition of the newspaper Press in London at the present time. The Government had an enormous majority in Parliament, and yet they were not able to maintain one decent penny paper. In regard to open access to books in libraries he again agreed with Mr. Brown. He happened to see a number of replies which were obtained by the St. Pancras library committee from all parts of the kingdom as to the advantages of such a system. The librarians in an overwhelming majority were against it, which surprised him because, with several others interested in libraries, he had long been advocating the advantages of free access. The public, he thought, did not require so much supervision as was often suggested as the possibility of being seen at any moment. People in libraries generally behaved themselves and, provided the arrange-

ment of space allowed of easy superintendence, their conduct was always good. With regard to similarity of plan, he did not see how the two papers could agree, for if one remembered that sites were often different, it would then be seen that it was impossible to have the buildings alike. As to the success of Mr. Hare's own buildings, the speaker could speak from personal experience, since in some examples he had been one of the competitors when Mr. Hare gained the award, and he realised how admirably the conditions had been fulfilled. Mr. Adams said there was often difficulty in the heating of libraries. Radiators occupied valuable wall space and were not cleanly; he had found the open fire was generally the most satisfactory.

Mr. E. A. BAKER, librarian of Eltham library, seconded the vote of thanks, and in commenting on the papers said Mr. Brown had distinguished himself among librarians by the completeness in which he had worked out his buildings, and more especially by reviving the open access system and the recent experiment of abolishing newspapers. The speaker used the words "revived the open access" because after all it was not a modern idea; at all events, they knew that some such system was in force in libraries 100 years ago. With the inauguration of municipal libraries there had been considerable difficulties in knowing how to administer large groups of readers, and librarians no doubt concluded that it was best to adopt the closed system, thereby keeping the books under control. It was curious that there should have been great hostility to the open access system, but he thought it was largely due to the natural inertia of librarians who were in charge, and the great inconvenience of converting existing closed libraries into ones of free access. The speaker believed that the problem for architects in the future would be to make this conversion in buildings not so administered. Mr. Hare's library at Islington the speaker cited as an example which embodied the best and most modern ideas in arrangement, combined with economy in construction and artistic effect.

Mr. R. J. ANGEL said he would be glad if Mr. Brown could tell the meeting his experience with regard to the theft and loss of books from libraries conducted on the open access system. Reference had been made to the delay which was occasioned in filling up forms of requisition for books and the indicator system. He ventured to suggest that a long counter with several indicators each accommodating its own class of books, and in the charge of an assistant, was a satisfactory method by which the public could be readily served. One good reason why the British Museum system could not be copied was that the conditions of municipal libraries were different. It was much more difficult to become a member of the British Museum library than of a local one, and there could not therefore be the same control in the latter case. In concluding his remarks the speaker wished to learn whether any libraries conducted on the open access system had changed in favour of the closed control.

Mr. R. A. PEDDIE said it had struck him that the library at North Islington was the result of the happy combination of architect and librarian. It was only occasionally that a library was planned under such conditions. Sometimes the building of a library was undertaken before the librarian had been appointed, but the speaker thought that unless the architect had had considerable experience of the wants from a librarian's point of view, there would be something lacking in the plan. He suggested that wherever possible architect and librarian should consult together. The general consensus of opinion was, he believed, in favour of open access, though the system could be modified to suit the conditions of a locality.

Mr. A. J. PHILIP said the questions of open access and the abolishing of the news-room were subjects tabooed at the meeting of the Librarians' Association. They must still regard such questions in the light of experiments.

Mr. E. GODFREY PAGE said the real objection to the open access was due to the carelessness which the public showed in replacing books in their right cases.

Mr. FRANCIS HOOPER suggested that open access was a matter which might be commended to the Council of the Institute with regard to their own library.

Mr. F. J. OSBORNE SMITH and Mr. H. V. LANCHESTER also made remarks.

Mr. J. FROWDE said the whole discussion had revolved almost entirely on one point, and that the most uninteresting in library construction. He was not quite sure that the consultation between architect and librarian would result in satisfactory planning. Some librarians could not direct or advise, and for that reason an architect with knowledge and

experience would be able to produce independently a good plan. Mr. Frowde was a defender of the closed system in libraries. He could remember that the privileges of open access were abused at Liverpool and the system had to be withdrawn. The loss of books by the open access system was a well-known fact. He wished architects to remember that there was a very great difference of opinion regarding the two systems.

Mr. BROWN, in his reply, said the loss of books under the open access system was insignificant, and he believed no municipal library in this country had abandoned the open access in favour of the closed system.

Mr. HARE said the difference in cost between the two methods was not so important as the consideration of the great question which system was the most useful.

ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the above Society was held in the rooms of the Royal Institute of British Architects at Conduit Street on Friday, the 15th inst. Mr. J. Macvicar Anderson acted as chairman on the occasion, in the absence through illness of the president of the Society, Mr. T. E. Colcutt.

The Honorary Secretary read the report, from which the following is an extract:—

"The Council of the Architects' Benevolent Society in presenting their fifty-sixth annual report have the pleasure to record a year of increased prosperity and usefulness. Many new names have been added to the subscription list, and the capital account has benefited both from donations and bequests. This favourable result is largely due to the letter of appeal which the president (Mr. T. E. Colcutt) issued towards the end of the year to over 5,000 architects. The thanks of the Society are due to the President for his exertions in this matter, by which the sum of over 100*l.* has been added to the annual income and 175*l.* to the capital account. If the appeal had not been issued, the income would have been insufficient to meet the demands made upon it. Notwithstanding the success of the President's appeal the number of subscribers on the Society's books is still very small compared with the number of practising architects.

"It is satisfactory to learn that the allied Societies are taking an increased interest in our labours. Mr. J. T. Cackett, in his presidential address to the Northern Architectural Association at Newcastle-upon-Tyne, stated that there was no better way to help our less fortunate brethren than through this Society, and he believed that the amount granted to recipients in the northern province exceeded the subscriptions derived by the Society from the district. He also alluded to the fact that their past-president, Mr. Glover, was now a vice-president of the Society.

"Eighty applications for relief were received during the year, and the sum of 743*l.* 12*s.* 6*d.* was distributed in seventy-five grants. In addition to this, the sum of 183*l.* 1*s.* was paid to pensioners, thus making the total amount expended in relief 927*l.* 7*s.* 6*d.*"

In moving that the report and statement of accounts be adopted, the Chairman said that he considered them on the whole satisfactory, and there was cause for congratulation, but he urged the necessity of every architect supporting the Institution. The motion having been carried unanimously, a vote of thanks was proposed to the retiring members of the Council, viz. Messrs. Rowland Plumbé, G. T. Hine, Ambrose M. Poynter, Mr. W. Grellier and Colonel R. W. Edis. This was seconded and carried unanimously.

The next business was the election of the Council for the ensuing year, as follows:—Mr. T. E. Colcutt (president), Mr. H. T. Hare (vice-president), Mr. H. L. Florence, Mr. G. B. Bulmer, Mr. F. W. Hunt, Mr. W. L. Spiers, Mr. A. Ashbridge, Mr. Walter Emden, Mr. Reginald St. A. Roumieu, Mr. H. Chatfield Clarke, Mr. A. Saxon Snell, Sir H. Tanner, Mr. E. T. Hall, Mr. J. T. Christopher, Mr. L. W. Ridge and Mr. J. Douglass Mathews.

Votes of thanks were unanimously passed in favour of the hon. treasurer, Mr. W. Hilton Nash, and the hon. secretary, Mr. Percivall Currey, for their services during the past year; and they were both re-elected for the ensuing year. A vote of thanks was also tendered to the retiring auditors, Mr. Sydney Perks and Mr. E. Greenop.

For the ensuing year Messrs. Greenop and Burk Downing were elected to serve in that capacity.

The resolution adopted at the last annual meeting follows was confirmed:—

"That the following be inserted after by-law No. 7 and be numbered by-law No. 8:—Allied societies and corporate bodies representing architecture who are now or may become annual subscribers of not less than ten guineas, or donors in one sum of not less than fifty guineas, shall be entitled to be represented on the Council by their president or chairman for the time being, who may also vote at all general meetings, and shall be entitled on behalf of his Society to the same privileges as those of individual donors or subscribers." And to renumber consecutively the subsequent by-laws. To move that after the words "hon. secretary" in by-law No. 9 the following be added:—"And the president or chairman for the time being of societies or corporate bodies who have qualified under by-law No. 8."

The proceedings concluded with a vote of thanks to the Royal Institute of British Architects for the use of their rooms, and to Mr. Macvicar Anderson for acting as chairman.

THE EFFECT OF FIRE UPON VARIOUS BUILDING MATERIALS AND FORMS OF CONSTRUCTION.*

WHEN I first set this subject to occupy our attention this evening, it was my intention to take the fire tests of the British Fire Prevention Committee as examples of the behaviour under fire of the various materials used in building, but I recently had forwarded to me an excellent report, with illustrations, of the San Francisco conflagration, prepared by the consulting engineer of the Roëbling Construction Company, New York, Mr. A. L. A. Hummelwright, C.E., who has kindly given me permission to use his report and photographs to illustrate my paper to-night, to whom I publicly tender my thanks. My paper, therefore, will be of more practical interest as showing from actual examples, rather than from the test before mentioned, the behaviour of the materials under the fire test.

I am also under obligation to Mr. S. Albert Reed, consulting engineer to the National Board of Underwriters, who has also issued an interesting report, which I have utilised.

My thanks are also due to Mr. Sydney Gamble, of the London Fire Brigade, for the loan of some panoramic slides, giving an excellent general view of the devastation wrought, and also to the British Fire Prevention Committee for photographs and other details of interest.

As you will perhaps recollect, the fire at San Francisco was consequent upon the earthquake.

On April 14, 1906, at 5.15 A.M., the main shock occurred, followed by subsequent minor shocks. Buildings with walls of masonry and brick sustained considerable damage, chimneys, parapets, gable walls and cornices were overthrown.

This being a region subject to earthquakes, a large number of the buildings, especially the residential portion, were of the wood frame type.

There were, however, a number of buildings of ordinary construction, and others again of steel-frame construction, which were intended to be fire-resisting, and it is to this latter class to which I wish more particularly to draw your attention this evening, as showing the effect of the fire on the various materials used, but at the same time it will be interesting to note the effects of the earthquake.

Soon after the main earthquake shock numerous fires occurred in the city. These were occasioned in most cases by the collapse of the buildings, and were most of them in the business section.

The fire department although efficient, and who to some extent had anticipated such a calamity, had the misfortune to lose its chief, he being injured in the earthquake by the collapse of the station in which he was sleeping, and who subsequently died, but the most serious factor in fighting the fire was the want of water caused by the breaking of the water mains by the earthquake shock, and it soon became apparent that a conflagration of great magnitude had started.

For three days and two nights the fire raged with incredible fury, destroying practically the entire business and financial section of the city, where the largest, costliest and most substantial buildings were located.

The area devastated by the fire was about 2,831 acres, or 4.11 square miles. I want you to mark these figures, as we

are seeing to-night the effects of the largest fire in modern times, if indeed of any time, which throws that of London, Chicago, Baltimore and Boston altogether in the shade, and I think it has for architects some useful lessons.

Of the general run of the buildings little is to be learned; they burned, collapsed, and there was an end of them, and so complete was their destruction that every scrap of combustible material was entirely consumed and blown away as ash, leaving scarce a trace behind.

But there were in certain parts of the city buildings having more or less pretensions to be fire-resisting, and these may be divided up into three types:—

I. Buildings with brick or stone walls carrying floors of fire-resisting construction.

II. Steel-frame buildings with reinforced concrete floors and fire-resisting partitions.

III. Steel-frame buildings with hollow tile floors and partitions.

It is my intention to show you specimens of each of these three types of construction, but it will perhaps be interesting first to note the results of the earthquake which preceded the fire, and also the effects of the fire upon a few of the ordinary types of building, viz. those having brick walls, cast or wrought-iron columns, steel or iron beams supporting deal joists and wood floors, a type of building described in the by-laws as Class B buildings.

Lessons to Architects.

It will be observed in the examples which we have seen that there have been certain good points and certain bad ones or omissions, which, if they had been anticipated, would have in some cases enabled the buildings in question, if not to have come out unscathed, at least to have withstood the ordeal without material damage.

It is by adopting the good, discarding the bad, and supplying the omissions that it should be possible in the future to plan and erect a building which should be actually fire resisting, not only in the mere shell, as we have seen, but with all its internal fixtures and fittings preserved, as it is not much satisfaction to the individual tenant to be told the building remains when perhaps his little all is entirely consumed.

Judging by the number of steel-frame buildings which have survived, so far as their shells are concerned, I think it is demonstrated that the steel skeleton frame is satisfactory, provided its individual members are sufficiently protected.

The glaring omission to protect the exterior openings was the direct and sole cause of the damage and destruction of the interiors in most cases. This is further emphasised by the fact that other buildings, of much less pretension to be fire resisting, have remained undamaged by reason of their window openings having some such protection as wired glass, steel shutters, or other form of fire resistant properly applied.

I would therefore sum up my observations by inculcating the following lessons:—

I. *Protect the openings against fire from the outside.*

This, to my mind, is the most important lesson, and is the key to the position. You will have observed in the views presented that the flames were communicated to the so-called fire-resisting buildings from the outside through the windows and doors. There are now available practical devices to safeguard such openings which may be adapted to the varied circumstances of each case.

II. *Adequate protection to columns and other structural members.*

You will have noted how utterly in some cases the column protection failed, and in others how it succeeded in keeping the ironwork sufficiently under a certain temperature to prevent buckling; both hollow tile and metal lath-and-plaster protection seemed to have been wanting when any long-sustained heat had to be endured. I am inclined to the opinion that concrete filled in solidly all round the column right up to the web is the best protection, but whatever it is it must be securely anchored to the column, and there must be no voids, and if brick or tile is used it must be backed up with good concrete or cement mortar filling up entirely the space, and no pipes must be hidden in the protection, as their expansion may endanger the casing, which in its turn will imperil the safety of the building.

III. *Avoid as much as possible the use of refractory materials for façades.*

It will have been seen that granite, marble, sandstone, limestone and similar building stones proved unsatisfactory materials for architectural effects. This, however, will be

* A paper read before the Society of Architects by Mr. Ellis Marsland, hon. secretary, on Thursday, March 14.

no argument against their use, for being deprived of these materials what is an architect to do?

Yet, knowing their inadequate fire resistance and the better fire resistance of all clay products, it behoves him to bear the fact in mind and avoid stone where damage might ensue by its employment for columns and piers carrying important points of support.

IV. *Select a good type of floor construction.*

It will have been seen that the hollow tiled floor construction failed in many cases by the expansion of the soffit causing it to split off and expose the cellular spaces. By a better construction of the tile this may be avoided in future, but the showing in the examples before us to-night has been more favourable to the reinforced concrete, and if this is executed in some form of "cinder" concrete or broken brick and the reinforcement well protected on the soffit by at least 2 inches of material, I am inclined to pin my faith to that.

V. *Adopt partitions that do not expand.*

The hollow-tile partitions in the cases before us have not shown up very favourably. The reason is that when heated a large amount of expansion takes place, and bulging and eventual collapse is the consequence.

The metal lath-and-plaster partitions were also failures, and we are led to fall back upon some form of reinforced concrete or concrete slabs, the thickness varying in accordance with their height. I am inclined to see in this material more satisfactory results.

These, gentlemen, are the principal points I want to emphasise; there are other minor ones with which I will not detain you now, as I have already exceeded my time, for which I must apologise, as the subject has been to me a fascinating one.

SPANISH ARCHITECTURE.*

(Concluded from last week.)

PASSING through the great atrium, or Patio de los Reyes, the church is entered by a large vaulted vestibule, formed under the choir. The wide flat vaulting is most skilfully executed, and is a triumph of stone construction. Philip II. was most doubtful of its solidity and ordered a central pillar to be added, but Herrera persuaded him to abandon the idea. The inside of the church is really majestic in its simplicity as seen from this vaulted chamber. There is nothing mean or trivial to mar the perfect proportions of this fine interior. Facing us is the Capilla Mayor, containing the high altar, the oratories and the royal tombs. The retablo of the high altar is superb, and is reached by a flight of steps in red marble, steeper than was intended, but built to afford space for a cupola under it for the pantheon. The screen is 93 feet high by 43 feet wide, of the four Orders, and is composed of red granite, precious jaspers and gilt bronze. It is the work of Giacomo Trezzo, of Milan. The tabernacle was designed by Herrera and executed by the above artist, who finished it in seven years. Beautiful paintings fill the spaces between the columns, and at the sides are niches with statues in gilt bronze. The vaulted roof was originally stuccoed white and dotted with blue stars. In the reign of Charles II., when the Escorial was restored after the fire, its compartments were painted *al fresco* by Giordano.

The Choir.

The choir, or coro alto as it is called, is placed over the western entrance of the building and looks down on the church, and it is here that the monks assembled for their devotions, in which Philip often joined. His seat was in the south-west corner adjoining a small doorway, through which a messenger passed bearing the news of the victory over the Turks at the battle of Lepanto. On receiving the news Philip is said not to have moved a muscle of his face, and continued his devotions as if nothing had happened. The simple but dignified choir stalls were designed by Herrera, and are made out of ebony, cedar, box, or other choice woods. The Corinthian order is introduced, and there are some good carvings on the priors' stalls. The large lectern was a present from Charles II. It is Classical in style and bears an eagle with spread wings, carrying in its beak the gridiron, emblematical of the martyrdom of St. Lawrence. The beautiful crystal chandelier was also a gift of the same monarch.

The arrangements and every detail of the choir are excellent. The organ was the finest that could be got,

while the walls are decorated with frescoes representing the martyrdom of San Lorenzo, and the history of St. Jerome, the head of the order. The choir is provided with ante-coros, and there is also a large library where the colossal choral books are kept, some of them being 2 yards wide. Finally, the gem of the choir is the full-size white marble crucifix, by Benvenuto Cellini, a present from the Duke of Tuscany to Philip II.

The Library.

As Philip II. intended to make the Escorial a treasure house of all the arts as well as a seminary for the study of the sciences and ancient letters, it was fitting that a magnificent library should form part of the collection. This noble apartment, about 170 feet long by 31 feet wide, is placed above the main entrance to the Patio de los Reyes. The pavement is marble, and the bookcases were designed by Herrera, made of ebony, cedar and orange. Most of the books are bound in black or dark purple leather, and have their edges, not backs, turned to the spectator. In all there are about 56,000 volumes. On account of the well-chosen position of the library, lighting is introduced on both sides and in the middle are five large jasper tables, with smaller ones in porphyry, for the use of readers; while above all is an arched ceiling adorned with frescoes, with subject personifying the sciences and arts.

Court of the Evangelists.

Of the fifteen courtyards contained within the four walls of the Escorial, the patio of the Evangelists, a court 150 feet square, is the largest and most beautiful. Few courtyards in Italy can rival it for grace and beauty of Classic proportion. It has four façades, composed of two rows of pillars, columns and arches, making a total height of 60 feet. The first row is of the Doric order, that above of the Ionic. They are equal in their proportions, which are taken from that of a man and answers to 6 feet in height. Santos says:—"The height of the arches from the balustrade is 20 feet and the width 10 feet. Both stages have large green lattices up to the springing of the arches and glass windows over them, which besides sheltering the cloisters from the rigours of the winter, preserve the frescoes which adorn the inner walls of both upper and lower cloisters. Within the body of the cloister is a delightful garden divided into sixteen areas, twelve of which were filled with flowers and curious plants and decorated with knots, labyrinths and other devices, displaying the most vivid colours in a continual bloom, so that during the most severe winter weather they constantly furnished the altars with a profusion of flowers. The remaining four squares are occupied by water ponds lined with rich marbles. In the centre of all is an octagonal cymborium, 30 feet in diameter and 60 feet high. The outside is of beautiful stone, and the architecture of the Doric order. Within, it is inlaid with jaspers and marbles of the richest kind. It has four entrances, answering to the two walks which cross each other in the centre. On the sides are niches, and in them the statues of the four Evangelists by Bautista Monegro, and in front of them their attributes—the angel, the eagle, the lion and the ox—placed near a jasper balustrade, whence the water issues into the ponds."

Time will not permit me to give any further description of the Escorial, nor of this beautiful courtyard with the sacristy to the east, the chapter-houses to the south, the old church and the grand central staircase to the west, but mention should be made of the pantheon situated under the high altar, the final resting-place of all the kings of Spain and the primary object of the erection of the whole building. Philip II. prepared nothing but a plain vault as a tomb-house for his father. His simple idea seems more appropriate than the work completed and carried out by his successors, who have undoubtedly spoiled the effect by overloading the chamber with marble and gold. Since 1385 the buildings have passed into the hands of a religious order who carry on the education of youths in the seminary to the north-west of the entrance.

Charles V.'s Palace at the Alhambra.

Previous to the erection of the Escorial there were few royal palaces in Spain, with the exception perhaps of the Alcazar at Toledo and the castle of Segovia. The Emperor Charles V. was a great soldier, and was much occupied abroad in wars with Italy and with Francis I., consequently he had little time for palace-building. It is true he gave instructions for a palatial addition to be built to the Alhambra at Granada, but this was abandoned and left unfinished a few years afterwards. It was begun as early

* A paper read at the meeting of the Architectural Association by Mr. A. N. Prentice on Friday, March 8.

as 1526 by a Spanish architect named Pedro Machuca, who had studied in Rome, and the cost was defrayed by sums of money wrung from the Moorish subjects. The equal division of the two storeys and the grouping of the windows is thoroughly Italian, but the characteristic features of some of the contemporary Spanish buildings are wanting in this design. The central doorway was completed at a later period, and the roof was never finished. The building forms a quadrangle 207 feet square and 53 feet high. The ground floor of rusticated masonry has a row of square and circular windows, and is surmounted by an upper floor with Ionic pilasters between richly ornamented windows.

Interior.

The interior consists of a series of rooms built round a large circular court about 102 feet in diameter, added by his son Louis, who continued the building of his father's original design in the reign of Philip II. The proportions of this magnificent court are most satisfactory, and one cannot but admire the long unbroken line of the Doric colonnade, supporting a second stage of the Ionic order of a lighter and more elegant proportion. It is seldom one sees a circular courtyard which is not spoiled by some excrescence or other. Probably Inigo Jones took his idea for the circular courtyard to his design for Whitehall from this charming Spanish example.

The Alcazar, Toledo.

Charles V. also made additions to the Alcazar at Toledo. In the year 1548 he employed Alonso de Covarrubias and Enrique de Egas to design the northern façade. Here we have an introduction to the essentially Spanish feature of the upper storey being formed with an open colonnade, which gives a feeling of lightness to the whole design. The rustications on this upper storey are also unusual, and were no doubt added to enrich the effect between the upper and lower storeys. The sculptured works over the windows are by Berruguette, and those of the central doorway bearing the arms of the Emperor are by Mena. The walls of this façade, which is flanked by two massive towers, are about 6 feet thick and must have formed part of the Gothic fortress.

Courtyard.

Turning to the courtyard, O'Shea says:—"The patio is worthy of the old Alcazar. It is an oblong surrounded by upper and lower galleries, each of which consist of thirty-two arches resting on Corinthian columns, all of stone and with the escutcheons of the many kingdoms and provinces over which Charles V.'s eagle could soar and call his own. This patio is the masterpiece of Vallalpando. In the middle is a bronze group representing Charles as the conqueror of Tunis, bearing the inscription, 'I shall stay in Africa dead or enter Tunis as a victor.'" Facing the entrance, and extending to the full width of the three central arches, the first flight of a magnificent staircase ascends to the upper cloister. It is one of the finest staircases in the world, and was originally designed by Covarrubias, and the story goes that Charles V. exclaimed when he was on the staircase, that he really felt he was an emperor and king. The steps are each of one block of stone of enormous width, and the size of the apartment enclosing the whole is 100 feet long by 50 feet wide. In the reign of Philip II. this staircase was further added to, and finally completed by Herrera in 1561, who afterwards turned his attention to the southern façade, forming the external wall of the staircase in 1571-84. It is Doric with four stages decorated with pilasters.

Other royal palaces were erected by various Spanish sovereigns in later years, but these do not come within the scope of this paper. The most important were the palaces of Aranjuez, San Ildefonso at La Granja, and the present royal palace at Madrid, built by Philip V. in 1737.

Colegio de los Irlandeses.

The powerful archbishops also built themselves palaces of considerable grandeur. Cardinal Fonseca commissioned Pedro de Ibarra in 1521 to erect a palace at Salamanca. The patio has fluted pillars and medallions with sculptured heads of warriors, in caps or helmets, full of grace and variety of design. Ibarra was aided by Covarrubias, to whom this beautiful courtyard is ascribed, and it may be considered one of the purest specimens of the Plateresque. The famous sculptor Berruguete was employed on this building, and executed the heads on the medallions, besides the retablo in the chapel. The building is now used as a seminary for Irish priests, and is commonly known as the Colegio de los Irlandeses.

The episcopal palace at Alcalá de Henares has a fine patio with bracket capitals, designed by Covarrubias for Cardinal Ximenez.

Town Halls.

There are many good specimens of municipal architecture of this early period in Spain, and the Casa Ayuntamiento at Seville is undoubtedly one of the best examples, although unfortunately restored and extensively added to on both sides. The façade was erected in 1526 from the plans of Diego de Riaño, who also designed the beautiful Sala Capitular, in the cathedral at Seville. As an architectural composition this façade is open to considerable criticism. The doorway seems out of proportion to the size of the windows, and the cornices and architraves are badly spaced one to the other, but the carvings of this front are so delicately chiselled and so beautiful that we can readily forgive the faults of its design. The interior contains some large rooms with decorated ceilings, and the Audiencia, or Court of Justice, is worth visiting; but perhaps the handsomest apartment of this nature in Spain is the hall of the Audiencia at Valencia, which has a magnificent *artesonado* ceiling, divided into twenty-one compartments, carved in lozenges entirely of native pine supported by a gallery with carved columns and corbels. The lower part of the walls is carved with curious old frescoes, representing the presidents of the Cortes, ecclesiastical dignitaries and the Noblesza Militar. Underneath is a beautiful dado of coloured azulejos. The window jambs are richly moulded in stone, while the woodwork of the doors and shutters, designed with elaborate Moorish patterns, is worthy of careful inspection. In fact, every available space of this apartment is highly decorated, and the effect is exceedingly charming; but the principal feature is the narrow gallery running all round the room, supported on Plateresque shafts, the interspaces below being filled up with coats-of-arms and busts of the kings of Aragon. There are other examples in Spain of rooms treated with open galleries in this manner, such as the hall of the Paraninfo, at Alcalá University, and the Salon de Santa Isabel in the Moorish palace at Saragossa; but I do not know of any other apartment in Europe treated in this manner, or which has so remarkable an effect as this noble room.

Saragossa Town Hall.

The Ayuntamiento at Saragossa is another civic building of the Early Renaissance period, completed in 1551, of a more severe type, but erected in a locality where building stone is scarce. It is interesting to note how the design has been influenced by the materials; rounded arches were adopted as being more suitable to brick construction. The principal façade rises in three stages, and is crowned by a boldly projecting cornice, which had to be constructed in wood. Indeed, stone not being available, most of the buildings in Saragossa have wooden cornices of great variety and form. The interior consists of one great hall roofed with groining, and divided into three aisles by rows of Ionic columns. The Court of Justice at Saragossa is a building of the same character, but here the openings in the upper storey are more pronounced and contrast very effectively with the plain space below. The façade flanked by low corner towers is simple and dignified. Two gigantic figures support the doorway, and in the tympanum above are the arms of the Luna family, who formerly founded this building as a palace.

Universities.

The universities of Salamanca and Alcalá at the end of the fifteenth century were amongst the most celebrated in Europe. Salamanca ranked immediately after that of Paris and before Oxford and Bologna; its students numbered 10,000 and upwards. Christopher Columbus came here to consult on his project for the discovery of the New World. The university has now dwindled into an ordinary college, while many of the colleges were destroyed during the Peninsular War; but the entrance to the library is still left, which is alone well worth an architect's visit to Salamanca to see, forming one of the most brilliant examples of the decorative and heraldic style. It is of the richest period of Ferdinand and Isabella, whose medallions are represented over the central jamb of the doorway, enclosed in a frame with a Greek inscription. Above are armorial bearings, busts and other ornaments. In the top stage is a relief of a pope and other persons unknown to fame. The characteristics of Moorish decorations are distinctly visible in this design; for instance, the doorways have plain jambs supporting a mass of ornament contained in a square frame, and the delicate manner in

which the ornament is treated just over the door heads increases in scale and projection as it ascends from the eye.

Staircase.

A staircase in the interior is worthy of note, richly carved with foliage and curious reliefs, representing bull-fights of the fifteenth century. The return of the handrail at the angles is very ingeniously worked, but with the exception of one or two rich doorways, these few examples represent the most important features of what is left of this once famous university.

Alcalá de Henares.

The buildings of the university of Alcalá de Henares have been sufficiently spared to convey some idea of their size and importance during the days of its prosperity. The façade is the work of that thoroughly Spanish architect, Alonso de Covarrubias, whose work is generally marked by the most refined and delicate detail, as we have already seen in the patio of the episcopal palace at Salamanca. The chief characteristics of this façade are the effective treatment of the upper storey, with its rows of arched windows placed on either side of a central pediment decorated with the arms of Charles V., the comparatively plain wall space below, and the tasteful manner in which the windows are decorated. The roof-terminals are, however, open to criticism, producing a certain fussiness of effect, but their introduction can be excused when we recall the fact that the Gothic period with its powerful traditions was then still in existence. Passing through the main doorway, a spacious vestibule leads to a series of three beautiful courtyards, extending to the Paraninfo, a grand saloon, already mentioned as having a picturesque upper gallery running round the room. Here the academical degrees were conferred. Cardinal Ximenes was the original founder of the university, and employed Rodrigo Gil de Hontañón, the architect of Segovia Cathedral, to build the chapel and other portions of the building.

Hospitals.

The cardinal princes of Spain founded many large hospitals during the reign of the Catholic kings, and thanks to their munificence, the aged and infirm were well provided for. They appear to have spent money on a lavish scale, judging from such examples as are in existence at Seville, Toledo, Valladolid and at Santiago.

Santa Cruz, Toledo.

The hospital of the Holy Cross at Toledo was founded by Cardinal Mendoza, and is built in the form of a Maltese cross. It was intended to have four patios like the hospital at Valladolid, founded a few years previously. Both these buildings are by the hand of Enrique de Egas, an Early Renaissance architect, who received his training at Brussels. The entrance doorway to the Toledo example, with its delicate carvings, is one of the most familiar specimens of the Renaissance period. The grouping of the windows, with the circular pediment over the doorway, is very pleasing, but the rounded pilaster, following the curve of the archway and then suddenly taking a perpendicular course, is not in the best of taste. Being an early work, the Arab influence is again apparent in the form of the general design.

Hospital del Rey, Burgos.

The Hospital del Rey, at Burgos, boasts of a very fine portal, pleasingly placed in the centre of a blank wall, enclosing the courtyard. I have been unable to ascertain the date of its erection or the architect's name, but it would appear to belong to a slightly later period than the Toledo example, which I might almost say it surpasses in the purity of its detail and the appropriate character of its design.

Domestic Architecture.

It has been often asked, Where did the nobility and grandees of Spain live? Travellers have remarked the absence of palatial villas, such as we find in Italy, or in our own country, situated in parks and surrounded by beautifully laid-out gardens. The only reasonable answer would seem to be that the topographical nature of the country is unsuitable for country residences. A great portion of Central Spain is an arid desert, and the inhabitants seem to be flocked together in small villages and towns, separated by wide tracts of land devoid of trees and in some cases of vegetation. The nobles had their country houses in the villages adjoining their estates, and frequently an excursion to an unknown hamlet will often repay the student in the discovery of some ducal residence of a bygone age. In the

large towns the great feature of the residential houses is the patio, some very often enclosing gardens, and there the inmates take the air in privacy, shut off from the busy streets. Every patio has its staircase, ascending in broad, easy flights, and mostly surmounted by an *artisanado* ceiling, sometimes gilt and elaborately painted. The staircase of the Casa Pilatos at Seville may be mentioned as a specimen of this class, built by Don Pedro Enriquez de Ribera at a time when the Moorish style was beginning to merge into the Plateresque. The walls are adorned with azulejos in many varied and rich colours, and over them may be seen stucco tracery of great variety of pattern. The ceiling of the staircase is dome-shaped and fantastically ornamented, a form of roof known to the Spaniards as *media naranja*. In this case it is entirely gilt. I show a view of a similar ceiling in the palace at Guadalajara. The reflected light from the windows below produces an almost indescribable effect. These ceilings were executed by Moorish workmen, who no doubt took their model from the ceiling of the Sala de los Abencerrages at the Alhambra richly honeycombed with stalactite ornament, resembling more the production of an insect or animal than the work of human hands.

Casa Conchas.

The Casa de los Conchas, at Salamanca, may be considered the most complete house in Spain of its period. The exterior is studded with stone shells, the heraldic badge of its owner. It has a fine patio and good ceiling over the staircase. The delicate traceries of the windows, the escutcheons and the enrichment over the doorway are all admirable. Perhaps the most interesting features are the iron grills which adorn the mezzanine windows, casting deep shadows on the stonework, and adding greatly to the charm of the curious effect of sunlight on the building. The skilful manner in which these grills are constructed is worthy of an investigation. There are many specimens of late Gothic grills and balconies to be found even in Renaissance buildings, but specimens of this particular form are exceedingly rare. The grill consists of three circular cages formed of twisted upright iron bars projecting boldly from the wall, bound together with horizontal bands of pierced work. The upper and lower bands are enriched with foliage, armorial bearings and turrets of Castile and pilgrim shells of St. James. These massive specimens not only screened and protected the inmates but excluded the glare of the sun.

Casa Monterey.

Amongst other old houses at Salamanca the Casa Monterey is worthy of note. Regarding its history very little is known. The date of its erection was probably about 1530, and as many of the carved shields bear the arms of Cardinal Fonseca in the form of stars, it is probable that the palace was built by that great primate, and possibly from designs prepared by his architect, Alonso de Covarrubias. The title of Condé de Monterey was created in the year 1626 in favour of Don Baltazar de Zinega, after whom the palace is called, and although he may have inhabited the building in the seventeenth century he certainly was not its founder. The open loggia on the top storey was built for the ladies of the house to promenade and take exercise in during times of disturbances when the streets were rendered unsafe. The building possessed two elegant square towers or *miradores*, with upper galleries of open arcaded windows, and the cornices are surmounted with a lace-like fringe in pierced stone, known to the Spaniards as *antepecho* work. Built of a warm-coloured stone, the palace has a very striking appearance when seen in the light of the afternoon sun. There is nothing of much interest in the interior, the building having been gutted during the Peninsular War.

Castles.

The castellated architecture of Spain is sufficiently important to present food for a paper by itself; it has not, however, been as yet properly investigated by modern writers. The Alcazar at Segovia is a fair specimen, but the structure itself is practically modern, having been rebuilt almost from the foundations after a disastrous fire in 1860. This once impregnable fortress is most picturesque, situated at the extremity of a rock promontory, built at the end of the eleventh century. It was repaired and embellished by Enrique IV., and Philip II. employed Herrera to redecorate some of the saloons. Charles I. of England lodged here in 1623, and here Gil Blas was confined in its dungeons. The exterior of the castle is striking. The great keep rises in a square mass, crowned with a row of turrets

There are few windows, while the whole effect is that of strength and defiance. The surfaces of the walls are diapered with a curious pattern in stuccowork. Formerly the great halls of the interior were decorated in the Gotho-Moresque style, and possessed superb ceilings with stalactite ornament springing from richly-gilt friezes decorated with heraldic shields, intermingled with verses from the Koran. The remains of another fine Castilian castle exist at Coca, within 10 miles of Segovia. It is a grand specimen of a genuine old palace fortress of the Hispano-Moresque period. It is built almost entirely of brick with wide mortar joints, and bears traces of bands of stucco decoration. The massive walls of the fortress rise out of a deep moat, and the angles are protected by sturdy octagonal towers crowned with turrets. The upper part of the walls are deeply slit for archers, and the lower portions have curious flat arches projecting over the foundation, while the whole composition is dominated by a huge donjon-keep entirely devoid of openings.

Remains of an even larger castle of this nature may be found at Alcalá, near to Seville, and the castle of Madina del Campo is a good specimen. Finally, and in conclusion, I feel that there is much to be learned from the architecture of Spain, and can only express the hope that more of our students will visit the Peninsula and add to our knowledge something more of the architecture of a country perhaps the least visited in Europe.

Mr. R. PHENÉ SPIERS, in proposing a vote of thanks to the author of the paper, said he occupied a very different position than was usual with him. He had never been to Spain, but it was on his suggestion that Mr. Prentice went to that country instead of to Italy. It was therefore rather difficult to say much about the subject of the paper because he had never seen the buildings therein described. He might say, however, he had sent a great many students, both English and American, to Spain, and indirectly therefore he had received a certain amount of information regarding the buildings. He thought the cathedral at Granada was an extremely interesting example of Spanish architecture, though its value to a certain extent arose because in the construction it was evident that the architect was well acquainted with Gothic vaulting. In the Escorial they were confronted with an extraordinary building. Mr. Prentice showed them a large plan, and he had spoken with enthusiasm about it. He (Mr. Spiers) held a different opinion. He could only speak from an acquaintance gained through drawings and photographs, but he thought one could judge buildings from illustrations. He would describe it as one of the most commonplace buildings in its execution, though the plan was grand. The front was like a warehouse, and inside the courts the five rows of windows lacked architectural composition. There was a total want of scale and too much contrast. The portion of the paper which dealt with domestic work was interesting, and he was struck by the fine contrast of plain masonry with very enriched work.

Mr. ALAN POTTER seconded the vote of thanks, and said the subject of the paper was an entirely new one to the Association. They had been shown work in Spain, the existence of which was unknown to many of the members.

Mr. H. TANNER said he had visited the Escorial when in Spain and enjoyed it immensely; the buildings had some very fine detail. Segovia he described as the most charming place he had visited in Spain.

Mr. T. R. SPENCE and Mr. LOUIS AMBLER also supported the vote of thanks.

EXCAVATION OF CORBRIDGE.

THE Roman site of Corstopitum, near Hexham, in Northumberland, has long been recognised as likely to offer valuable results to excavators. Situated at the point where the main road from York crosses the Tyne, its position and extent distinguish it alike from the military camps along Hadrian's Wall and from the fortified halting-places on the Roman road, while the former finds of a massive silver dish and two altars with Greek inscriptions show that here are the buried traces of a wealthier and more mixed community than was to be found elsewhere on the military frontier of Roman Britain. The whole area is cultivated land, and has apparently been unoccupied since the time of the Roman evacuation.

Excavations on the site, with a view to determining its general character, were carried out during last summer by the Northumberland county history committee. Briefly

the results were to show that the foundations of Roman buildings remained intact at all points, and that in some places walls remained six or seven feet high. Built into one of the walls were discovered the quoins of the largest and most elaborate arch yet met with in the North of England. The outer defences of the town were also found, and the uncovering of painted plaster and flooring of good quality corroborated the view that Corstopitum possessed buildings superior to anything hitherto known near Hadrian's Wall.

The remains of the Roman bridge were surveyed, three or four of its piers being found embedded in the northern bank of the Tyne.

These results demonstrate that the systematic excavation of Corstopitum will yield most valuable information regarding Roman civil life as brought into touch with the troops on the frontier.

The Northumberland county history committee could not itself undertake so large a work, and a Corbridge excavation committee has been formed, including representatives of the London and Newcastle Societies of Antiquaries and of the Universities of Oxford and Cambridge. Captain Cuthbert, D.S.O., of Beaufort, the owner of the whole site, has lent his active co-operation, and the sum of 1,000*l.* has already been promised. A complete excavation of the site is likely to cost about twice this sum, and may require five summers' work. Subscriptions may be paid either to the treasurer, Mr. Howard Pease, F.S.A., Otterburn Tower, Northumberland, or to the secretary, Mr. W. H. Knowles, F.S.A., Gosforth, Newcastle-upon-Tyne. An illustrated report of the excavations will be sent to annual subscribers of upwards of 2*l.* 2*s.* and to all donors of 10*l.* The excavations will be carried out under the personal supervision of a properly qualified archæologist.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the rooms of the above Society on Thursday, the 14th inst., Mr. G. P. Bankart read a paper on "Plaster Work," Mr. H. S. Chorley, president, in the chair.

The lecturer said:—The task of condensing so immense a subject into a space of a few minutes is, I fear, no light one. Historically the subject has on more than one previous occasion been compressed within the limits of a paper. Plaster has so long been looked down upon, and perhaps rightly so, for its modern commonplace vulgarity of treatment, that it seems almost incongruous to think of it as a vehicle of art. The primary object of the decoration of a ceiling or of a wall, as in, I think, all decoration, was the giving of pleasure to the eye. The construction of the ceiling has undoubtedly its bearing on the design. We have a method of constructing our modern plaster decoration by casting with fibre and wood, and this is a method of convenience. Whether the process itself is right or wrong is another matter; much of our modern construction calls for it, and it has come to stay, at least, for a time. Unlike the plasterwork of the early centuries, which was a mere coating, our process is a casing. It would be a fatal error to suppose that the undulating surfaces of ceilings would have been left had there been more skilful workmen. It does not follow that because the surface of the ceiling bulged or undulated it was altogether due to the negligence of the plasterer. All the crafts are alike in this respect. Joists were then cut and shaped by hand, and unevenly laid and irregular of surface when lathed over. Walls were irregular also, roughly built, and in the early times the plaster followed suit. The materials were prepared and mixed as they had been mixed for centuries, and in application they relied very largely on doing the best they could with the freedom of the hand and the judgment of the eye rather than on the over exactitude of the rule and measure. We must give credit at any rate for these men using plaster in a plastic form. I claim for plaster at least that respect and technical liberty which are due from the artist to any other material or medium of expression, whether the surface of operation be large or small.

The lecture was illustrated by many fine lantern slides.

The Committee of the Irving Memorial announce that the work of executing the statue of the late Sir Henry Irving has been offered to and accepted by Mr. Thomas Brock, R.A.



Transept Roofs, Abbeydore Church.

SIR,—Will you allow me through the medium of your valuable paper to make known the urgent need of this beautiful and interesting Cistercian abbey church?

Nearly four years ago a considerable reparation was effected under the supervision of Mr. Roland W. Paul, F.S.A., architect. The entire flooring was taken up, which lay upon an earthen bed rather more than a foot deep, on the surface of which were scattered human skulls and bones. These were carefully collected and sealed up. The earth having been removed, the whole area was concreted and the floor relaid as it was before. The roof of the presbytery (the most beautiful part of the church) was re-covered with stone slates, boarded and felted. Scudamore's plaster ceiling, being in a broken state, was removed, and oak boarding substituted for it behind the joists. A complete system of drainage has been carried out, and the buttresses of the eastern chapels carefully underpinned. The repair of the tower roof and battlements entailed a considerable outlay. The latter had to be rebuilt and the old roof replaced by a leaden one. This repair alone cost 500*l*. The entire reparation (as far as it has gone) cost just 2,000*l*.

It was intended to treat the transept roof and ceiling (for which this appeal is being made) in exactly the same way as that of the presbytery, preserving Lord Scudamore's interesting woodwork and substituting oak boarding at the back of the joists for the present plaster ceiling, and relaying the stone slate roof on felt and boarding. But our good intentions were frustrated through lack of funds.

The transept roof, at that time very bad, is now in a most dilapidated and dangerous condition, the laths on which the slates are nailed having rotted in numerous places, causing the tiles to slip and leaving openings in the roof through which the rain pours in upon the plaster ceiling below.

I cannot help feeling that when it is publicly known that this portion of the church is in such a sad and dangerous condition and—more than this—a source of danger to the repaired portion, as well as to those who pass under it, that the 1,100*l*. required will be forthcoming.

My deepest and heartfelt thanks are due to the many friends and well-wishers who have so generously responded and enabled me to repair this beautiful Cistercian relic, so far, for the reverent worship of God. And I am emboldened to think, judging from the many who have visited and continue to visit the abbey, that their interest in it is still keen and unflagging. The very fact alone of this Cistercian presbytery being the only one in the country used for Divine service is sufficient to rouse the interest of all lovers of ecclesiastical architecture for this church, possessing as it does an interest and beauty so unique.

ALFRED PHILLIPPS, Rector.

Abbeydore, Herefordshire: March 15, 1907.

Royce, Ltd.

SIR,—As considerable confusion appears to exist as to the relationship between Messrs. Rolls-Royce, Ltd., motor-car manufacturers, and ourselves—we being, for instance, frequently asked how our motor cars are progressing and receiving communications intended for our friends—we should be obliged if you would, through the medium of your columns, allow us to explain that Messrs. Rolls-Royce, Ltd., have taken over the automobile business inaugurated and formerly carried on by us at Cooke Street, Hulme, Manchester, where they are continuing the manufacture of the well-known "Rolls-Royce" motor chassis; that our offices and works, which have been considerably enlarged to meet the rearrangement, are situate at Trafford Park, Manchester (now our only Manchester address), and that we are there continuing the manufacture of the "Royce" dynamo-generators, electro-motors, motor starting and controlling switches, switchboards, arc-lamps and accessories, and the "Royce" electrically-driven cranes, hoists, capstans, winches and transporters. The two firms are totally distinct and separate companies, Messrs. Rolls-Royce, Ltd., manufacturing motor cars, and we electrical plant, cranes, hoists, &c., and should not in any way be confused with one another.—We are, sir, yours faithfully, for Royce, Ltd.,

T. RITCHIE, Commercial Manager.

GENERAL.

An Exhibition of Drawings, principally from Venice, by Mr. Arthur Studd, has been opened in Paris. Among the views is one of Hampton Court.

The Foundation-Stone of the Higher Broughton Synagogue, Manchester, which is being constructed from the designs of Mr. Delissa Joseph, F.R.I.B.A., was laid on Monday by Sir Marcus Samuel, in the presence of the Lord Mayor of Manchester.

M. Edouard Toudouze, the painter, died in Paris last week of influenza. He won the Prix de Rome in 1871. Recently he prepared for the Government several cartoons which were reproduced in tapestry at the Gobelins.

A Sum of 30,000*l*. is required for the repair of the ecclesiastical buildings which were ruined by the Kingston earthquake.

Lord Alverstone, in presiding on Tuesday in the new Central Criminal Court, said he desired to congratulate the Corporation of London and the legal profession upon the new buildings. So far as one could judge the buildings were admirable in their arrangements in every way. He had no doubt that some minor points would be rearranged in the working of the buildings; as they were they seemed most admirably designed.

The Competition for a poster for the Scottish Exhibition of next year attracted over sixty competitors. The first prize of 50*l*. was awarded to Mr. F. H. Ball, Nottingham. The second prize of 20*l*. was gained by Messrs. M'Lagan & Cumming, of Edinburgh.

Mr. Paul Hoffmann has removed from Palmerston House, where he has carried on his practice for the last fifteen years, to new offices at Capel House, New Broad Street, the recently completed building on the south side of the street.

Mr. W. L. Wyllie, A.R.A., the painter of shipping and tidal rivers, was on Wednesday elected a Royal Academician.

The Ayr Auld Brig preservation committee submitted a petition at Ayr Dean of Guild Court on the 15th inst. asking warrant to carry out the proposed preservation works on the bridge. Mr. Wilson, C.E., Glasgow, the engineer; Mr. J. A. Morris, Ayr, the archaeological expert; and Mr. Robert Welsh, of Messrs. Shaw & Welsh, solicitors, Ayr, the hon. secretaries, appeared on behalf of the committee. The Court granted warrant, leaving it to the Town Council to authorise the closing of the bridge to traffic.

Mr. Robert George Clutton, senior partner in the firm of Messrs. Clutton, the agents to the Commissioners of Woods and Forests and the Ecclesiastical Commissioners, as well as to Lord Normanton and other large landowners, died last week. Mr. Clutton, who was sixty-eight years of age, was the eldest son of the late Mr. John Clutton, the founder of the Surveyors' Institution, and was formerly a member of the Council of that body and of the Surveyors' Association, the Land Surveyors' Club and other bodies connected with the profession.

The New Baptist Church at Hertford, which was designed by Messrs. George Baines & Son, of London, was opened on the 14th inst. by Mr. Herbert Marnham, treasurer of the Baptist Union. The Rev. W. Cuff preached at the afternoon service. It is seated in oak, with oak pulpit, and accommodates 548 persons in a mixed congregation, all on the ground floor. The contract amount was 2,251*l*. The builders were Messrs. F. Wood & Co., of Luton.

The Sub-Committee of the Dundee Town Council in charge of the plans of the new Technical Institute have met for further consideration of the four sets of competitive designs which have been submitted. There were seven members of the committee present, over whom Mr. William Henderson presided, and, after discussion, a unanimous report and recommendation were arrived at with reference to procedure regarding the plans.

A Paper will be read at the Institution of Civil Engineers on Tuesday upon "The Application of Hydro-Electric Power to Slate Mining," by Mr. Moses Kellow, Associate.

The Italian cotton manufacturers have decided to construct their own cotton docks at Genoa and Venice, and if necessary at other Italian ports. Two Italian engineers are proceeding to Liverpool and Bremen in order to study the methods employed there of unloading and storing the cotton.



PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

INK PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.: DETAIL OF DOORWAY.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

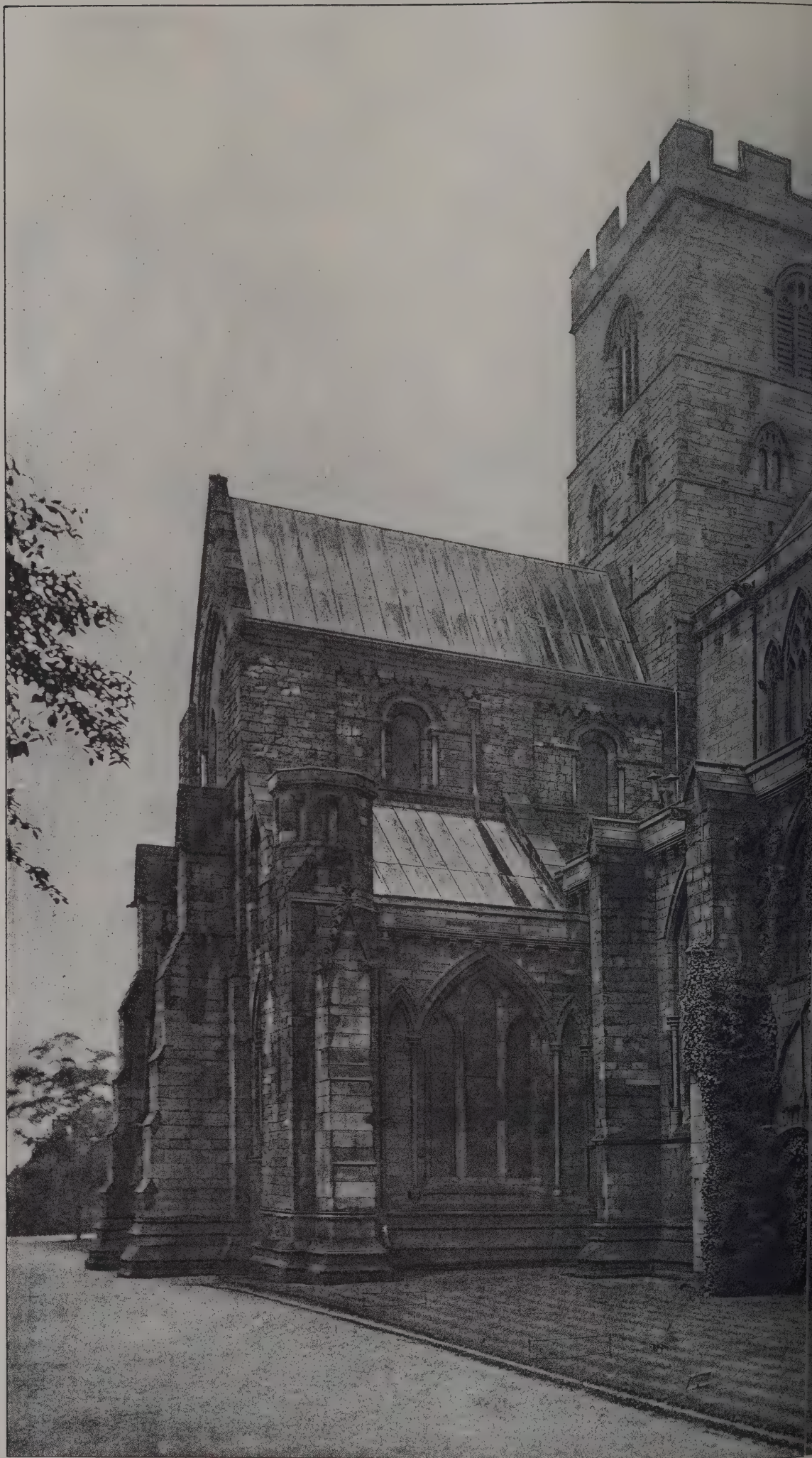


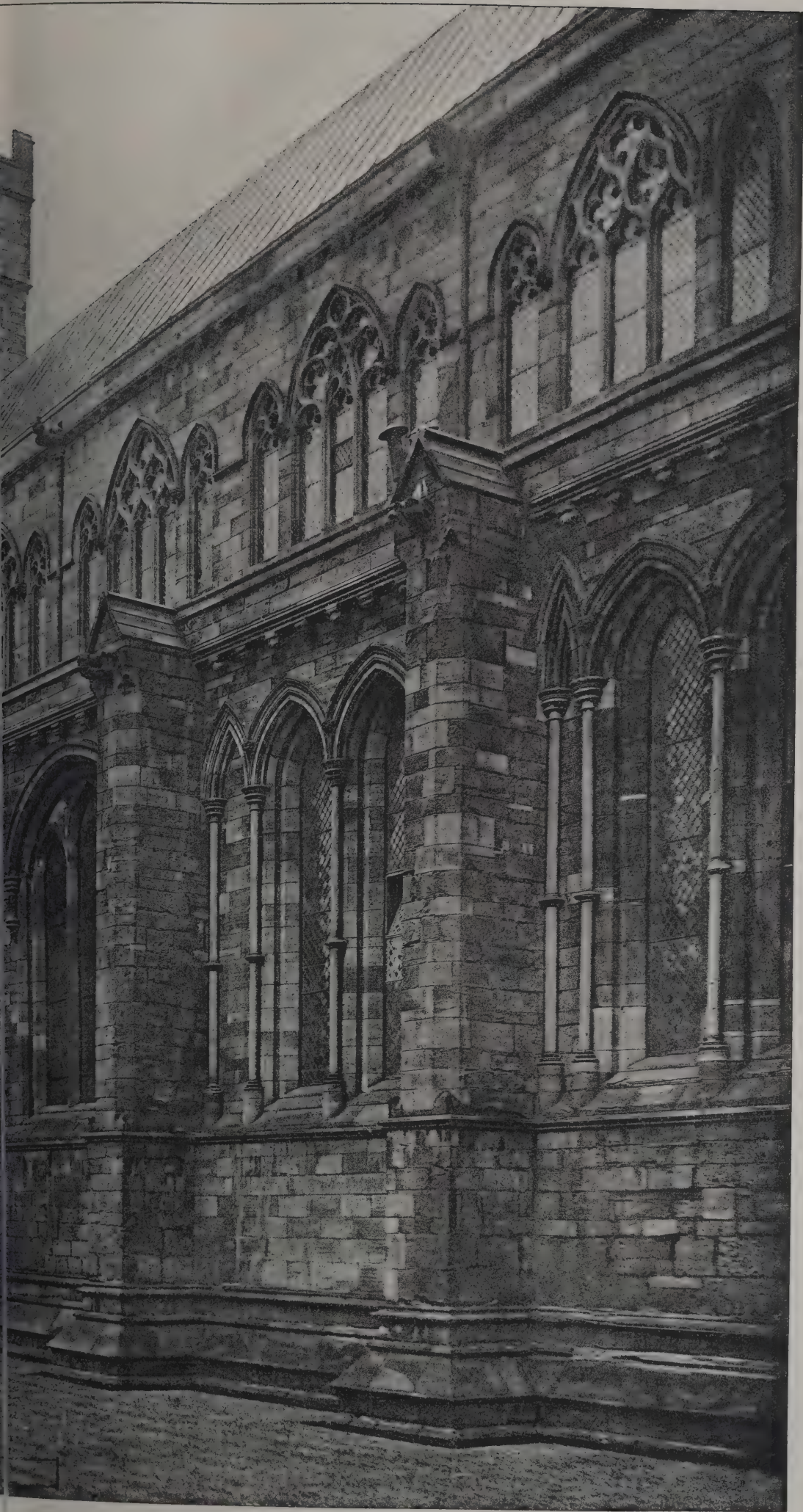
PHOTOGRAPHED BY S. B. BOLAS & CO. 61, OXFORD STREET, W.

INK PHOTO. PRACUE & CO. L. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.: REFRESHMENT ROOM.

E. W. MOUNTFORD, F.R.I.B.A., Architect.



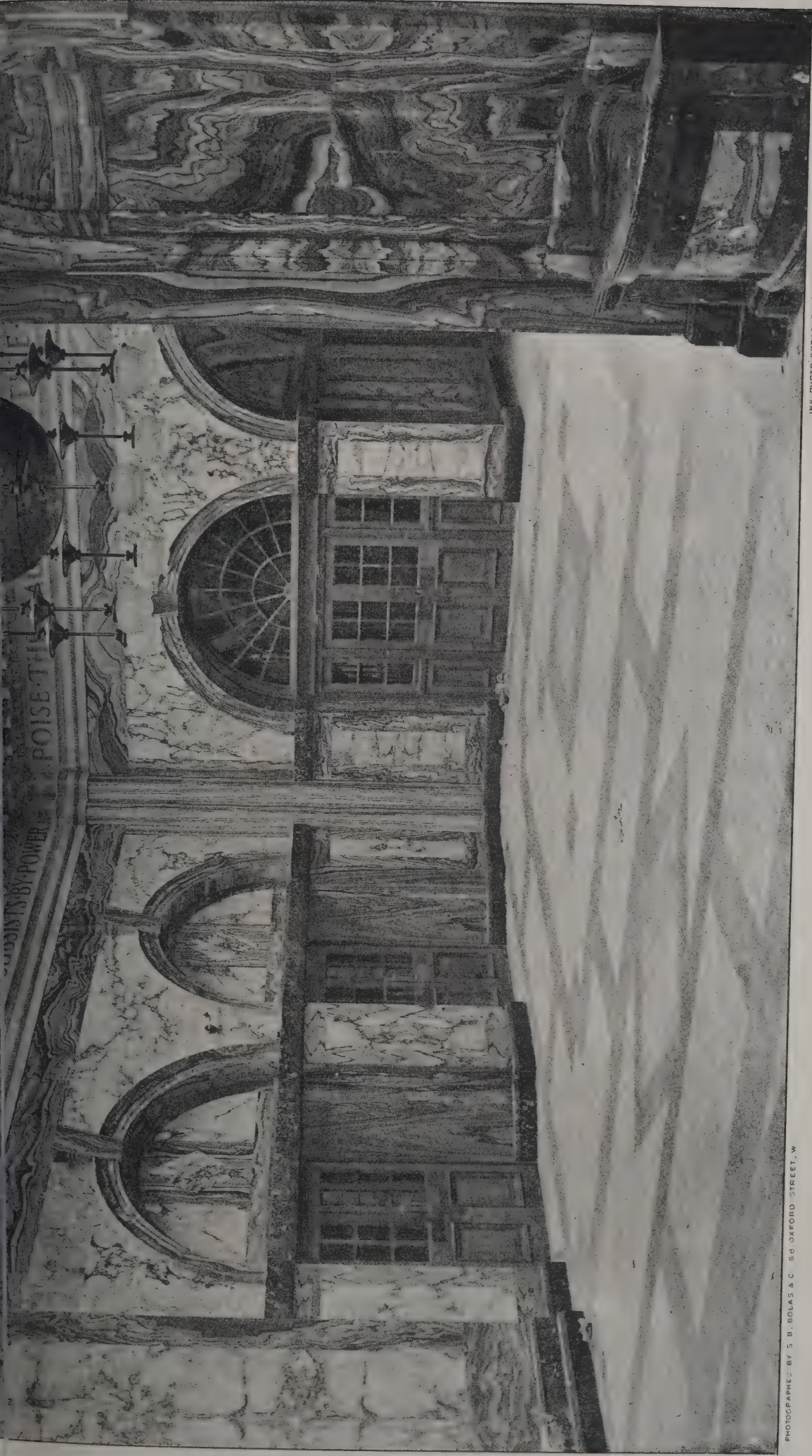


"INK-PHOTO," SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

TERIOR FROM SOUTH-EAST.

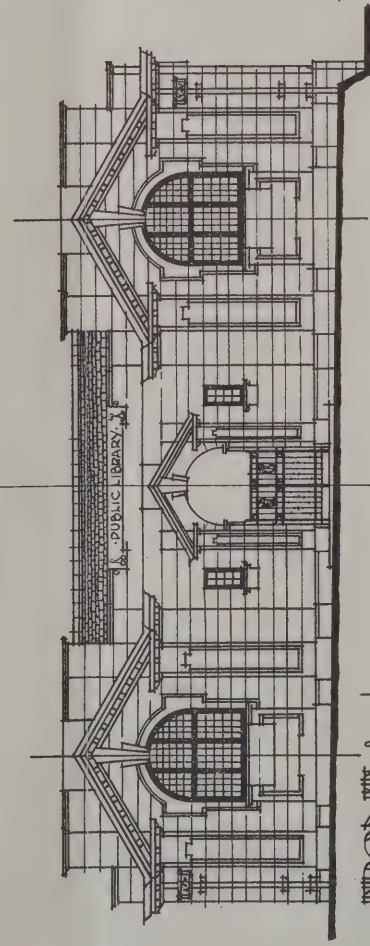
The Architect, Mar. 22nd 1907.



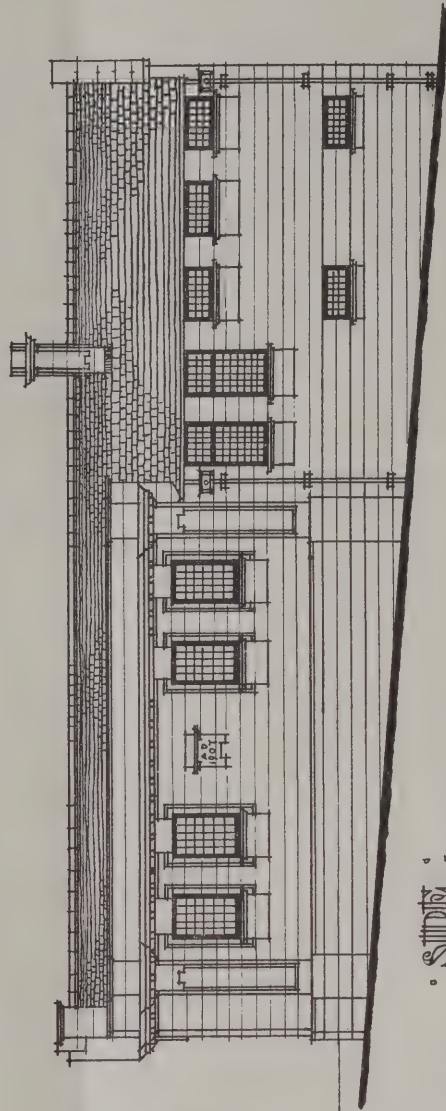


NEW SESSIONS HOUSE, OLD BAILEY, E.C.: ELECTROLIER ON FIRST FLOOR, CENTRAL HALL.
E. W. MOUNTFORD, F.R.I.B.A., Architect.

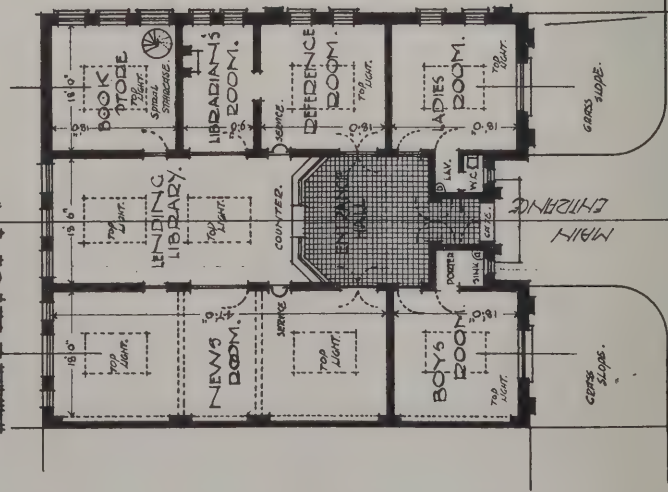
PHOTOGRAPHS BY S. B. BOLAS & C. 68, OXFORD STREET, W.



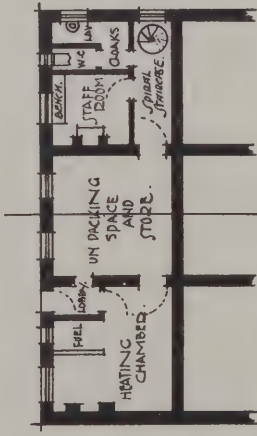
FRONT ELEVATION



SIDE ELEVATION



GROUND PLAN



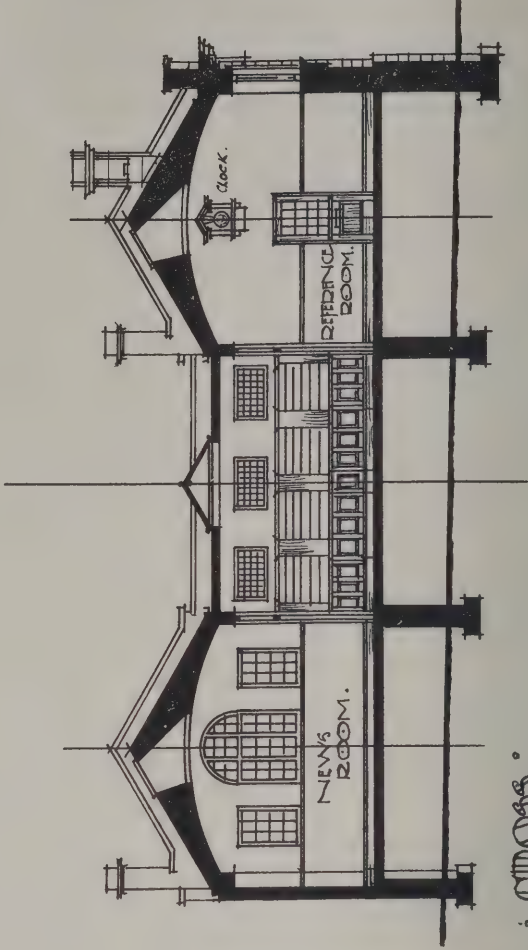
BASMENT PLAN

ANNEXED PLAN
PUBLIC LIBRARY

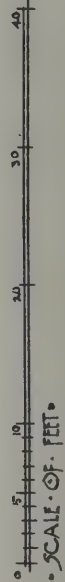
FIRST PREPARED DESIGN

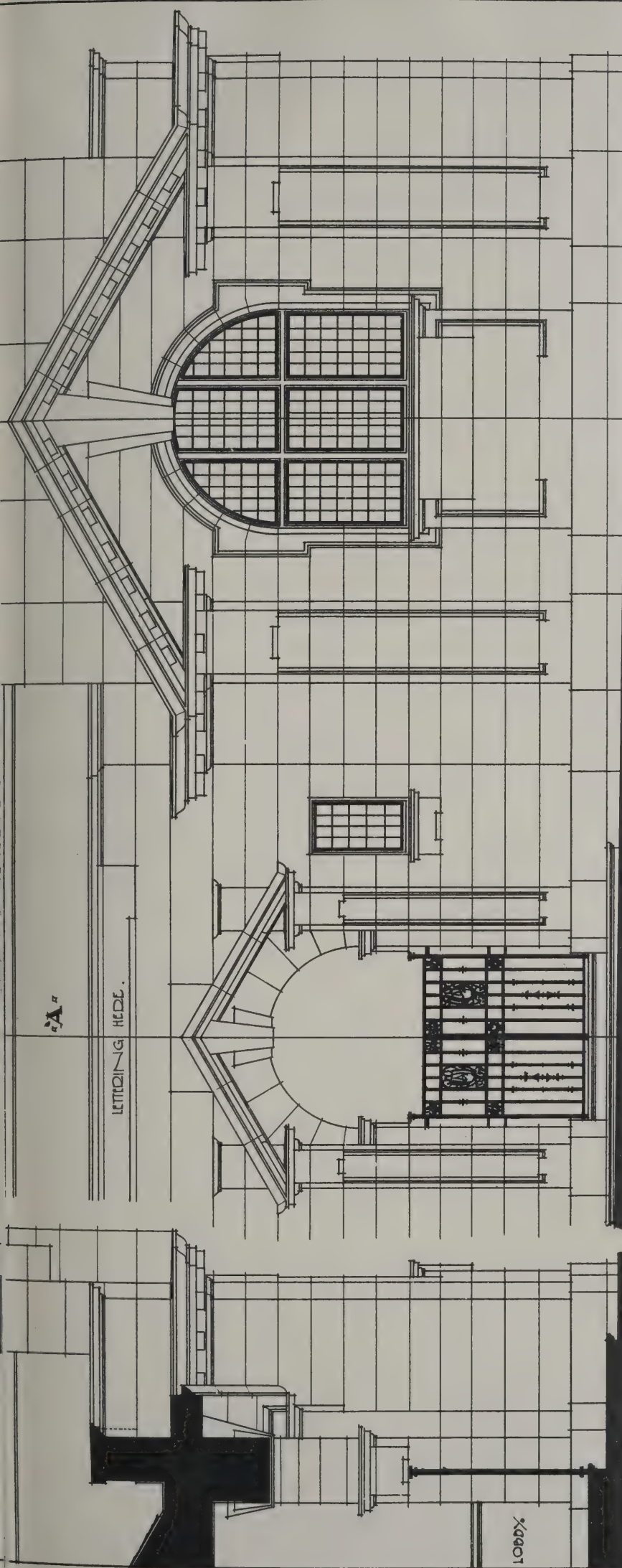
SIDE STREET

MAIN ROAD



CROSS SECTION





SECTION
"A-B"

DETAIL DRAWING OF FRONT

SCALE OF
FEET

e.c.d.11

ELEVATION

LADIES' ROOM

EDWARD CRATNEY :
(DAVIDSON & CRATNEY),
ARCHITECT :
50 GRANGER STREET :
NEWCASTLE-ON-TYNE :
ALSO :
COUNCIL CHAMBERS :
WILLINGTON QUAY :

PLAN

"B"

The Architect.

THE WEEK.

THE recommendation of the majority of the committee of inquiry respecting the Royal Hibernian Academy, which would confine its work to organising exhibitions, leaving the teaching to the school of art connected with the Department of Manufactures and Agriculture, has given rise to petitions to the House of Commons. One was signed by (1) the joint art committee of the Ulster Society of Architects, the Belfast Arts Society and the Ulster Art Club; (2) students at the City of Dublin technical schools; (3) art teachers and students of Cork; (4) citizens of Cork; (5) art teachers, students and citizens of Limerick; (6) art teachers and students of Waterford; (7) artists and citizens of Belfast. The memorialists unite in declaring that any Bill founded on the recommendations of the committee of inquiry aimed at depriving the Royal Hibernian Academy of its academic functions must inevitably tend to its abolition and to the discouragement of art in Ireland, and that such a proposal is most untimely, having regard to the large amount of independent effort which is at present being directed to the development of art in Ireland. The Government do not appear to be unfriendly to the Academy, and ask for a proposal by which the rival schools could be enabled to co-operate in the training of students. It should be realised that although the Academicians may endeavour to teach students, the exhibitions in which the results of their teaching are seen cannot be considered as satisfactory. Changes of some kind will be necessary if the official system is set aside. At the same time it must be allowed that the small sum assigned by the Treasury is not sufficient to enable the Hibernian Academy to compete with the Royal Academy in power of teaching, and the wealthy people in Ireland will not aid in supplementing the annual grant.

THE committee of organisation and the local committee of the International Congress for Hygiene and Demography, which is to be held in Berlin, have resolved to give occasion to the members of the Congress to make themselves acquainted with the numerous hygienic institutes of Berlin and its environs. The scientific meetings will not be extended beyond 2 P.M., in order that the afternoons may be reserved for such sight-seeing. Through the presidents of the different sections more than a hundred establishments have been chosen, which can be visited during the Congress, partly *à libitum*, partly in groups under a special conduct. A "Hygienic Guide" will give a short description of the institutes in three languages in such a way that the members can select the subjects which would be most interesting to them. The local committee, under the presidency of Dr. EILSBERGER, consists of representatives of Imperial and State Offices, the Municipal Council of Berlin, members of the Faculty, of physicians, directors of different hygienic societies, engineers, agriculturists and special journalists.

It is not unlikely that the ignorant classes in Paris will misinterpret public opinion concerning churches, and imagine that sacrileges and robberies from them will be only lightly punished. In that way we can understand why an effort was made a few nights ago to rob the church of St. Merri, and with success, although the thieves were unable to escape with their booty. The church is in the Rue Saint-Martin and is quite close to the Rue de Rivoli. The building is one of the most curious in Paris. It is believed that 1,200 years ago a church stood on the site, which was succeeded by other structures of a subsequent date. It would be

difficult to say whether there is any genuine masonry-work in the edifice, but it has at least all the characteristics of late examples. What makes the style appear odd is the way in which Gothic and Renaissance are commingled. On one face the arches are pointed; if we look on the other side they are transformed into round arches. The porch appears on the exterior to be a remarkable example of Gothic sculpture, but it is said that the numerous statues occupying the niches were all made in the middle of last century and were direct copies of figures at Notre-Dame. It is well known that extensive works were carried out in the reigns of FRANCIS I. and LOUIS XIV. as well as in a later time. But sometimes the works seem to have been alternated as if a definite style was to be avoided. As a curiosity the church is deserving of examination by architects who may visit Paris at Easter, for it suggests within a limited compass the peculiar laxity which was for many years tolerated in France.

THE committee of the Glasgow City Council who have charge of the building regulations under the Act of 1890 could not be expected to be satisfied with the decision of the House of Lords respecting the street register, on which we commented last week. It is said that over 20,000*l.* has been expended in the litigation. The decision has to be accepted, but it is considered desirable to leave an opening for a future attempt to obtain frontages without paying for them. Meanwhile the following notice has been drafted:—"To repeal, alter or amend section 9 of the Glasgow Building Regulations Act, 1900, and in connection therewith to enact that it shall not be necessary to enter in the register of streets provided for in that section and in the relative map (a) the width of any street or (b) the distance between the centre of any street and the building line thereof; to provide for a new or amended register of streets and relative map, and to repeal sections 20 and 21 of the said Act in whole or in part." The terms of the clauses are under the consideration of a sub-committee of the Corporation. It has yet to be seen whether the 5,500 owners or occupiers of property who consider themselves aggrieved by the entries in the streets register can be pacified without compensation.

It has often been said that an archæological Domesday Book would be a valuable acquisition. It would be advantageous also for those who possessed proprietorial or allied interests in the objects recorded in the pages, for they would be likely to esteem it more highly because of the interest taken in them. An approach to such a register is found in the plates of the photographic surveys of some counties. And in any case photography could lend invaluable aid as a substitute for description. Mr. C. A. CLAYTON, of Brighton, has suggested that the Sussex Archæological Society should undertake the work for that county. Although parts are in immediate connection with London, and therefore, as it were, under strict supervision, there are other parts in which interesting remains might be removed or transformed without any criticism from those who desire the preservation of antiquities. Mr. CLAYTON refers to the case of a half-timbered sixteenth-century cottage at the entrance to a village which conferred distinction on its surroundings. It was recently destroyed and replaced by red and yellow villas. In a neighbouring village an ancient farmhouse was also doomed to destruction. Fortunately a suggestion was made to the owner that reparation would serve his purpose equally well, and the relic still exists. As the Sussex Society has the services of sixteen local secretaries and they could also call in voluntary assistants, it would not be difficult to make a record of whatever has survived in the different districts. Guide-books are useful, but they are far from being exhaustive, and something more is required to suggest the wealth of the county in products of a past age.

THE BRITISH CLAYWORKER AND HIS RIVALS.

IF we believe Mr. RUSKIN, our fields of fine clay were not given to us to be made into oblong morsels of one size, but in order that men who could not handle a chisel might knead out of them some expression of human thought. And until architects know how to use clay they will, according to him, never know how to use marble. If literally accepted, the words would appear exaggerated. But anyone who considers the wonderful adaptability of the clays of England for manufacturing purposes must acknowledge that they are capable of serving far higher purposes than were supposed practicable fifty years ago when Mr. RUSKIN was preaching or prophesying. Clay has been so closely associated with the history of civilisation, it demands our reverence, and the potter's wheel has been adopted as an emblem to symbolise many purposes from the earliest times. Other countries may have used clay in a more remote age than did the inhabitants of this country. But explorers have found that it served the purposes of the primitive dwellers in the island. The Romans no doubt demonstrated how the art could be improved, and it is quite possible that the scene depicted by Sir ALMA-TADEMA was real and that a Roman emperor considered a British pottery worthy of a visit. Clay-working has undoubted claims on modern Englishmen on account of its historic interest.

It is not necessary for us to follow the useful and manifold purposes in which clay was employed. But we think it can be asserted without fear of contradiction that the revival of industrial art in this country was and is closely connected with pottery. We are not among the idolaters of JOSIAH WEDGWOOD, for we are aware of the shortcomings of his system. But there can be no doubt that he was able to demonstrate the relation between pottery and sculptured art, or, in other words, between manufactures and what was known at the time as High Art. It would have been advantageous if at a later time those who were appointed to teach ornament and decoration could have realised that pottery deserved more attention than any other kind of manufacture. Owing to a number of circumstances textiles were preferred, as if England was mainly dependent for success upon the cottons of Manchester. It was not perceived that although textiles afford opportunities for surface decoration alone, in pottery, or in most varieties of it, there is in addition a necessity for creating beautiful forms. In that way there is a connection with work in other materials which is not possible with textiles. As an outlet for the expression of any skill in art which may be possessed by Britons, pottery is deserving of the protection of the State, for it can combine design, painting and modelling.

There is, however, another development of the potter's art which England can claim as especially its own. If it were not for the co-operation of the maker of what is simply called "sanitary ware," would there be much use in sanitary science? Those who talk loudly about the diminution of the death-rate, preventive medicine and much else, rarely give due acknowledgment to the labours of the potter, which made theories become actualities. It is only necessary to visit any sanitary exhibition in order to be impressed with the countless variety of the forms in which clay has been made to serve the requirements of hygiene. Improvements are being constantly carried out, and there is no doubt that under proper encouragement not only the producers of sanitary ware, but of all other kinds of wares in which clay is the principal element, would be able to supply all wants of Great Britain, whether æsthetic or material, without the least aid from the rest of the world.

When we say encouragement we do not mean subsidies from the Treasury. The potters have improved and extended their art independently of all State aid. Even in the matter of artistic education, as we have suggested, they were not properly treated. CARRIER-BELLEUSE, SOLON and SALMON compensated

for any lack of official teachers. The encouragement we mean is of another kind. It is mainly the adoption of fiscal means to preserve not only the potters but the people of this country from the practices of foreigners which must be described as opposed to all legitimate principles of commercialism, if they are not absolutely dishonest. Anyone who may think such proposals unwarranted has only to glance at the report on the pottery industries by the Tariff Commission which has been lately issued.

One advantage of the evidence is that manufacturers are allowed to express the results of their own experience in their own words. There is consequently an entire absence of the diplomatic vagueness which is supposed to be essential in documents by officials of the British Government. In the reports there is no concealment of facts. The sufferers are allowed to relate the losses which arise through a lax system. Messrs. DOULTON & Co., for example, produced an article from a registered design which was sold for 16s. a dozen. The Germans made copies, and sold them in this country at prices varying from 3s. 6d. to 12s. 6d. a dozen. Such an extraordinary variation in foreign prices is by itself enough to prove that German competition is regulated by novel principles. Indeed, our registration system as administered affords no protection for those who employ it. Numerous firms testify that registered patterns can be reproduced in Germany and sold in England without any remedy, while if Germany is supposed to suffer by imitation of one of her designs her Government protects him voluntarily by stepping in and confiscating everything bearing that design. In our trade, said one witness, there never was one good foreign design that was not copied from an Englishman's. The imitation is most irritating, and there is no redress. Any novelty we bring out, said another representative, a new shape or pattern, is at once copied and sent here, even to our own town (Longton), to compete with our productions. One manufacturer related how he had forty models prepared, and the Germans copied and applied thirty-eight of them. Imitation of the kind may be flattering, but it is not advantageous to the English potter. While Germany is mentioned it is to be regretted that Austria, which for a long time was recognised as a fair-trading country, is now becoming notorious for its piracy. Another rival is Japan. For a long time the country possessed a style of its own and was proud of it. But the people are now realising that dishonest copying can bring profit, and they are making and selling what are called standard, that is British, lines of goods. When it is remembered that the potters in Japan are paid about 4d. a day, competition would be hard enough even under fair conditions.

It might be supposed that in sanitary ware England was secure. Any Englishman who has lived on the Continent must be pardoned if he does not esteem the inhabitants as remarkable for cleanliness. SVENGALE's exclamation about the absurdity of an Englishman taking a daily bath, and poor TRILBY's admiration of a clean Englishman were no exaggerations on the part of DU MAURIER. Yet it is curious that foreigners, who are so indifferent to employing aids to cleanliness and sanitation, are competing with English traders in producing them, especially for people in distant countries. The export trade of sanitary goods to Germany is said to have stopped entirely, owing to the hostile tariff of 10s. a ton, but their own manufactures are adequate for any use made of them. If in connection with trade anything could be considered as ludicrous it is the foreign endeavour to gain a reputation in sanitary wares. But the opposition to the manufacturers of this country is so intense there is no fear of the ridicule which is supposed to be fatal to absurdities.

Another class of goods has also of late attracted foreigners. Although common bricks and tiles are left alone, other classes of bricks—such as flooring and fire proof ware—are now introduced largely in England.

Foreign fireproof flooring is in demand. A case is mentioned of a British colliery firm giving a contract for building coke ovens to a foreign firm, and they used 1,200 tons of foreign bricks. This, strange to say, was in the very home of the firebrick trade. Among other kinds of goods which are also going from us are door furniture and porcelain electrical fittings, for both are now largely imported.

One witness was not afraid to say, after his observations in foreign countries, that the English potter is the best in the world. But it is believed that owing to the depression in trade and the hopelessness of any improvement in his position, the English potter is becoming indifferent and desponding. Improved education does not appear likely to create successors who will be superior to the present race, for owing to the unsteady nature of the employment desirable apprentices are not attracted. There is reason for their hesitation. In the Longton and Fenton districts the imports of foreign china are calculated to mean a loss of 5,000*l.* a week to the working potters alone, and probably subsidiary trades lose 2,000*l.* a week. It should not be concluded that the apparent inferiority is due to the superior system of production employed by foreigners. There are some people who will not believe that extraordinary measures are adopted in order to undersell English manufacturers in their own country. It might, for instance, be supposed that although "dumping" should serve with iron and steel goods, it would be ridiculous in the case of pottery. Jugs can be bought in England for 9*d.* which in Germany cost 1*s.* 7*d.* Flooring tiles are shipped to Australia below ordinary cost price. Silica bricks, firebricks, magnesite bricks can be obtained in this country at prices lower than the normal cost of production abroad. Dutch tiles, which in Amsterdam cost 6*s.* per square yard, can be obtained in London at 5*s.* per square yard. Messrs. WOOLLISCROFT, who should understand the condition of the trade, say that a duty of 10 per cent. ought to be imposed on imported floor and wall tiles, and they refer to one of the largest firms of pottery manufacturers, who propose erecting new works in the United States and closing their factories in this country unless tariff reform comes along within a reasonable time. Other firms suggest that the duty on Dutch glazed tiles should not be less than 20 per cent. There are advocates of 33½ per cent.

Experience alone can demonstrate whether the imposition of a duty on imports of pottery to this country which would correspond with what has to be paid by English traders in foreign countries would be sufficient to regain English supremacy in the world's markets. There may be other conditions which would have to be considered. Nevertheless, it is remarkable that out of sixty firms in the china trade no less than fifty have agreed that a measure of the kind is essential. About one-half of the remaining ten are favourable to an import duty, but as they have partners who believe in universal free trade they are compelled to stand out. In this country we are not much disposed towards theories. However, when one is taken up it becomes like one of the axioms in geometry, and is esteemed as a necessary truth. Much has occurred of late years which should be sufficient to convince people that beliefs which were comprised among the eternal verities have to obey, like meaner things, the law of mutation. Unrestricted free trade undoubtedly served temporary purpose, and preserved Ireland, if not Great Britain, from famine. But other countries who also studied political economy and were without any temporary incentive to the adoption of the principle declined to see in free trade a panacea for earthly evils. They may have been mistaken in not following the example set by this country. But their business is growing whilst ours is declining. It would seem before affairs go from bad to worse that it would be wise to try some experiments in Protection. The pottery trade might be selected. It is not well to have

examples of dishonest practices before the public gaze in every successful crockery shop in town and country. The display is not only bad in itself, but it teaches English people the advantage of renouncing the old way of trusting one another, which has been one of the causes through which Great Britain has held its own against the world. English potters can supply all the requirements of Englishmen, and they are numerous enough to prevent any charging of disproportionate prices for honest ware.

PUBLIC LIBRARIES.*

HARDLY more than a century has elapsed since it was enacted in England that unless regularly licensed by the magistrates every house, room or place which was used for the purpose of reading books, pamphlets, newspapers, or other publications was to be deemed a disorderly house, and the owners were to be punished as the law directed in the case of disorderly houses. To lend books on any subject whatever without permission of the magistrates was to incur a fine of 100*l.* a day, and the fines did not exempt a culprit from the punishment incurred as the keeper of a disorderly house. We have reason to be thankful that the England of 1907 does not correspond with the England of 1799, for then the author and publisher of the latest volume on public libraries would probably find themselves charged with high treason.

It was not to be expected that under such conditions much attention would be given to the planning of buildings for libraries. For centuries it was supposed that a square or oblong room was sufficient. The library of Leyden may be taken as an instance, for it was attended by students from all parts of Europe. A very careful etching suggests its appearance in 1610. It was lighted along the sides by large windows. The books were arranged in two rows of shelves or cases running parallel, with a passage dividing them and with only sufficient space between each case to allow the student to stand while searching for the book he required. Each case was inscribed with the class of books it contained in large letters above it. On one side were volumes on history, medicine and law; on the other side were works on mathematics, philosophy, literature and theology. There were no seats, but a student who wished to read had the use of a desk on which he could rest his folio. A few globes and views of places completed the furniture. Evidently at the time it was not supposed to be desirable that anyone should study literature with the comfort which is now possible in the great libraries in Paris or London. There must have been little difference as regards the difficulty of consulting works between a student in the library of ASSUR-BANI-PAL and a student in one of the university libraries of the Early Renaissance period.

As soon as it was decided that libraries were to be provided for a great number of people who were not possessed of the philosophic patience of the ancient students, it became necessary to avoid any infliction of the self-sacrifice which was supposed in the old days to be inseparable from the study of books. Arrangements had also to be made to provide for the increase in the number of books which were required. In most of the older libraries that was not considered as necessary. The collection was supposed to be sufficiently complete when the library was opened, and it would lose its character if additions were introduced. It has been often related that books were rejected because room could not be found for them. Everything seemed to be fixed, including the readers, for collections which were supposed to be public were interdicted to all but a favoured few. The keeper was generally supposed to be jealous of all strangers. So much is now required

* *Public Libraries*: A Treatise on their Design, Construction and Fittings, with a Chapter on the Principles of Planning and a Summary of the Law. By Amian L. Champneys, B.A., architect. (London: B. T. Batsford.)

for the encouragement of readers that librarianship has become a profession which is not only important but difficult to master in all its details. The modern library, unlike the ancient, is bound to grow, and in consequence there is necessarily some indefiniteness in the planning. The number of readers, as well as the number of books, cannot remain stationary. Accordingly there should be vacant ground attached to the site for extension, or a recognition of the fact that branch or supplementary libraries will have to be erected elsewhere.

It was mainly owing to the neglect of the future by promoters of libraries that so many mistakes have occurred in the erection of buildings under the Public Libraries Act in this country. An architect must have definite ideas about what he has to provide before he can produce workable plans. Mr. AMIAN CHAMPNEYS says in his first chapter that "in many cases the architects are to blame, since they have sometimes wilfully sacrificed utilitarian to æsthetic considerations, and have only too often displayed a complete ignorance or, what is worse, a very incomplete knowledge of the special uses and requirements of this class of building. Such failures, whatever their real causes, are apt to be imputed without discrimination to the architectural profession; and to this fact must be attributed the suggestion that librarians should dispense with the services of architects and design their buildings for themselves." It is, of course, to be expected that an English architect in treating of any subject will endeavour to charge his contemporaries with ignorance and incompetence, and Mr. A. L. CHAMPNEYS has precedents in censorship. But inquiry would have demonstrated that in many cases the authorities had no clear notions about the requirements of the people, and the architect was therefore compelled to imagine what was needed. Æsthetic considerations could not fail to receive attention when so much was dubious. The number of amendments of the Act of 1855 should be enough to suggest that even the Legislature was doubtful about what should be done and how it could be attained. On one occasion an Attorney-General said in the House of Commons that the Act did not contemplate the lending of books out of the library, and to take one home was illegal. The conditions under which gifts were given by private benefactors also reveal that it was considered feasible to combine a public library with a museum, science and art school or special technical schools on a restricted area, and for a small sum of money. In some towns the library was looked on as if it were a necessary evil, like a tramp ward, and we remember seeing it stated that out of ten town councillors only one had condescended to pay a visit to the rooms. We might also refer to the discussion at a late meeting of the Architectural Association as evidence that librarians are not unanimous about the requirements of a public library, and if they designed their own buildings and dispensed with architects it is not unlikely that some imperfect arrangements would be the result.

For many, if not the majority, of readers, a public library is regarded simply as a news-room. Sometimes men and women will be found outside the doors before they are opened. They wish to look at advertisements and then they depart. Others can spend a much longer time in perusing the journals and magazines without once troubling the librarian for a book. There are other people who would be ashamed to be seen in the news-room and who only borrow books. In some libraries the books for reference receive much attention. A chairman of a section of the British Association once stated that he had sent for ninety-four books of reference to the library of Newcastle-on-Tyne and he was able to obtain ninety-three of those he sought. That indicates the extent of the supply which has to be provided, and suggests the likelihood of a large number of readers. In other towns a local and a county directory with an English dictionary would be sufficient to meet the demands of readers. It is only by experience that

the accommodation required can be gauged, and indeed it would be an advantage if in all cases temporary buildings were first erected. We must educate our masters was the declaration of ROBERT LOWE when voting power passed to new hands, and as education ought to begin early, in some libraries there is a children's department—an innovation which would appal ancient students.

In Mr. CHAMPNEYS'S book there are chapters on materials and construction, installations and apparatus, shelving and accessories, fittings, furniture and appliances, book-rooms, lending department, reading-rooms, reference department, other public rooms and spaces, administrative accommodation, finance, organisation and building, principles of public library design, and single libraries and library systems. There are illustrations not only of buildings and plans, but of the furniture, indicators, racks and other appliances. Indebtedness is acknowledged to several experts, and the book may be said to embody the conclusions which time and use have proved to be useful. The following table by Mr. J. D. BROWN will show that finance has not been omitted. It is an attempt to suggest the accommodation which can be provided from various incomes derived from rates, and is described as "the first real attempt hitherto at working out scientifically the capacity of a library building on the basis of its income":—

Income.	Annual Repayment of Loan.	Building Loan.	Furniture Loan.	Cubic Feet in Building at 1s. per foot.	Square Feet in Building.	Volumes Stored.	Readers Accommodated.
£	£	£	£				
1,000	250	3,600	400	72,000	4,412	34,000	200
2,000	500	7,200	800	144,000	8,824	68,000	400
3,000	750	10,800	1,200	216,000	13,236	102,000	with branch 600
4,000	1,000	14,400	1,600	288,000	19,200	136,000	with branch 800
5,000	1,250	18,000	2,000	360,000	24,000	170,000	with branch 1,030
10,000	2,500	36,000	4,000	720,000	48,000	340,000	with branch 2,000

ROYAL HIBERNIAN ACADEMY.

ON Thursday of last week a public meeting was held in the Mansion House, Dublin, to consider the position of the Royal Hibernian Academy and the reports of the recent Commission. Sir Thomas Drew, president of the Academy, was chairman. He said a letter had been addressed to him from one of the members of the late Commission, Mr. Justice Madden, who had shown more wisdom, more scholarship and more dignity in considering the subject than any other member of the Commission. The letter, after apologising for Mr. Justice Madden's absence owing to his circuit duties, stated:—

"The question has assumed a different aspect by reason of the statement recently made on behalf of the Government in the House of Commons. The Royal Hibernian Academy is now safe. There is no longer any danger of its functions being transferred to a school which, however efficiently conducted, could never fill the place which an Academy should occupy in relation to the highest education in art. The abolition of our Royal Academy of Arts, under any circumstances deplorable, would be especially disastrous at a time when, for the first time in the history of Ireland a serious effort is being made to develop and train the artistic capabilities of which remarkable testimony was borne by witnesses who had exceptional opportunities of forming an opinion on the subject. The efforts of those who are interested in the maintenance of an effectual Academy of Arts in Ireland should now be directed towards formulating a practical scheme of reform, a task in which I venture to hope the work done and the evidence taken by the members of the recent committee may prove useful. I am strongly of the opinion expressed in the report by Mr. Boland and by myself, that the essential condition of an effective reform is the performance by the State for Ireland of the duty which it has recognised in regard to England and Scotland—the duty of housing the Academy in a proper building in a suitable place. I believe that the educational value of the Academy might be greatly increased if the new building

were so designed as to accommodate a collection of modern works of art, for which a gallery of moderate size would suffice, capable of being added to as the collection grew. This could be done at a moderate cost. I shall willingly take part in the work of preparing a scheme of reform if it is thought that the information which I gained when acting on the recent committee could in this way be turned to account."

In view of the report of the Commission, the Chairman said that the Academy had decided to lay its grievances before the public, for the time had come to decide whether it was to exist any longer or not. Fortunately he had succeeded in interesting Mr. John Boland, M.P., in the matter, and thanks to his praiseworthy efforts, they were now in a much better position than they were, and in view of Mr. Runciman's very reasonable statement in the House of Commons the other day, they would not just now unduly press the strong case they had made against the Treasury. The Academy, as long as he had known it, had been in trouble, and its troubles dated back to the great famine. At that time Irish art was in a deplorable state, and the Academy had closed its doors. A Highland gentleman, MacLeod of MacLeod, was sent over to report on the Academy, but his report showed that he did not know what he had come to inquire about, for he confused the School of Art, at that time under the Royal Dublin Society, with the Royal Hibernian Academy. Now the peculiar thing about this was that to the present day, when the Academy brought any matter before the Treasury, MacLeod of MacLeod came uppermost. He even appeared in the recent Commission, and his report was the bedrock upon which the Academy was to stand its trial. However, they had got rid of him now, and they could bury his report decently. When the Commission was established they took the strongest possible objection to it, because it was framed to inquire, not into the circumstances of the Academy, but into the School of Art, all apparently for the purpose of dissolving the Academy. As a result of a remonstrance, it was agreed that there should be some inquiry into the position of the Academy. Two members of the Commission were independent enough to see that some inquiry was made into its position, and the strongest possible evidence was given on the matter. Out of twenty-two witnesses examined eighteen gave very strong testimony in favour of the removal of the Academy from its present site and for a proper endowment. The other two witnesses, official witnesses, were silent on the point, but did not oppose. But the majority report of that Commission utterly ignored this body of evidence, and reported against the Academy, and introduced arguments which did not arise out of the evidence. The two independent members of the Academy, Mr. Justice Madden and Mr. Boland, M.P., issued a minority report in favour of the Royal Hibernian Academy, which was also supported in its present controversy by the Royal Academy, the Royal Society of British Artists and the Royal Scottish Academy. Within the last few days Mr. Runciman, secretary to the Treasury, had stated, in reply to Mr. Boland, that the recommendations of the majority report were not such as he could accept, that something more, he felt, was required than the majority seemed to realise, that he would do all he could in the matter, and that the details of a businesslike scheme would receive sympathetic consideration. This was going a long way in the right direction, and he might say the Academy were perfectly ready to furnish such a scheme. Their complaint heretofore with the Treasury was that they were never conferred with in the matter, and that instead of taking the advice of the President, some ill-informed person was consulted, and the Academy was put off with a formal knock-down letter to which there was no possible answer. The Academy were ready now to formulate a scheme, and they were able with the ability at their disposal to do it without outside assistance. They were told that the Academy could not survive on its present endowment (300*l.* a year), and the Government had been told that it could not carry on its work in the slums, and that it had a right to be included in the new buildings to be erected at Leinster House. On that the Academy would not go back. It was farcical to say that their premises in Abbey Street were in a good position. It would be utterly useless and unnecessary to create what was called a Royal College of Art, and the suggested advisory committee to manage or teach art would not be satisfactory either. The Academy, which had never received any support, even from South Kensington, wished to keep itself perfectly free from departmental control.

Art must flourish in the open air, and that was the only place in which it could flourish. Behind that ideal the Academy would never go. It contained painters, sculptors and architects of considerable skill, and if they were not fit to give the highest necessary education in these matters, with, of course, proper means at their disposal, he did not see that anybody else could do it.

The following resolutions were adopted:—

"That in the distribution of the public funds granted for the advancement of industries, science and art, a due proportion should be devoted to the encouragement of modern and contemporary art in Ireland, and that the Royal Hibernian Academy of Arts has proved itself deserving of goodwill and approval in its endeavour to promote the advancement of the fine arts during the past eighty years, and is therefore entitled to be no longer excluded from due recognition in the distribution of those funds.

"That the purpose of the foundation of 1823 in Ireland and its charters was to give to a Royal Hibernian Academy of Arts in Ireland a like position to that declared for a Royal Scottish Academy in Scotland, viz. that it was to be considered as representative of the artists of Ireland in its due position in reference to the promotion and teaching of the fine arts.

"That in the opinion of this meeting of citizens of Dublin, a primary function imposed on the Royal Hibernian Academy by its foundation and charters, viz. of securing to the inhabitants of Dublin annual exhibitions of modern art, can no longer be maintained in its old galleries, wholly unsuited now in accommodation and locality for their purpose, and where a moderate income realised by exhibitions and devoted to a public purpose in former years can be no longer relied on; and that the Academy of Modern Art should be no longer excluded from the comprehensive group of science and art institutions at Leinster House."

HOLYROOD CHAPEL.

HOLYROOD PALACE and its more ancient chapel were visited on Saturday, the 23rd inst., by members of the Edinburgh Architectural Association and others, to the number of about 140. According to the *Scotsman*, the visit, which was one of the series arranged by the Architectural Association, was made by permission of the First Commissioner of Works, and the party were received and conducted over the buildings by Mr. W. T. Oldrieve, F.S.I., of H.M. Office of Works, and by Mr. F. H. Parsons, resident inspector, Lord Chamberlain's Department. Among those present were Mr. Hippolyte J. Blanc, R.S.A., president of the Association; Mr. J. T. Baillie, vice-president; Dr. Hay Fleming and Mr. Macintyre Henry.

Mr. Oldrieve said it was his privilege and honour to offer, on behalf of the Crown, a welcome to the members and friends of the Association. He could assure them that his own interest in the guardianship of these and similar architectural memorials of the past history of Scotland helped very much to relieve the monotony of a busy official life. Mr. Oldrieve exhibited a plan showing the oldest parts—what now remained of the twelfth-century abbey, the great tower of the original palace, built about 1500, and the late palace, built by Charles II. The early history of the abbey was quite well authenticated. The Bannatyne Club published in 1828 a carefully collected transcript from the original foundation charter from King David I., dated 1128. The original charter was stated in 1828 to have then been in the archives of the city of Edinburgh, and presumably was still there, or in the Register House, to be seen by the historical student.

Architecture of Abbey Ruins.

The myth of the miraculous escape of the king when hunting, through the interposition of a cross as he was charged by a stag, might be dismissed as a monkish legend which did not appear until early in the fifteenth century. It was certain that originally the abbey church and precincts were extensive, and that nothing at present existed which would enable them to indicate those parts which had been demolished. So far as he had yet been able to discover no very early plan existed showing even the general disposition of the abbey buildings. The very fact that so little remained of what was once an extensive abbey lent all the more interest to what was still left to us—the ruins of the nave of the abbey church, about which so much enthusiasm had recently been shown owing to the late Lord Leven's

bequest for the purpose of restoration. Mr. Oldrieve drew attention to the fascinating variety of style still to be very clearly distinguished and throwing much light on the abbey's chequered history. They would notice first, as undoubtedly the earliest and now the only remaining fragment of that period, the Late Norman doorway, now built up, at the eastern end of the south aisle, which evidently led to the cloisters. It could only be seen from the exterior, the royal vault having been built against it on the inside. They would note the interesting transition of style as they looked westward at the wall face of the south aisle.

Indications of other Buildings.

What now existed was but the nave of the original church, the tower, transepts and choir having entirely disappeared. It was said that during the course of excavation for the formation of the garden certain remnants of foundations had been observed, and the position of the steps to the high altar was thought to be indicated by benching still showing in the turf. He could not, however, at present vouch for the accuracy of these indications. The nave as a whole was not begun to be built until the end of the twelfth century, and then without buttresses. It was not until the time of Abbot Crawford, between 1457 and 1483, that these buttresses were added. Those on the north side, though massive, were embellished with extremely delicate and beautiful work in the canopies of the niches, &c., in striking contrast to the more vigorous spirit of the earlier work of two centuries before. For three centuries these noble buttresses safely withstood the constant thrust of the great stone vault of the nave, but when at last the catastrophe came and the vault collapsed there was no longer a balance of forces, and so the buttresses which supported so long the outward thrust of the vault exerted an inward thrust—thus more disastrously involving in the common ruin both north and south clerestories with the triforium and nave arcade on the north side. The filling-in of the eastern arches of the nave and aisles dated from about the middle of the sixteenth century, but the large window was blown in in 1795 and restored in 1816.

The Restoration Controversy.

The wide extent of the controversy upon the subject of the proposed restoration of the abbey church was, in his opinion, a most gratifying evidence of the general awakening of the nation to a sense of responsibility for the better preservation of our treasures of ancient architecture. The fact that many and divergent views had been expressed was not on reflection at all surprising, and he was venturing on this delicate ground, since the question could not fairly be ignored on this occasion, with two simple suggestions which might perhaps contribute to the solution of the problem. Let them see, however, whether they were not all agreed upon some important points of principle. Were they not agreed, for instance, that a chapel for the Knights of the Thistle was a desirable object, and that there ought to be a royal chapel attached to the palace of Holyrood House? If there could be unity and agreement upon a common plan, he could not believe but that very soon wealthy men of public spirit like Lord Leven would be found to come forward with the necessary funds. There had not, he believed, been so much divergence of opinion as appeared at first sight, but much of the divergence had arisen from the point of view from which the subject had been considered, and this led him to his first suggestion. Much had been said and written as to the practicability of the proposed restoration of the nave, and it seemed to him that, interesting as that particular aspect of the case might be, it did not touch the heart of the question.

Preservation of Ruins and a New Building.

His first suggestion therefore was this—that at least they as architects should look at this beautiful architectural relic as a piece of "fine art," just as the mutilated Greek statue, "Venus de Milo," was a piece of "fine art," or any "Old Master" of priceless value. If they, as architects, would not like to deny that at least the ancient masters of their craft—who produced the glories of their profession—were in truth artists, and that the fine arts still embraced architecture as well as sculpture and painting, then, he would submit, their point of view should be rather that of desiring respectful efforts to preserve what remained in all its artistic spirit and touch, beautiful and more impressive even in its decay than it could be if "restored." His second suggestion was that all parties interested should unite in a common effort to have the tower, choir and transepts built as an entirely new building, the ancient

nave forming a dignified approach, and every effort being made to preserve what remained of it from further decay. There need be no fear, in his opinion, of very early decay. If they would look at the view of the chapel in Arnot's "History of Edinburgh," published in 1779, they would wonder how little change time and exposure had wrought in 128 years. There must necessarily have been surface waste and the loss of the more delicate parts of ornament and moulding, but no part of the structure seemed to have disappeared.

The Old and the New.

If therefore means were taken still further to preserve what remained from the natural process of decay, there was no reason why the grand old ruin should not be still among the art treasures of Scotland centuries hence, when, as he would fondly hope, the chapel of the Knights of the Order of the Thistle stood—then no longer new—prized and admired for its own intrinsic beauty. One very important purpose the new church would serve would be thoroughly to screen the garden front of the palace from that most hideous view of brewery buildings and chimneys to the north-east. Dealing next with the palace, Mr. Oldrieve said perhaps they would notice a little bit of genuine "restoration" the Board of Works were carrying out on the west front of the ancient tower. It had doubtless occurred to many that the two empty recesses at the first-floor level of the corner turrets were very unsightly. After full inquiry and the advice of experts, it was decided last year to place an exact replica of the original sculptured armorial panel, which had long stood near the entrance to the chapel, in the recess from which it had been removed by order of the Parliamentary Commissioners sitting at Dalkeith in 1652. This panel was an extremely fine specimen of heraldic sculpture. He thought they would agree that it was worth doing to have a replica of it again adorning the old tower. With the advice of the Lord Lyon, Sir James Balfour Paul, they were having a similar panel prepared for the recess in the north turret with the arms of Mary of Guise, consort of James V. An experiment was being made with heraldic colours upon a model of the shield in this panel.

Changes in Palace Rooms.

Alluding to the work that had been done recently in what were called the historical apartments, he said the Board had been trying to remove what was undoubtedly comparatively modern and misleading, and to restore the rooms to what they were originally, so far as that was possible. In Queen Mary's chamber the partition which until recently divided this fine room into two parts had been removed, and they now saw the room of the size it was in Queen Mary's time. A recess on the east side of the room had been opened out, and was thought to have been a private oratory. The ceiling of the recess was worth noticing, with the white cross of St. Andrew on an azure field at the intersection of the moulded panels, all richly painted and gilt. They should notice also the private stair which evidently led up to the gaol above, and the recently discovered piece of wall-frieze decoration in distemper over the fireplace. In all these historical rooms the original stone surface of doorway and fireplace mouldings had been cleaned of paint and the woodwork grained in old oak, so as to harmonise with the fine tapestries which had been or were being cleaned and restored. The ancient furniture also was being gradually restored so far as that was possible.

Restoration of Archery Gate.

Dealing with some points of interest in the precincts, Mr. Oldrieve said the old sanctuary cell, where so recently as within his own memory debtors were incarcerated with certain protection and privileges, was now a store-room for the sergeant warden of the palace. He should like to see the Archery and outer gate restored at the foot of the Canongate, and the palace yard kept private when royalty was in residence. This improvement, with the new church, would revive the memory of old days, and their noble city might perhaps again rejoice in the presence and patronage of the King.

After the party had been shown over the palace and chapel Mr. Blanc, in proposing a vote of thanks to Mr. Oldrieve, said he appreciated Mr. Oldrieve's kindly, thoughtful and prudent words with regard to the abbey. Mr. Oldrieve was not a controversialist, and had proved himself a man of large and open mind. They were not met that day to deal with controversies regarding the restoration of the abbey, but to get information about the palace and abbey, and he was sure that whatever controversy might produce

in the future, they would be very much more enlightened upon what was being spoken and written about than they were before what they had heard and seen that afternoon. It was very satisfactory to know that the old buildings of Scotland were in the careful hands of Mr. Oldrieve, who regarded the buildings with so much interest and reverence.

Mr. Oldrieve, in replying, said all questions of architecture, archæology and kindred subjects were far above considerations of nationality.

A vote of thanks was also accorded Mr. Parsons.

TAYLOR ART SCHOLARSHIP.

THE annual adjudication for the Taylor art scholarship and prizes took place last week in Dublin, when the sum of 105*l.* was awarded in prizes. The judges were Mr. Nathaniel Hone, R.H.A., appointed by the Royal Dublin Society, and Sir Walter Armstrong, appointed by the Governors of the National Gallery of Ireland.

The judges were of opinion that no work sent in was of sufficient merit to warrant the award of the full scholarship of 50*l.* A prize of 30*l.* was awarded to work No. 10, a statuette entitled "Cuchulain," executed by Mr. Edwin McGowan, a student of the Dublin Metropolitan School of Art; a prize of 20*l.* to work No. 1, entitled "Erin," executed by Miss Eileen M. le Poer Trench, a student at the Royal Academy, London; a prize of 10*l.* to work No. 16, entitled "Girl in Pink Dress," executed by Miss Beatrice Moss Elvery; a prize of 10*l.* to work No. 25, entitled "A Portrait," executed by Miss Dorothea C. J. FitzGerald, a student at the Royal Hibernian Academy, Dublin; a prize of 10*l.* to work No. 29, entitled "Suggestion for Panel," executed by Mr. Edwin W. McGowan, a student at the Dublin Metropolitan School of Art; a prize of 10*l.* to work No. 9, a statuette, entitled "Cuchulain," executed by Mr. Albert G. Power, a student at the Dublin Metropolitan School of Art; a prize of 10*l.* to work No. 14, entitled "Macbeth and the Three Witches," executed by Mr. Maddison Branch Fisher; a prize of 5*l.* to work No. 12, entitled "The Fall of the Leaf," executed by Mr. James Carroll, a student at the School of Art, Dundalk.

KELSO ABBEY.

A PAPER was read by Mr. P. Macgregor Chalmers, architect, at a meeting of the Scottish Ecclesiological Society, on "Some Recent Researches in Kelso Abbey." In the course of his paper he said that the portions of the abbey church which had been preserved were at present understood to be a nave about 22 feet square, north and south transepts of smaller dimensions, a central tower and part of a three-aisled choir. If this were a correct interpretation, then the church of Kelso, instead of being one of the greatest of our Mediæval abbey churches, was one of the smallest. The building was then strangely disproportioned to the important part which the abbot and convent played in the nation's history. Many years ago Dr. D. C. Macvail, St. James Terrace, Glasgow, remarked upon the similarity between the remaining portion of Kelso Abbey and Ely Cathedral. Mr. Chalmers appreciated the suggestion, and after measuring and digging over the site of the abbey, was thoroughly convinced that the designer of the Scottish building owed much to his knowledge of Ely, from which he may have come. The remaining fragment of Kelso Abbey then was only the west front—a western tower with north and south transepts used as chapels and a western porch, the whole forming a galilee. The three-aisled building was the nave, extending eastward to a great choir. If the narrow enclosed burial-ground, known as "the aisle," was now accepted as indicating the position and dimensions of the choir, the abbey church emerged as a great transeptal church with a splendid west front with a western tower, a great three-aisled nave of seven bays and a central tower and transepts. It was impossible to determine the plan of the choir, but the suggestion might be offered that the original structure was designed with a semi-circular apse, and that this apse was removed at a later time and the choir lengthened and terminated with a square end. From the evidence which had been adduced they found that the total internal length of the abbey was 302 feet. It ranked as the second longest church in Scotland, being only exceeded in length by the cathedral church of St. Andrews. The design of the west front of Kelso Abbey, of which so

much happily remained, was the finest and most impressive in Scotland, worthy of its great founder and of its splendid history. Its source might with good reason be found in the contemporary design of Ely Cathedral.

TESSERÆ.

Hindu Buildings.

IN a few places in Hindustan are found the remains of ancient buildings which have attracted the attention of Europeans, and have, where there existed a predisposition to wonder and admire, been regarded as proofs of a high civilisation. The entry, says Dr. Robertson, to the Pagoda of Chillambrum is by a stately gate under a pyramid 122 feet in height, built with large stones above 40 feet long and more than 5 feet square, and all covered with plates of copper adorned with an immense variety of figures neatly executed. The whole structure extends 1,332 feet in one direction and 936 in another. Some of the ornamental parts are finished with an elegance entitled to the admiration of the most ingenious artists. Another structure still more remarkable than that of Chillambrum, the Pagoda of Seringham, situated in an island of the river Cauvery, is described by Mr. Orme as composed of seven square enclosures, one within the other, the walls of which are 25 feet high and 4 thick. These enclosures are 350 feet distant from one another, and each has four large gates with a high tower, which are placed one in the middle of each side of the enclosure and opposite to the four cardinal points. The outward wall is near 4 miles in circumference, and its gateway to the south is ornamented with pillars, several of which are single stones 33 feet long and nearly 5 in diameter, and those which form the roof are still larger; in the inmost enclosures are the chapels. In this nothing is described as worthy of regard except the magnitude of the dimensions. The cave of Elephanta, not far from Bombay, is another work which, from its magnitude, has given birth to the supposition of high civilisation among the Hindus. It is a cavity in the side of a mountain, about half-way between its base and summit, of the space of nearly 120 feet square. Pieces of the rock, as is usual in mining, have been left at certain distances supporting the superincumbent matter, and the sight of the whole upon the entrance is grand and striking. It had been applied at an early period to religious purposes, when the pillars were probably fashioned into the sort of regular form they now present, and the figures, with which great part of the inside is covered, were sculptured on the stone.

Rationality of Gothic.

In one point of view Gothic is not only the best but the only rational architecture, as being that which can fit itself most easily to all services, vulgar or noble. Undefined in its slope of roof, height of shaft, breadth of arch, or disposition of ground plan, it can shrink into a turret, expand into a hall, coil into a staircase or spring into a spire with undegraded grace and unexhausted energy; and whenever it finds occasion for change in its form or purpose it submits without the slightest sense of loss either to its unity or majesty—subtle and flexible like a fiery serpent, but ever attentive to the voice of the charmer. And it is one of the chief virtues of the Gothic builders that they never suffered ideas of outside symmetries and consistencies to interfere with the real use and value of what they did. If they wanted a window, they opened one; a room, they added one; a buttress, they built one utterly regardless of any established conventionalities of external appearance, knowing (as indeed it always happened) that such daring interruptions of the formal plan would rather give additional interest to its symmetry than injure it.

Mr. Harcourt, First Commissioner of Works, authorises the statement that Mr. J. E. Ellis, M.P., has undertaken to fill up the panels in the library of the House of Commons with portraits of all the Speakers since 1377, and with mezzotint portraits of all the Prime Ministers since Sir Robert Walpole. Mr. Raphael, M.P., will also give portraits of a long series of Chancellors of the Exchequer, and Mr. Agnew, M.P., is contributing to the new dining-room panels twenty engravings and mezzotint portraits of other eminent statesmen who do not fall under the preceding categories.

NOTES AND COMMENTS.

THE Emperor of AUSTRIA will accord his patronage to the International Congress of Architects which is to be held in Vienna from May 18 to 24, 1908. The programme of subjects to be discussed has yet to be determined. The opening meeting will be in the Hotburg. The Society of Fine Arts will have a meeting in their exhibition building. The Society of Architects and Engineers will organise an excursion on the Danube, with an ascent of Kahlanberg. It is also possible there will be an excursion to Semmering, and it is hoped there will be receptions at the Hôtel de Ville and the Imperial Court. Vienna and its neighbourhood can present so much that is novel to strangers it is to be feared that business will receive but scant attention. For the sake of good-humour all the conclusions desired are likely to be accepted without much discussion.

It seems strange to find the London County Council interfering with the light of two buildings, a church and its school. The Central School of Arts and Crafts and the London Day Training College will, it is alleged, cause serious interference with the lighting of St. John's Church, which is situated at the rear of the premises, and with the lighting of the St. John-the-Evangelist school. The latter building is situated on the opposite side of Fisher Street. An informal claim has been received from the surveyor acting on behalf of the trustees of the church in respect of the damages alleged to have been sustained by the trustees in consequence of the erection of the Council's buildings. Negotiations have been carried on between the surveyor for the property and the Council without any prospect of an agreement being arrived at as to the sum which the Council should pay for alleged damage to light hitherto enjoyed by the church and schools. The education committee have come to the conclusion that certain points relating to compensation and the sum to be paid for a right to light in perpetuity over the yard at the west end of the church should be referred to arbitration, and recommend that Mr. JOHN SLATER should be appointed as sole arbitrator for this purpose.

ILLUSTRATIONS.

COUNTRY HOUSES.

THE innovation of the motor car as a means of locomotion is responsible for much more than the outward demonstration by costume of the equality of the sexes. This, although a great achievement, is as nothing in comparison with the widespread interest which has been aroused in the attention devoted to the study of week-end cottages and the more important and imposing country residence.

The beautiful stretches of country which extend miles away from any railway communication are now, through the advent of the car, within easy reach of those who in former days eschewed country life, except on periodic occasions, because of the difficulties of transit. There is no longer occasion to imagine existence in the most picturesque parts of the Home and South Counties as equivalent to entombment.

At any rate, if living amongst delightful scenery with the ever-varying charms of nature, it is well to know that on a wet day if you want excitement there is your unknown quantity horse-power car ready to swirl you away to the bustle and gaiety of the larger towns. The prejudice of fear as to premature burial can at least be modified by the satisfaction that living in the country under happy circumstances is at any rate a decent interment.

Once the glamour of country life gets home to a man it can never be lost again, and one wonders why one of the greatest delights in life has been so long neglected, and in its stead six weeks' sojourn in a too populous watering-place, domiciled in an overcrowded hotel or

boarding establishment at ruinous prices, has been sufficient to allay the craving for change from town and its never-ending bustle.

If considered financially, there is no doubt that for less money, calculated on the actual capital outlay, it is possible to have a domicile of one's own where many happy and bright week-ends and holidays may be enjoyed, with the distinct advantage of knowing that your health resort is absolutely your own and cannot be raided by noisy trippers.

Let us take, for example, a busy City man, who, by the time Friday evening comes, is exhausted with his efforts of the week, possibly supplemented by City dinners and other ponderous gaieties. As a rule, his sole desire is to escape from them all. If he follows his inclinations and happens to be a family man, it means leaving the olive branches from Friday till Monday as temporary orphans, like ships without rudders or sails, to drift their own sweet way, and thus engendering the utter absence of real domestic home life. Individuals such as we have described, whilst cursing the noisome motor in one breath may welcome it as a blessing in disguise—as a means of preventing the disuniting of a family circle.

We hold no brief for the motor-car itself, but we cannot fail to admit its usefulness in bringing within the reach of many the delights of the simple or country life which to gentlemen a few years ago were an impossibility. Moreover, the car, in our opinion, is destined to prevent the vandalism which inevitably occurs in rural districts by the innovation of railways, and this alone is something which should earn the gratitude of all lovers of nature.

We have thought it a fitting opportunity at this Eastertide to fill our pages with designs for country cottages and residences varying in cost from 350*l.* to 5,000*l.*, believing they would be of interest to many of our readers (motorists and otherwise) and the public generally. The drawings reproduced have been kindly placed at our disposal by Messrs. ERNEST RÜNTZ & FORD, of the Old Church House, Lewes, Sussex, and of 10 Walbrook, London; and although plans are not given the accommodation contained in each house is detailed in the following description:—

Design for a Kent County House.—Billiard hall, library, two other reception-rooms, kitchen, scullery, dairy and usual offices, six bedrooms, dressing-room, bath-rooms, &c.

Well Green, Kingston-by-Lewes.—Hall, library and billiard-room, three reception-rooms, winter garden, kitchen, scullery and domestic offices, ten bedrooms, dressing-rooms, two bath-rooms and offices.

House at Hythe, Kent.—Hall, large reception-room with dining recess, kitchen, scullery and domestic offices, five bedrooms, bath-room, &c.

Cottage Residence, near Lewes, Sussex.—Hall, two reception-rooms, kitchen with scullery recess, domestic offices, three bedrooms and bath-room.

Cottage Residence, Kingston Road, Lewes.—Hall, two reception-rooms, kitchen, scullery and domestic offices, three bedrooms, three attics.

Proposed Cottage Residence for Lewes.—Hall, two reception-rooms, kitchen, scullery and domestic offices, five bedrooms, bath-room, &c.

Entrance Lodge, Well Green by Lewes.—Hall, one reception-room, sitting-room with bed recess, one bedroom, scullery and domestic offices.

Farm House, Tenterden, Kent (remodelled).—Hall, two reception-rooms, servants' hall, kitchen, scullery, dairy and domestic offices, five bedrooms and bath-room, &c.

Cottages, Southover, Sussex.—Hall, three reception-rooms, kitchen, scullery and domestic offices, six bedrooms, bath-room, &c.

House at Crowborough.—Hall, two reception-rooms, kitchen, scullery and offices, eight bedrooms, nursery, dressing-room, bath-room, &c.

Week-end Residence, Hythe.—Hall, two reception-rooms, kitchen, scullery and offices, six bedrooms, bath-room, &c.

House on the South Downs.—Hall, three reception-rooms, billiard-room, kitchen, scullery and offices, large court in rear, six bedrooms, one bedroom with dressing-room, bath-room, &c.

House at Sutton.—Three reception-rooms, billiard hall, kitchen, scullery and offices, eight bedrooms, one dressing-room, &c.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at the premises in Tufton Street, Westminster, Mr. A. Needham Wilson, vice-president, in the chair.

Three new members were elected—Messrs. R. F. Chisholm, W. Charles Steljes and H. M. Pett.

The Chairman proposed a vote of thanks to the Royal Institute of British Architects for its sixteenth annual grant towards the educational scheme of the Association, the motion being carried by acclamation.

House List, 1907-8.

The following gentlemen have been nominated for election to hold office during the next session:—President, Mr. Walter Cave; vice-presidents, Messrs. Arthur Keen and H. Tanner; council (nine to be elected), Messrs. L. Ambler, R. Frank Atkinson, R. S. Balfour, F. D. Clapham, C. Guy Dawber, Theodore Fyfe, K. Gammell, J. S. Gibson, V. Curtis Green, H. A. Hall, F. Lishman, P. W. Lovell, Alan Potter, S. J. Tatchell, Stanley Towse, A. Needham Wilson, E. W. M. Wonnacott and Sir A. Brumwell Thomas; hon. treasurer, Mr. H. T. Hare; editor of the *A.A. Journal*, Mr. Baxter Greig; hon. librarian, Mr. Edwin Gunn; hon. secretaries, Messrs. C. Wontner Smith and Maurice E. Webb; hon. assistant librarians, Messrs. T. W. Watkins and Percy May; hon. solicitor, Mr. W. H. Jamieson.

Mr. EDWIN T. HALL read the following paper, illustrated by plans and lantern slides, entitled:—

Sanatoria for Consumptives.

He said:—The subject of sanatoria for the treatment of those suffering from tuberculosis is one to which great attention is being given throughout the United Kingdom by public authorities, because it is now realised that only by organised effort all over the country can any good be done to stem the advance of this disease. In an association of architectural students we have not to deal with the medical side of the question, still less to treat of the statistics of death. The practical question for us to consider is, given the necessity for sanatoria, how can we best provide the buildings to accommodate the thousands of patients who will have to be treated. It seems to me that the elucidation of this problem will be furthered if we see what has been done by other nations as well as by our own, and so I have endeavoured to collect plans and other particulars of sanatoria in Germany, Sweden, Holland, Switzerland and France, as well as some in England. To Germany is, I think, due the earliest recognition of the duty of the public to stem the growth of tuberculosis, the effect of which is to lower vitality, deteriorate the race; and all over the German Empire there are hospitals and sanatoria in large numbers, subsidised or constructed by various States and by insurance companies, as well as those carried on by private enterprise. I shall exhibit on the screen a map of Germany, showing existing sanatoria, which will more forcibly illustrate what has been done than any words of mine.

Before, however, coming to the display of plans, I will ask you to note that in practically all cases elevated sites are selected with open prospects, broadly speaking towards the south; that shelter from the northern half of the compass is sought, and that extensive areas for exercise are regarded as of great importance. Or, putting it in other terms, dry sites for building at bracing altitudes, aspects with the maximum of sunlight for patients' rooms, protection from chilling winds and sleet and open-air living are regarded as essentials for the reinvigoration of the invalid, the broad prospects are mentally stimulating, widening the interests in life and inculcating hope in the future. In woods as a screen are much appreciated for their exhilarating resinous aroma, and the sandy soil on which they thrive is considered the best on which to be located.

As to the type of building selected for patients, you will recently note that there has been an evolution in this. The earliest sanatoria were ordinary houses; indeed, as is attested, patients were at first treated in what came readiest to hand. Given the essential requisites of location, all that was sought was a place in which patients could sleep; disciplinary treatment was relied upon for the rest. A reputation for the cure being once established the buildings became larger as demands for accommodation increased, and many houses grew into hotels. Of such a type is the sanatorium in the Taunus Mountains, near Frankfurt, and the one at Rhodé, near Cologne. An examination of these plans will show that they have in parts a central corridor, with rooms on each side, common to most hotels. Gradually the

development of the sanatorium has led to a type with a corridor on the north and rooms on one side only, and of these we shall see many examples. Another branch of development has been the aggregation of small houses, first by the natural process of the acquisition of adjacent buildings, and later by a deliberate scheme of constructing small houses on the village principle, with central administrative buildings. The natural aggregation may be seen in Dr. Walther's colony at Nordrach, in the Black Forest; the artificial village may be seen at Montigny, in the North of France; and there are several in America, all for paying patients. A third type is the large hospital with wide verandahs on the south side of wards, where the open-air treatment is practised by placing couches on the verandahs, and on these the patients are reclined for eight or ten hours a day. As an example, I may cite Harlaching, near Munich. Another ramification of the same idea, even with buildings specially erected as sanatoria, has been the construction of what in Germany are called Liegehallen, or reclining halls. These are generally one, but sometimes two-storeyed verandahs enclosed on three sides and open to the south, sometimes attached to, but often entirely separated from the building proper. They are very general in Germany, but I think this arises to a great extent from the design of the sanatorium itself. Most of these buildings on the Continent are of three or more storeys in height, as though the military idea of a barrack was the motive of the design adopted, and as experience taught the managers that the patient must come out of his nightly domicile and could not be going constantly up and down stairs, provision had to be, and was, made for his resting during the day in shelters in the open air.

Hospitals are necessary for any advanced stages of consumption, but sanatoria are more particularly intended for, and are more successful with, early-stage cases of pulmonary tuberculosis. While, therefore, a hospital of three or four storeys may be justified where sites are limited or concentration is considered imperative, sanatoria are better of one or two storeys with verandahs on the ground floor, and with such a type the Liegehallen are, I think, unnecessary. I believe, too, that the medical view is gradually coming to regard the treatment of keeping these patients lying down for many hours at a time as prejudicial to any permanent recovery and conducive to idle habits, and is in favour of regular and regulated exercise and employment, as in every way—physically and morally—better for the patient, and as educating him to become a more useful member of the community. The results obtained on these lines by Dr. Paterson in the Brompton Hospital Sanatorium at Frimley are most satisfactory, and should exercise an influence on treatment elsewhere.

From the sanitary building point of view, the long central corridor, with rooms on both sides, is not to be commended for patients, and even with one corridor sanitarians recommend that there should be ample windows in the outer wall of the corridor with corresponding openings in the walls of the rooms so that air may blow right through. Of the relative merits of one or two storeyed buildings this much may be said—the one storey is the easier and better for patients; the two storeyed, in a large institution, gives better concentration for the staff. The former in a permanent building is the more expensive when foundations, roofs and sanitary apparatus are taken into account.

There are many advocates of the cottage type of sanatoria as tending to greater classification, but that is an argument only of weight where other than first-stage cases are dealt with. Of course the cottage has its advantages for paying patients, because greater privacy can thus be secured.

Much is heard of the chalet type, or wood hut for a single patient, and its trifling cost as compared with a permanent sanatorium, but the two cannot be fairly compared. It would be as reasonable to compare the cost of a soldier's camp of tents or huts with that of a dépôt barrack—the one is temporary, the other permanent.

The wood hut is primitive, and although medical skill may in any individual case produce as good results in the one institution as in the other, the essential difference remains so far as buildings are concerned.

The permanent sanatorium is replete with the latest outcome of civilisation—electricity generating station for lighting and power, hot water and heating installations; an elaborate system of drainage, a laundry full of machinery, engine and boiler-houses, an expensively fitted kitchen and large stores, permanent residences for medical and nursing staff, recreation and dining-rooms, laboratories for research, mortuary and post-mortem rooms. Its bath-rooms, closets

and other similar accessories are, to meet modern requirements, built with glazed bricks; the angles of all rooms are rounded, and other expensive finishings are required by the medical staff. Such an institution is as costly as a private mansion of similar extent would be.

Two essential details in design are (1) that all windows or other openings shall be carried up to the ceiling, so that all parts of the rooms and corridors may be scoured with fresh air; (2) sanitary apparatus should be external to the building. I think with such provision a minimum of 1,000 feet for a single-bed ward is sufficient, and 9 to 10 feet is ample for height in such wards. Single-bed wards should be the rule, but two and three-bed wards are useful. In a hospital where all kinds of cases are taken it is different, and in these wards of eight to twenty beds are found. Floors should not be laid direct on the ground, but should have a ventilated space beneath. In rooms where windows are practically always open no ventilating flues are necessary. In the designs which are exhibited it will be seen there are great varieties of plan. Some buildings are straight; some are T-shaped; some are crescents; some are like an inverted U, the centre straight, the arms opened out at angles from about 110 degs. to 160 degs.; some are cruciform. For moderate-sized sanatoria, say under fifty beds, I should give the preference to the open U plan. Care should be taken not to put too large a number of patients in one block or pavilion, because of the danger from a large fire. If the building is more than one storey in height there should be, as far as practicable, no way by which the vitiated air of the lower storey may ascend to the upper one. I think the time has now come when we may profitably study the large number of buildings which will be shown on the screen. Beginning with Germany, we have Beelitz, near Berlin, designed by Herren Schmieden & Boethke, illustrated by four slides, a large scheme, consisting of twenty main buildings and many smaller ones. The main pavilions are two-storeyed, E-shaped and patients' rooms generally face south. At present accommodation is only provided for 308 patients. Belsig, near Berlin, of which a view and a plan are shown, is for 125 patients. The building illustrated is a long two-storeyed building with axis east and west, the centre being recessed, the whole forming an interesting and picturesque group. Badenweiler, of which you see a view and plan, is four-storeyed and in plan an inverted T, the base, with east and west axis, containing the patients' bedrooms, the perpendicular block containing the public rooms, &c. Meschede, shown by three slides, is again a four-storeyed building with other rooms in the roof. On plan it is a crescent with southern aspect and provides accommodation for 114 men. Albertsberg, designed by Professor Tscharmann, of Dresden, for 121 men, is a large building with a main corridor running east and west, with pavilions at right angles, those on the south side forming single wards of ten beds, each lighted on three sides, with Liegehallen between them. Those on the north side face east and west respectively, and contain on one floor six wards of three beds each, and one at the north-east of six beds. The public rooms are in the centre, the dining-room connecting the main building to another parallel block at the rear. Edmundsthal, designed by Herren M. Haller & H. Geissler, of Hamburg, of which I show the block plan and a plan of one floor of the main building for men. This is roughly H-shaped; the front block has two end pavilions, with windows on three sides, for twenty beds each, connected by a corridor having a Liegehalle on its south side. A large central dining-hall connects this block to a parallel one at the rear, in which are four-bed wards with their own balconies. There are other pavilions for women and children. Schreibershaw, as seen by three slides, is again a lofty building, the rooms in the centre being in single file, those in the side blocks being in double file with a central corridor. Melsungen, another lofty block, forming a very flat crescent, with centre Liegehalle on the upper floor and large dining-hall behind. The view shown on the third slide is very interesting from its extent, and as illustrating my observations regarding prospect. Falkenstein, of which the plans are shown, near Frankfurt, is four storeys high. The nucleus of this sanatorium was a large private house, and its kitchens and offices are in the basement. It has accommodation for 120 paying patients of either sex, with 70 single and 25 two-bed rooms. Its plan has the public rooms in the centre, with an east and west axis, and two wings with axes south-south-east and south-south-west. It will be seen that there is a central corridor with some bedrooms facing

west, north-west and east-north-east. Ruppertsheim, near Konigstein, is three storeys in height, the main building crescent in plan, as seen on the screen. It contains 100 patients' beds, all facing towards the south—nine beds for men, thirty-two for women. There are 6 single-bed wards, 17 four-bed and 18 one-bed wards, in single file south of a well-ventilated corridor. The annexe has further accommodation. The Volksheilstaatskrailung, near Planegg, in Bavaria, designed by Herr Michael Dosch, is for 120 patients. The slide shows that it has a central block with east and west axis and two wings with east-south-east and south-south-west axes. There are thirteen single-bed wards, fourteen of two beds, six of three beds, two of four beds, six of five beds and two of six beds, but more beds are occasionally used to accommodate the maximum number. This is well planned, and is surrounded by pine woods, which, however, rather hem it in. Harlaching, near Munich, designed by Herr Hartwig Egger, is a large hospital for 212 patients. There are six wards, twenty beds, six of twelve and some with single beds. The building is E-shaped on plan, with the axis of the main block east and west, the arms north and south. In the main block the long wards are lighted from north and south, but the south side is shaded by balconies or Liegehallen of solid masonry, 12 feet wide. This hospital is not exclusively for consumption. It will be noted in most of these German sanatoria that the sanitary arrangements are most imperfect. Frequently, water-closets are in the heart of the building, in some cases three being in one room, lighted and ventilated by only one window, and having a door of access to the main passage. Sinks and lavatories are as badly placed.

There are, of course, many sanatoria in Switzerland, but I am only showing by four slides that of Schatzalke. It will be seen this is a long parallelogram of four storeys with a central corridor from end to end. The principal floor is largely appropriated to the public rooms. In Sweden we have at Stockholm the large consumptive hospital designed by Mr. Wickman, by whose courtesy we are enabled to study the drawings kindly sent to me. It is a large building, ultimately to consist of eighteen blocks of buildings, containing in all 1,248 beds. Its architect speaks of it as a hospital for treatment of consumption generally. There are three principal buildings, containing 384 beds in each, and these are in groups of eight to a ward. All wards are in single file, the corridor behind being wide and well ventilated. There are three staircases and there is a cloak-room on the ground floor, a very useful accessory. In another building there are forty beds, wards of two beds each. Two summer pavilions have twenty-eight beds in each. At Osterasens, the sanatorium designed by Mr. F. Lilljakviet consists of one group of buildings, containing 104 patients' beds. In the centre the administration, connected by four bifurcating arms, four parallel pavilions of one storey each, containing twelve 6-bed, two 4-bed, two 2-bed and two 1-bed wards. I venture to think the defect of the plan is that the rear block looks on to the back of the front ones. Halahults Kronopark, designed by Mr. A. B. Kumlien, contains on three floors 102 patients' beds, with a central administration, having its axis north and south, and two wings facing south-east and south-west—one for men, the other for women. There are eighteen 4-bed wards, the others being for two beds and one bed each. In addition to this main building, there are seven other buildings, including two summer pavilions grouped around the front and largest. The next slide shows a design for a fifty-bed pavilion. Its general scheme of plan has a central block with axis east and west, and patients' rooms in wings having their axes east-south-east and west-south-west, a type corresponding to that of Planegg, with Liegehallen beyond the wings. This has eight four-bed wards, eight two-bed and two one-bed wards. Here is another Swedish design for a sanatorium of twenty-five beds with an L-shaped plan. It has four four-bed wards, four two-bed and one one-bed ward. Here we have another for twelve patients. In Holland I am able to show the sanatorium of Oranien-Nassau Oord, designed by Mr. R. Kuipers, which is a semicircle on plan, with rooms in single file and Liegehallen at intervals, forming a part of the design. It provides accommodation for patients on two storeys, the wards facing south, east and west. There are excellent public rooms, the dining-room having windows on all sides. The picturesque grouping is shown in the view. Hoog-Laren, designed by Mr. Ed. Cuypers, of Amsterdam, is a sanatorium for the city of Amsterdam. The building, of which the ground and first floors are shown, is straight

th a central corridor. The ground floor contains the ministration and the patients' recreation rooms. The st floor contains eight single-bed wards, two four-bed ards, two six-bed wards, and two isolation wards of single ds, opening on to a central balcony. The dining saloon d offices are at the rear, and a corridor connects the two ocks.

France.—The Sanatorium d'Agincourt (Oise), designed M. Balouet, stands in 320 acres of grounds, and when mpleted will have 328 beds in two patients' blocks. It ll be seen that it differs in plan from any I have hitherto own. It is, from a hygienic point of view, admirable in rangement. Some of the administrative buildings lie on axis north and south. To the right and left, near the rthern end, are two others, while right and left of the uthern end are the detached patients' buildings. Each of ese has a base with axis east and west, and wings with es south-south-east and south-south-west. Each block ntains 164 beds in four wards of eight beds, twelve ve beds, twelve of three beds, and eighteen of o beds. On the ground floor a galerie de cure, the uivalent of the German Liegehallen, extends all around e southern three sides of the enclosing building. A ss corridor connects the building to the dining-hall. Hauteville (Ain) is a sanatorium for the city of Lyons, at altitude of 3,000 feet, containing 110 beds in three blocks buildings (two storeys high with a basement), disposed an arc of a circle open to the south-west. A special oratory is provided for the study of the disease. The rds are of one, two and three beds each. The baths, ndry, disinfectory, kitchens and dining-rooms are in the ement, a scheme open, I think, to grave objection. ntigny-en-Ostrevent (Nord), designed by Professor Calte of the Pasteur Institute, is of the cottage type. It sists of a series of pavilions or houses, each for two ilies, one of whose members is suffering from tuber- osis. Another block is for contagious cases, and there laboratories, &c.

In England there are three sanatoria of 100 beds each, ich I mention in chronological order.

Heatherside, Frimley, in Surrey, belonging to and built the cost of the Brompton Consumption Hospital, for e free treatment of the poor, designed by me; that t Northwood, Middlesex, belonging to the Northern Con- umption Hospital, similarly for free treatment of the r, the gift of Mr. Rudd, designed by Mr. Wheeler; y the King's Sanatorium at Midhurst, the gift of Sir est Cassel, Bart., for paying patients, designed by Mr. cy Adams. Frimley is two storeyed with a central lk, having its axis east and west, containing the admini- tive offices, public rooms and twelve beds for patients equiring special attention, and there are four radial eilions containing each twenty-two patients' beds. As as I am aware this is the only sanatorium of such a ye. Every ward has a clear and undisturbed view of the n country, and the exterior has been designed to get ay from anything like the appearance of a hospital and aier to suggest a comfortable home. All wards are in gile file, facing south, south-south-east or south-south- wt, with corridors on the northern side and windows in vls and partitions for through currents of air. The end v of each pavilion is projected so as to afford shelter to h others from flanking winds, and there is a wide paved eace to the south, so that patients' beds may be wheeled ou. In lieu of fixed verandahs, to which there are objec- ics, there are rolling sunblinds available for shelter from h sun, but dispensable when there is no sun. The wards ar forty-eight of one bed, eight of two beds and twelve of he beds. The sanitary apparatus is all in detached oers. To the north of the patients' building are grouped h administrative buildings and recreation hall, and it has er sought to give all these the maximum of sunlight and i Northwood.—This is not strictly a sanatorium but a ountry branch of the Mount Vernon Hospital. It provides or 114 patients, fifty-seven of each sex, and there are ten es in most of the wards, but there are twelve single-bed vards. Its plan of the main building has a small base, ang east and west axis for officers, and two wings two teys high, east-south-east and west-south-west, with a ie paved terrace on the south. The administration is to h north. The general design is very pleasing in ap- eance. The King's Sanatorium at Midhurst.—This contains 100 single-bed wards in one large building, three teys in height in the centre, two storeys in the wings. Al the rooms are in single file facing south, south-south- ea and south-south-west, with corridors to the north of

them. The dining-hall, connected by a corridor, is to the north, and the administration and staff homes are in the west wing of this same block, the kitchen, &c., forming the east wing. Mr. Adams was fortunate in having a large sum of money at his disposal, and his open-air chapel is one of several novel and interesting features. Next in size is the Pinewood Sanatorium of sixty-four beds, designed by Mr. Jones for paying patients. It has a central administrative block and two detached two-storeyed wings, each containing thirty-two single-bed wards in single file, facing south-south-east and south-south-west. The dining-rooms, offices, nurses and servants' quarters are to the north.

Design for private sanatorium.—This is a design of my own for a small private sanatorium of twelve beds, prepared for a conspicuous position where economy is not the ruling factor. It contains a small private chapel and adequate staff accommodation for so small a building. Infirmary wards.—It may be interesting to guardians who own large infirmaries to show plans of the consumption wards and provision for open-air treatment on the roofs of four pavilions, designed by me as part of the Camberwell Infirmary, where the medical results obtained with consumptive patients are most satisfactory. I have not treated of the cost of the various sanatoria, because a comparison between cost in various European countries is almost impossible, the rates of wages and price of material differing very largely. In England, again, so much depends upon the character of the institution, as stated in my opening remarks. A cubic basis of cost is again illusory, because manifestly rooms of large cube are cheaper per foot than those of smaller dimensions. The cost per bed is that usually adopted, and this has varied according to the type of design, the scope of the institution, the locality, &c., but for high-class permanent sanatoria the cost has ranged from 350*l.* to 600*l.* per bed, and even to over 1,000*l.* Now it is objected that the cost of all these institutions does not meet the want of sanatoria to be constructed all over the country for the million—in the literal sense—and it has been said that architects have yet to solve the problem of a design that can be carried out for complete institutions of varied size to suit local wants at a cost that shall commend itself to the guardians of the public purse. Huts, on the one hand, are cheap enough, but are very temporary, and the maintenance is considerable. They have also special fire risks in wooded districts. At the other extremity is the solid building. I have been giving a great deal of thought to the solving of the problem, and this has eventuated in the designs which will now be placed upon the screen. The enclosing material, including that for floors, is non-combustible and impervious to rain and vermin. It is made in dry slabs of standard size, which are practically universal in application for the unit.

A sanatorium on these lines, complete with all essential administrative buildings to suit any required number of beds, with drains, fittings to kitchen and laundry and water storage, can be erected on a suitable and reasonably accessible site at a cost of about 85*l.* to 105*l.* per bed, depending on its size. I call the design the standardised expanding sanatorium because if a small institution erected on these lines requires to be extended to meet growing wants, this can be readily accomplished by adding units to the wards and administration. As examples of what may be done are shown one sanatorium of sixteen beds with its appropriate administration to cost about 1,680*l.*, one of thirty-two beds to cost about 3,170*l.*, and one of forty-eight beds to cost about 4,080*l.* Now it should be said at once that these buildings do not pretend to compete with the large permanent sanatoria illustrated and described. Those have their place. They are the central institutions and places of research.

My aim has been different. In June 1905 a profitable discussion of the whole subject took place in London, and Dr. Heron, in the course of his remarks, said:—"All poor consumptives should be sent into sanatoria for their own sakes and for the sake of the healthy community. This could not be done if sanatoria were built costing about 200*l.* to 800*l.* per bed. A sanatorium well equipped for the service of the poor should not cost more than 80*l.* per bed."

I venture to express a hope that my application of his remarks will meet the want there expressed. The buildings suggested have in them nothing in common with the temporary wood hut or galvanised iron buildings with timber construction and cavity walls and roofs. They have solid thin walls, roofs and floors, with no cavities. They have smooth internal surfaces, avoiding the expense of plaster or wood covering. These surfaces may be left bare or may be

distempered or painted. The drainage is taken to be for soiled water only, which, if no sewers are available, would be taken into cesspools, as at Nordrach, and emptied by closed suction-carts. A water supply is assumed of course to be available, either from public mains or a local pure stream or other source. Fireplaces in all rooms are provided to avoid the great expense of an engineering plant. A gas supply is required for heating bath water by geysers and gas or oil may be used for lighting. All the joinery required can be prepared in labour centres and carted on to the site ready for immediate erection.

It will be noted that in all cases the sanatorium is divided into units of eight beds, each unit containing six wards with single beds and one with two beds. With a total of only sixteen beds it is assumed that the medical work will be done by a non-resident physician, the patients being in charge of a qualified matron with nurses. With thirty-two patients, a resident doctor is provided for in addition to the matron, and the nurses and servants are increased. With forty-eight patients quarters are provided for two medical men, a matron and an assistant matron or housekeeper, with a large staff of nurses and servants. A small consulting-room and a waiting-room are also provided in all these sanatoria. All the buildings are one-storeyed. All patients' rooms face south-south-east or south-south-west; all staff rooms face either south or east and west, so that all get ample sunlight. All rooms are approached by corridors or covered ways, protected from rain. All patients' rooms have glass verandah shelters on the southern side. The open-air treatment is fully adopted.

In conclusion, I have to thank the following gentlemen for their great kindness in enabling me to show so many and varied plans, both on the screen and the wall:—Herren Muthesius, of Berlin; A. Schmahl, of Frankfurt; Ed. Cuypers, of Amsterdam; Roelof Kuipers, of Gravenhage; Gustof Wickman, of Stockholm; M. Lucien Bechmann, of Paris; Messrs. F. Wheeler and F. Jones, of London; and Mr. Percy Adams, who has also kindly lent me some of the German slides. I know you will appreciate this courtesy on the part of all, as it has added so much to the interest of the evening.

Colonel GERARD CLARK formally moved a vote of thanks to the author of the paper. He concluded the prices Mr. Hall had quoted for cheap sanatoria did not include furniture.

Mr. HALL said the figures he put forward would only cover the cost of building.

Dr. H. T. BULSTRODE, who seconded the vote of thanks, said he was very sorry that his official capacity as inspector to the Local Government Board prevented him from expressing any decided opinion on the subject under discussion. He had considerable sympathy with the attempts made to provide sanatoria for consumptives on cheaper lines. The reason why Germany was covered by sanatoria was that all working men there earning less than 100l. per annum had to insure against sickness and death. To safeguard their own interests the insurance societies therefore prepared to combat disease, and immediately consumption became manifest the patient was sent away by the societies to one of the sanatoria for treatment. Dr. Bulstrode said it was very generally believed that consumption was on the increase. As a matter of fact, the disease had been dying out in England for the last fifty years, and there was every reason to believe if the decrease in the number of cases continued that in the course of thirty years consumption would be as rare as leprosy.

Dr. LYON said the paper had gone through every possible point in regard to sanatoria, but he wished to make a few remarks which would be of interest to architects. He thought a great deal too much time was spent in selecting sites for such buildings, quoting as an instance the King's Sanatorium at Midhurst. Two years was taken up before the site was chosen, and although they had there the ideal pine trees and the ideal prospect, yet the atmospheric conditions throughout the whole year were not the best for consumptives. In speaking to a society of architects he thought he would be allowed to suggest that in the building of sanatoria architects should understand the doctor's point of view. In that respect they should remember that in an ordinary hospital all cases of phthisis showed better improvement when the patients were exposed on the balconies in the wards; the walls were an obstruction to the air that was necessary for them. Dr. Lyon suggested that the ideal room for consumptive patients would have three open sides so arranged that the amount of air flowing through it could be regulated. As a matter of fact, he

believed nothing more than four posts and a roof was necessary. The size of the room was absolutely a matter of aesthetics. Rooms should be as small as possible, for should be remembered that the bigger the room the higher the cost of the building. There seemed to be a great waste of money in the construction of such buildings, many of which, Dr. Lyon said, could be compared to palaces, where a consumptive person needed no better housing than that afforded by a shed.

Mr. W. A. FORSYTH said he had for some time past been interested in the subject of sanatoria, and he had come to the conclusion that they suffered from too much architecture. A sanatorium did not need to be equipped like an hotel, though perhaps something more than four posts and a roof were necessary.

Colonel GERARD CLARK said there was no doubt that nothing could be done for the poor suffering from consumption until cheap sanatoria were built. It seemed absurd to erect expensive buildings that kept out the air, the germ-essential in the cure of the disease.

The CHAIRMAN, in putting the vote of thanks to a meeting, said it had been interesting to him personally to see that architects were doing their share towards combating the dreadful scourge of consumption. He ventured to think that from the examples they had seen on the screen the foreigners had very little to teach English architects in the planning of sanatoria.

DECAY OF MEDIÆVAL GLASS.*

MEDIÆVAL glass, as you are aware, decays in a very characteristic manner. Very commonly the glass becomes covered with little pits, for all the world like the worm-holes one often sees in an old oak cabinet; the appearance is, however, too well known to you to need description. The reason for this peculiar behaviour seems to have been often speculated upon but rarely inquired into. The pitting of the surface has been likened to smut, and I remember a few years ago, when some of the York windows were undergoing repair, an alarming account of their condition appeared in one of the daily papers, from which it appeared that this pitting was due to a malignant microbe which started a regular disease through the glass. Of course, this probably originated as a practical joke on the part of one of the artists in charge of the restoration; but I have seen suggestions almost wide of the mark put forward quite seriously and quite recently.

So long ago as 1879, however, a paper was contributed to the Society of Antiquaries on this subject, which, although incorrect in many details and somewhat unnecessarily complicated, gives a very complete survey of the matter. It is much to be regretted that the large number of examples collected together in illustration of this paper were not kept together for future reference, and are now only to be judged by the brief descriptions of them there given.

The process of decay in glass is undoubtedly a parallel on a small scale to the change produced on a large scale by the action of time and weather on geological formations, such as chalk and sandstone—a combination of corrosion and internal change. In fact, to study the decay of glass is to study structural geology under the microscope, to put it metaphorically.

In the first place, glass—especially that made with potash, as all Mediæval glass was—is hygroscopic, attracting moisture to its surface, so that except in a very dry climate it is never perfectly dry, but covered with a film of moisture. This water immediately attacks the surface of the glass, extracting the alkalis from the alkaline silicates, and leaving the silica behind. Of course, this action is very slight, but it is quite possible to demonstrate that it takes place by leaving glass even for a few minutes in contact with moisture.

Allow this process to go on unchecked for year after year, century after century, accelerated by actual exposure to rain, frost and snow, by the presence of acids dissolved in the water, and by continual variations of temperature, and you will find that the effect of the action accumulates until the whole surface of the glass gradually becomes corroded away, as you can see it is in this specimen of glass from Sandiacre. The alkalis being entirely extracted

* From the paper by Noel Heaton, B.Sc., read at a meeting of the Society of Arts on March 13.

om the surface the silica is left behind, and in glass exposed to the weather, as this has been, is washed away. However, the glass is not exposed to actual washing—if it is buried for instance—the silica remains on the surface as a thin film, so thin that like the soap bubble it interferes with the light passing through it, producing that iridescence which is so admired on specimens of ancient buried glass. This is only very rarely, however, and under exceptional circumstances, that Mediæval glass becomes iridescent by corrosion, and this is due to the large proportion of lime it contains as compared with the silica and alkali. On the extraction of the alkali by water this lime is left behind with the silica and forms with it a hard insoluble silicate of lime, which adheres to the corroded surface of the glass, forming an opaque scum or patina, as is also well illustrated by this Sandiacre glass. In some cases this is so marked that the glass appears to be covered with a coat of cement. There are instances of this, for example, in some of the glass from the Sainte-Chapelle in the Victoria and Albert Museum, of which by the kindness of the authorities I was recently enabled to make a careful examination.

This scumming of the glass has given rise to the suggestion, put forward by Winston and others, that Mediæval glass was sometimes coated with mortar when first made in order to imitate decay. I submit to you that mine is the more tangible explanation. I have no doubt that the craftsmen of the Middle Ages were capable of such a thing if it occurred to them, but I think we must give them the credit of being ignorant of modern ideas of faking, and of descending to such mean and unworkmanlike tricks.

So much then for the direct corroding effect of the atmosphere on glass. Side by side with this corrosion of the surface we find that exposure to weather and variations of temperature have another indirect influence, which produces internal change. You must remember that glass is not a definite chemical compound, but an indefinite mixture of different silicates.

It is well known that if glass is kept for a length of time at such a temperature that it is just plastic, its constituents tend to separate out into definite compounds, which crystallise out from them their matrix in the same way as any salt will crystallise out from solution, until in the end the glass changes entirely into an opaque, crystalline mass, generally known as Réaumur's porcelain, because Réaumur conceived the idea of utilising this action to produce articles having a general resemblance to porcelain.

Now it sometimes happens that glass commences to crystallise out in this way whilst it is being worked, from various causes affecting the working of the furnace. The glass-blower's name for this state of affairs is that the glass has turned "ambitty." This accident has been turned to account in the production of a glass called ambitty sheet, with which all glass-painters are familiar; it is very extensively used for domestic plain glazing. The peculiar nature of this glass is due to the presence of numerous minute crystals, which can readily be distinguished with a pocket lens, while the microscope reveals the presence of several distinct compounds with definite crystalline forms.

You see, then, that it does not take much to make glass change its constitution, and what happens in a few hours in the glass is hot tends to take place on prolonged exposure to the atmosphere, with this difference, that when the glass is molten its molecules can freely move about, whereas, when it is cold and rigid such freedom of movement is impossible; in consequence the definite formation of crystals cannot take place and the result of the change is different. What happens is this. In the first place molecules of the same kind tend to separate out from the homogeneous mixture and collect round a point, forming a centre of decomposition. The action, in fact, is just the same as the formation of concretions in sedimentary rocks—such as the formation of flint in chalk—and as you find that these concretions generally form round some object which produces a nucleus, so you generally find that if there is any irregularity, such as a scratch on the surface of the glass, decomposition will proceed along the line of that scratch.

Proceeding from this centre we find the glass decomposing into definite compounds in an ever enlarging circle until it reaches a point at which the strain set up in the glass by this molecular movement results in a crack forming around the area of decomposition, and then the whole area comes away, leaving behind it a little hole or pit in the surface of the glass. These pits are more or less circular in shape, but frequently they grow close together and the glass unite, forming an irregular-shaped hole. The pits

vary in size from microscopic dimensions to a quarter of an inch in diameter, but as a general rule they are about the size of a pin's head. The most remarkable case of pitting I have ever seen is that of some of the York windows, fragments of which have been shown to me by Mr. Grylls, where the pits reach a diameter of over five-eighths of an inch. When pits are forming along a scratch they generally develop close together, side by side along it, and the adjacent sides break down, so that in the end we have an excavation in the shape of a long trough.

This I am convinced is the explanation of the pitted surface of old stained glass. That there certainly is a change in the constitution of the glass is shown by the fact that on digesting glass which has begun to decay in this way in hydrochloric acid, it is possible to extract the whole of the alkalies and earths, leaving a skeleton of pure silica in the form of the original glass, whereas fresh glass of the same composition is not attacked by hydrochloric acid to any extent.

Mr. Williams, who first made this experiment, has obtained the same result with certain varieties of asbestos, which is produced by the devitrification of natural volcanic glasses. Glass devitrified by heat is also attacked by hydrochloric acid in the same way.

With the aid of the microscope one can follow out the whole process of the formation of pits in Mediæval glass in the way I have described, and I now put before you several illustrations of the process and its relation to that of devitrification.

Such, then, are the two forces at work on the decay of glass—corrosion without and decomposition within, and of course they act simultaneously. As the pits are formed they are extended by corrosion, forming a resting-place in fact for the water, until eventually the whole fabric of the glass is destroyed.

According to varying circumstances—the position of the window as affecting its degree of exposure—the climate in which it is placed—differences in composition and mechanical state of the glass—we get all sorts of variations in the precise effect of decay in particular instances.

It is a well-recognised fact that glass containing a large proportion of earths, that is, lime, magnesia and alumina, is specially liable to turn ambitty. If, then, I am correct in thinking that the peculiar pitting of Gothic glass is due to a similar change of constitution, one would expect to find it excessively rich in these constituents, and we have already seen that this is, in fact, the case.

On the other hand, glass containing excess of alkali has an equally recognised tendency to go "blind," that is, to become covered with a film, due to corrosion; the surface of water glass, consisting of soda and silica only, to take an extreme case, becomes roughened by corrosion in a few days. Finally, glass with a high content of silica, with earth and alkali equally balanced, may be looked upon as highly resistant in both directions. It is such glasses which decay slowly and with little tendency to devitrification, the surface being merely etched by corrosion, leaving the large proportion of silica in a coherent thin film, producing gorgeous effects of iridescence.

Of course one must not overlook the fact that apart from composition the mechanical nature of the glass has an influence on decay. Just as a geological formation of regular and uniform nature resists corrosion better than one of varying hardness and character, so a glass of uniform texture resists decay better than one of the same composition but full of variations.

Now I pass on to say a few words about the "colour," as we call it, used to paint on the glass in Mediæval times. If one is struck by the fact that the older the glass is the freer it seems to be from decay, how much more is this the case with the colour? On making a careful examination of the Sainte-Chapelle glass, to which I have already alluded, I found that the painting of the original glass was as sound and perfect as when first put on early in the thirteenth century. Here and there, however, were pieces where the paint had either gone entirely or showed unmistakable signs of decay; but in every single instance careful examination revealed the fact that the glass was an insertion of later work. The most glaring case of this is one of the heads, which no one who has seen this glass can have failed to notice as being later in date than the rest of the glass. Half the paint on this head has already gone, and I would undertake to wipe the glass clean by rubbing it with a damp rag. Possibly the explanation of this may be that all the bad work of the thirteenth century has already disappeared and only the best remains, but there is no doubt

that the Mediæval craftsmen could make their colour so as to last remarkably well.

In this respect, however, I consider they are equalled by the best colours of to-day. But that is not all; there is a peculiar texture about the old colour, a vigour in the very finest lines, and yet a general feeling of warmth and transparency which one has great difficulty in producing to one's satisfaction. Any hint one gets as to the method of production of this colour therefore demands careful investigation.

Now on looking through the various Exchequer accounts, many of which are extant, connected with the glazing of church windows, one is struck by the constant reference to a material called "geet," bought for the purpose of painting the glass—"Geet pro pictura vitri." The actual nature of this material does not seem to have been thoroughly inquired into, and my attention having been drawn to it in course of conversation with Mr. C. W. Whall, I thought an investigation of the matter might possibly prove to be of value.

I now want to put before you what is actually known about this material called "geet" and my conclusions regarding it, and I will begin by showing you a selection of extracts from the accounts I have mentioned:—

"Pro stangno Get et operacione fenestrarum et stipendiis de verrers usque festum sancti Michaelis 32s. 9³/₄d. Pro verre empt., 5¹/₂ os. 2¹/₄d." (Norwich Sacrist's Roll, A.D. 1274-5).

"Die Lunæ ix^o die Julii. Johanni-Geddyng pro vj libris de Geet emptis pro pictura vitri vjs. pro cervisia emptā tam pro congelacione vitri quam pro mensis vitriariorum lavandis viij¹/₂d. Eidem pro lymatura argenti emptā pro pictura vitri viij¹/₂d. Willelmo de Newerc pro cc. Talshid emptis pro vitro anellando et frangendo pretium centenæ vijs.—xiijs. Johanni Madfray pro j. libra de Gum arebik emptā pro pictura vitri iij¹/₂d. Ricardo Thorp pro xv. centenis vitri diversi coloris pretium centenæ xls.—xxx¹/₂l. In portagio et batillagio ejusdem vitri de Temesestreete usque Westmonasterium xd.

"Summa empcionum xxx¹/₂l. ijs. vd."

(Exchequer Accounts, St. George's Chapel, Windsor, A.D. 1351-2.)

"In xij peys vitri diversi coloris empt', xij s. In geet et lymail empt' ad vitrum, iij s. iij d." (Ely Cathedral, A.D. 1357.)

Similar references to "geet" appear in the accounts for the glazing of the windows of St. Stephen's Chapel, Westminster, which Brayley and Britton sum up thus:—

"Large quantities of stained glass of various colours, as blue, red, azure and white, were used in glazing the windows; and silver filings, geet [probably jet] and arment [orpiment or yellow arsenic], are mentioned among the materials procured for painting on the glass."—"History of the Palace of Westminster," p. 180.

To come to a later date, we have the "Booke of Sundry Draughtes," by Walter Gedde, 1615, wherein we read:—

"The Receipts, for the true making of Colours for Glasse. To make a faire Blacke. Take the Scales of Iron & Copper, of each a like waight, & put it in a cleane vessell that will indure the fire, till they be red hotte, then take halfe as much leate, and stamp them into smal pouder, then mix them with Gumwater, & grind them fine vpon a painters stone and so drawe with it vpon your glasse."

And again:—

"Carnation.—Take two ounces of Tyn-glas, and six ounces of leat, half an ounce of gum, ten ounces of red Ocker, and grind them very well together, and so use it."

"To Make a Grey couller, take Iron scales, a little Cristall, and sum smale quantitie of leate, grind these well together upon a painters stone, the more leate ye take, the sadder the coullour will be, and likewise the more christall you put to it the lighter."

From the middle of the thirteenth century to the beginning of the seventeenth century we find this substance "geet" in use. It is true, however, that the treatise of Theophilus, which would be somewhat earlier than any of the dates quoted, makes no reference to it, but states that the colour is to be made of copper scales, green glass and "Greek sapphire" in equal proportions. (Book II. Chapter xix.)

The extracts quoted undoubtedly convey the impression that "geet" must be taken to mean jet—an impression strengthened by the fact that the word "geet" is constantly used by Mediæval writers, wherefrom the context jet is undoubtedly referred to. Hence we find that from Brayley

and Britton to the present day it has been taken for granted that the Mediæval glass painter painted his glass with ground jet. But the point is not the name they gave to their material, but what it was. Was this stuff they called jet what we mean by jet at the present day? On the face of it, to a practical man it seems improbable. Let me give you a short account of jet condensed from various authorities.

The name "jet" is supposed to be a corruption of "gagates," the name given to this substance by Pliny, who described it as found near the mouth of the river Gagas. The hardest and therefore best jet is found principally at Whitby and Robin Hood's Bay.

Its use appears to have been known in this country from a remote period. It frequently occurs amongst the relics found in ancient British barrows and in Roman and Saxon tombs. It is also frequently mentioned in Mediæval wills and other documents down to the present day.

In composition it resembles cannel coal, but it is harder, blacker, and takes a brighter polish, and, like coal, consists mainly of hydrogen and carbon. It readily ignites and burns when heated, and on dry distillation yields a quantity of dark oil.

Jet, therefore, does not sound a very promising material for use in glass painting; but in such a case as this, whatever theoretical conclusion one may come to, the only really reliable argument is practical experiment. I therefore decided to see what sort of glass colour one could prepare from jet. For this purpose I obtained a number of specimens from various sources, namely:—

1. A lady's hat-pin, purchased from the street vendor of jet at Whitby.
2. Some specimens of jet collected from the cliffs at Whitby by Dr. Andrea.
3. A large piece of unworked jet, obtained from a merchant at Whitby.
4. A brooch and other articles made of jet.
5. Some fragments of Roman jet from Silchester.
6. A number of jet beads.

I made up some pigment with samples of all these different jets according to the recipe given by Walter Gedde; the result obtained was just as I expected in theory. On putting the glass painted with this "faire black" in the kiln the colour ignited and burnt away like tinder, leaving a slight residue behind which could be readily rubbed off the glass with the finger; jet as a material for painting on glass is perfectly useless.

But one may assume that for "geet" we should read the ashes of jet—the residue left after burning, in the same way as wood ashes were used for making glass. In order to test this I made analyses of these specimens of jet, of which the following may be regarded as typical:—

Moisture	1'56 per cent.
Volatile matter	66'15 "
Coke	29'96 "
	97'67
Ash	2'33
	100'00

This ash contained the following:—

Silica, titania, &c.	40'6 per cent.
Iron, alumina and manganese	45'5 "
Lime and magnesia	4'8 "
Alkali	nil. "
Undetermined	9'1 "
	100'0

This is the analysis of specimen No. 3, but the other (with the exception of No. 6, which I shall refer to shortly) yielded similar results. No. 5, for example, gave the following figures:—

Moisture	0'02 per cent.
Volatile matter and coke	97'85 "
Ash	2'13 "
	100'00

Now I put it to you—is it probable that a hundredweight of a material of sufficient value to rank as a minor article of jewellery would be destroyed in order to obtain a couple of pounds or so of material for painting on glass, especially when you consider that the material so obtained would be quite useless for this purpose? As you see, it contains alkali and over 50 per cent. of bases, and would require to fuse it a temperature at which the hardest glass would run like water.

But now I must tell you something—the matter might have ended there. I might have robbed the antiquaries of their beloved jet and left them nothing in its place, only it happened that amongst the specimens of jet I collected from my friends was a necklace of beads supposed to be of finest jet; when I ground up these beads with iron oxide in the same way as the others and put a slip of glass painted with the mixture into the kiln, instead of burning away as I have described, it melted and fired into the glass just as an ordinary enamel colour does, so that my glass came out painted a "faire black." Unfortunately, this was a forgery; it was not jet at all. Analysis showed that it was just an artificial jet made of black glass.

But starting with this material as a basis, and altering the composition somewhat, I could produce a colour which exactly matched the old thirteenth-century colour, and passed all the tests I could devise for permanency. Therefore I make the suggestion that the explanation of "geet" is this, that a glass resembling jet in appearance was prepared especially as a flux for painting on glass, which, mixed with the oxides of iron and copper, yielded the fusible pigment with which the Mediæval glass was painted.

I admit that I have no direct documentary evidence of this. I have searched the records in vain for the slightest hint as to how or where the substance called geet was obtained, but I can mention several points in support of my contention. In the first place, as far back as Roman times we find articles made of black glass and obsidian in imitation of jet. For instance, when I came to examine the fragments of Roman jet from Silchester that I have referred to as being amongst the specimens examined, I found that only one piece was true jet, the others being composed of a dark-green glass with which I could make a glass-painter's colour in the same way as with the artificial jet I have just described. The two materials were, however, so identical in appearance that it was not until I was breaking them up preparatory to analysis that I discovered the difference.

One can readily imagine—of course this is pure imagination—some Mediæval worker making the discovery that a glass made in imitation of jet formed an excellent material for painting on glass, just as I discovered those imitation jet beads. This supposition is the more likely, however, because we have every reason to believe that in the very early days the crafts of stained glass, enamelling and working in gold and precious stones were carried on side by side.

Having once been discovered, what more likely than that the artificial jet should be specially prepared for the glass painters and receive the technical name of "jet"? As a parallel case I would mention blacklead. As far back as I have been able to trace one finds this form of carbon referred to as though it were a variety of lead. Are we then to imagine that antiquaries of the twenty-sixth century, diving amongst the records of to-day, will argue that it was the custom of the period to cover our firegrates with a film of lead because they read of them being coated with blacklead?

Another possible explanation is, that this substance was called jet in the same way as the various coloured glasses were often called by the name of the precious stone they most nearly resembled. For instance, we read in Theophilus—"Tabulas saphiri pretiosas, ac satis utiles in tenebris," tabulas saphiri meaning undoubtedly sheets of green glass.

Then you may perhaps have noticed in the recipes given by Gedde the use of the word "crystal." To make a grey colour he says, "Take iron scales, a little cristall and a small quantitie of Ieate." Now no one ever imagines that "cristall" means quartz, or anything else but white glass; why therefore can we not read for "Ieate" black glass?

One other piece of evidence I can offer you, which is this. If you grind up oxide of iron with a soft white glass, which is a very common way of making glass-painters' colours, the fired glass shows under the microscope a mass of opaque black spots in a colourless matrix.

If, however, you examine Mediæval "colour" under the microscope it appears as a mass of black spots in a deep brown matrix. This also is the appearance presented under the microscope by the colour made up with black glass in the way I have just described; a colour which I have taken the liberty of calling by the name of "geet."

And that, I think, brings me to the end of what I have to say, and I must not detain you longer. Some of you may perhaps question the practical utility of such inquiries as

I have discussed to-night; to such I would say—much has been done of late to revive the craft of stained glass and place it once more in the dignified position it held in Mediæval times, but more remains to be done. The bulk of the work must of course rest with the craftsman, on whom lies the responsibility for æsthetic conception. To such a position I cannot aspire, but the maker of materials can perhaps in a humbler way do his part. It is from this point of view that I have endeavoured to throw some light on the technical problems which face the glass painter, feeling that it is a privilege to be able to be of some use in such a cause.

And now I have only left the pleasant duty of acknowledging the help I have received from so many quarters in preparing this paper. My old friend Mr. Percy Williams really did most of the hard work for me; but it is largely due to the kindly encouragement and assistance of Mr. W. H. St. John Hope that I have been enabled to carry out these inquiries, the results of which I now lay before you.

CHICHESTER GUILDHALL.

A LOCAL guide book, which a visitor found useful in directing his steps about the exceedingly interesting city of Chichester, says of the Priory Park that the castle which stood there "was destroyed in the reign of Stephen 1216," and that the ground was given in 1233 to the Grey Friars of the Order of St. Francis, who erected on it a monastery. "The old building," the account continues, "in the centre of the park is a portion of the monastery church. It is now the town hall of the city, but is never used except on the occasion of elections for the county. There is a fine east window of five lancets, but the interior is only remarkable as displaying the vandalism of the civic authorities who fitted it up as a Court of Justice, for which purpose it was formerly used."

A building with such a varied history, says a correspondent of the *Sussex Daily News*, was thought worthy of inspection, and the pleasant little park was soon reached. But apparently there was some mistake besides that of the date assigned to the reign of King Stephen. Judging from internal evidence the building was rapidly falling into ruin, and any sign about the structure of the business appertaining to the town hall of the humblest place in the kingdom, much less a city of the importance, dignity and activity of Chichester, was conspicuous by its absence.

After some trouble, admission was gained to the interior, and there the puzzle became still more complex. Evidently it had been a church. There was "the fine east window of five lancets," and there also were the sedilia, or seats for the officiating priests, together with other evidences of an ancient and, probably at one period, a very beautiful structure of the Early English and Decorated periods of architecture. So the date and original purpose of the building were quite correct; there was, however, no sign of either the "Town Hall" or the "Court of Justice."

But whether an ecclesiastical or a civic relic, this once fine hall, more than 80 feet long, 31 feet broad and 42 feet high, was in a lamentable state of disrepair; and it seemed a matter for intense regret that another should be added to the many links with the past which Sussex has allowed in comparatively recent times to become broken and ultimately disappear. Some of the original work, and especially the east window, is exceedingly good. It is little wonder, however, that a handbook to Chichester Cathedral, one of a well-known series on the cathedrals of the country, makes no mention of the Guildhall in its list of "ancient buildings in the city."

For explanation as to its present usage reference was made to a local directory, which said "The old Guildhall, and the way thereto, belongs to the Corporation." This only added to the wonder why so valuable a relic of the past, and a building so capable of becoming an object of utility as well as of general interest, was not kept in a suitable state of repair.

Interest in archæology led the visitor to seek for information respecting a building which appeared to have played many parts in the history of the city and the county, and the following is a summary of his search:—

1087.—A castle erected by Montgomery, Earl of Shrewsbury and Arundel, occupied the site.

1208.—The castle was seized by King John and ordered to be demolished, but the order was not carried into effect.

1216.—Writ issued by Henry II. to William, Earl of

Arundel, to forthwith destroy "the castle, with its appurtenances."

1233.—The site was given to the Grey Friars or Friars Minor for a monastery.

1270.—The choir (the present guildhall) of the monastery church completed about this date. The nave had already been built.

1541.—The monastery dissolved and granted to the mayor and citizens of Chichester, "by whom it was let on lease, except the chapel, which they converted into a shire or town hall."

1804.—The property was still held by leasehold tenure under the Mayor and Corporation. "The term of lease," says the historian, is "999 years, but when commencing I have not found;" and, he rightly adds, "nor is it material."

1833.—A local guide of this date records that the guildhall was then used for the trial of offences committed within the jurisdiction of the Mayor; for the Mayor's Court for the trial of issues to any amount between subject and subject; for the Court of Quarter Sessions for the western division of the county; and as the county court for the same division.

Probably some one acquainted with the history of the city would be able to fill in the more material blanks in this short sketch, especially as to its actual use as a guildhall, and as a shire or a town hall.

For more than 170 years Chichester has been provided with a separate institution for civic purposes in the building known as the Council house, but for a long period the name of guildhall appears to have been associated with the older structure. Guilds, or corporations for mutual aid and protection of interests, date back to much earlier times in Chichester than even the building now under consideration. The oldest existing charter of the city was granted by King Stephen (1135-54), "that my burgesses of Chichester do well, and honourably, and quietly hold and enjoy their customs and regulations of their borough and Merchants' Guild as they did in the times of King William, my grandfather;" and the charter granted by Stephen's successor declared that "no person shall sell cloth by retail within the city of Chichester unless he be of the Merchants' Guild."

It was customary for guilds to have a common hall of assembly, and, according to a charter of Richard II. (1394), "the Gilden Hall" of Chichester appears to have been "between the cathedral cemetery and South Street." By that document the said hall was granted to the vicars choral to found their college. There is also a record that the ancient parish of St. Peter hard by was called "St. Peter's juxta Gilden Hall."

Possibly the necessity for a guildhall changed its character or lapsed altogether in the previous reign, when Edward III. made Chichester one of the seven cities in the kingdom with a "Company of the Merchants of the Staple," whose chief purpose was "to collect all that could be spared of the produce of the district in wool, lead and tin, and deposit them in the city that foreign merchants might know where to find them." So important a body, exempt as it was from the jurisdiction of the ordinary magistrates, would most probably have had a hall of its own.

To what extent the building in Priory Park has a right to the name of guildhall in the original signification of the term is not quite clear; but there is no doubt that its popular if not official designation as the guild or town hall of the city goes back a long way. The use of the Priory Park building as the actual meeting-place of the guilds is not, however, of great importance. It is the danger of so interesting a piece of architecture and evidence of social change falling into decay instead of being utilised for some suitable purpose which seems to be so much a matter for regret.



Ailsa Craig.

SIR,—Please excuse me for drawing your attention to an error in this week's (22nd) issue of *The Architect*. On page 185 you say, "Ailsa Craig is a familiar object to those who travel from London to Leith by sea." As Ailsa Craig is in the Firth of Clyde, on the West Coast of Scotland, it is impossible to see it from the East Coast, unless by very

powerful eyes. No doubt you have been thinking of the Bass Rock. Trusting you are not offended at my drawing your attention to this,—I am, yours sincerely,

WM. HALLEY (native of Glasgow).

15 Burton Road, Brixton, S.W.

GENERAL.

A Memorial Tablet is to be erected by the London County Council on No. 39 Rodney Street, Pentonville, to commemorate the residence of James Mill and his son John Stuart Mill.

M. Ch. Widor has been elected a member of the Berlin Academy of Fine Arts.

The Students selected to compete in the final stage for the Prix de Rome in architecture are MM. Abella, Boursois, Deslandres, Janin, Madeline, Mahieu, Nicot, Pons, Tulasne and Villemot.

The Prix Achille Leclère was not awarded last year by the Académie des Beaux-Arts. Two prizes of 1,000 francs each were available this year. The subject selected was a design for a central station on the Métropolitain Railway Paris. On Saturday the winners were declared to be M. Boussois and M. Albert Bray, both pupils of M. Pascal.

The Prix Duc, of the value of 3,700 francs, has been awarded to M. F. Débat for his design, "A Temple of Peace."

The Commissaire of Police for the quarter of the Champs Elysées, Paris, has removed a painting entitled *Lutte Russe Japonaise*, by a Polish artist, from the exhibition of the "Indépendants," on account of the protests of the public.

The Royal Irish Academy have received during the past year several donations to the library. They included a collection of coloured drawings, architectural and landscape illustrative of Ireland, by the late Sir Henry Dryden, Bart. of Canons-Ashby, Northamptonshire, presented to the Academy by Miss Alice Dryden. A volume of antiquarian sketches, by the late W. F. Wakeman, was presented by Mr. Thomas Manly Deane, A.R.H.A.

The Court of Common Council have approved a proposal that expert advice be taken relative to the suggested rebuilding of Southwark Bridge out of the funds of the Bridge House Estates.

The Council of the Royal Academy consists this year of Professor Herkomer, Messrs. T. G. Jackson, B. W. Leader Seymour Lucas, David Murray, W. W. Oules, Britton Riviere, J. S. Sargent, Solomon J. Solomon and J. M. Swan. These, with the President, form the Chantrey Trustees. The hangers for the forthcoming show at Burlington House are likely to include Professor Herkomer and Messrs. Leader, Lucas, Riviere and Solomon.

A Meeting of the archdeacons and rural deans of the diocese of Llandaff was held last week at Cardiff for the purpose of electing two surveyors of dilapidations. Mr. George E. Halliday, of Cardiff, was reappointed for the archdeaconry of Llandaff, and Mr. H. J. Griggs, Newport, for the archdeaconry of Monmouth. They will hold office for three years.

A Report by Mr. Whitie, the architect for the new Mitchell library, Glasgow, states that in order to secure a stable foundation at the corner of North Street and Ken Road, it will be necessary to resort to piling or to put down an extensive system of grillage, involving an additional expenditure. The libraries committee have approved of this.

The Corporation of High Wycombe have accepted an offer from the Ecclesiastical Commissioners, lords of the ancient manor of Bassetsbury, to convey as an open space to the Corporation Keep Hill, which was formerly held as an ancient British fort. The acreage of the land is sufficient to provide for the enjoyment and recreation of a large population.

Mr. Runciman has stated that it is proposed to rebuild the whole of the Regent Street Quadrant as leases fall in on the same design as the building now being erected. The designs are intended to provide for the rebuilding of the whole of the Quadrant as one consistent scheme. The plans were most carefully considered both by the local Government and by the present Government before they were agreed to, and it would be too late now, when a part of the scheme has been almost carried out, to make an alteration in them even if it could be shown to be desirable.

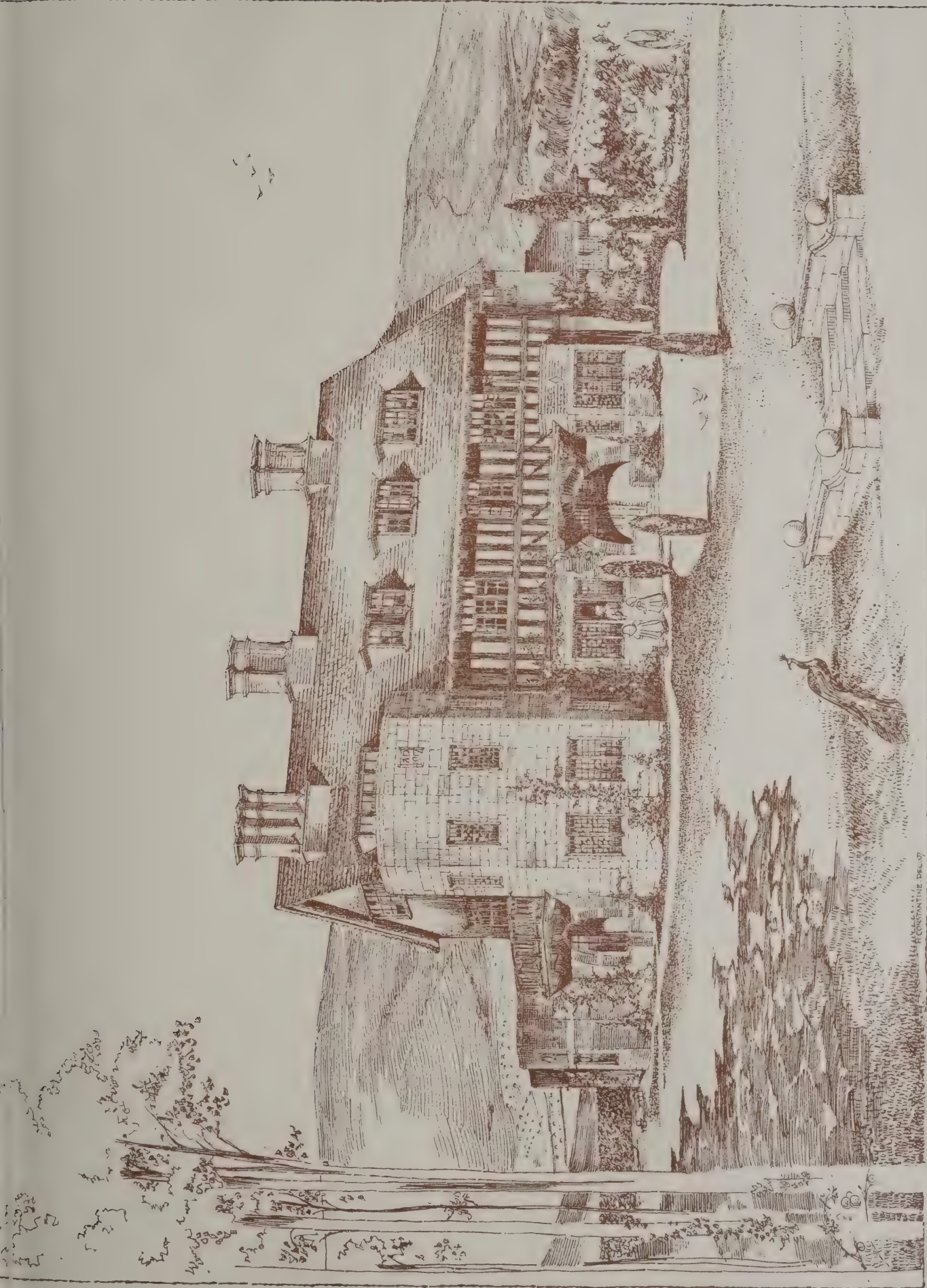


PHOTO-LITHO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, PETER LANE, E.C.

"WELL GREEN," KINGSTON BY LEWES.

Messrs. ERNEST RUNTZ & FORD, Architects.



A. C. CONSTANTINE
del. '07

PHOTO-LITHO SPRAGUE & CO. L^Y 456 EAST HARDING STREET, PETER LANE, E. C.

DESIGN FOR A KENT COUNTY HOUSE.

Messrs. ERNEST RUNTZ & FORD, Architects.



DESIGN FOR HOUSE ON THE SOUTH DOWNS.



HOUSE AT SUTTON, SURREY.

Messrs. ERNEST RUNTZ & FORD, Architects.



DESIGN FOR MUSEUM AT LEWES
FOR THE SUSSEX ARCHÆOLOGICAL SOCIETY.
Messrs. ERNEST RUNTZ & FORD, Architects.



HOUSE AT HYTHE, KENT (CASTLE SCENE ESTATE).



COTTAGE RESIDENCE, NEAR LEWES, SUSSEX.



COTTAGE RESIDENCE, KINGSTON ROAD, LEWES.



PROPOSED COTTAGE RESIDENCE FOR LEWES.



ENTRANCE LODGE, "WELL GREEN," BY LEWES.

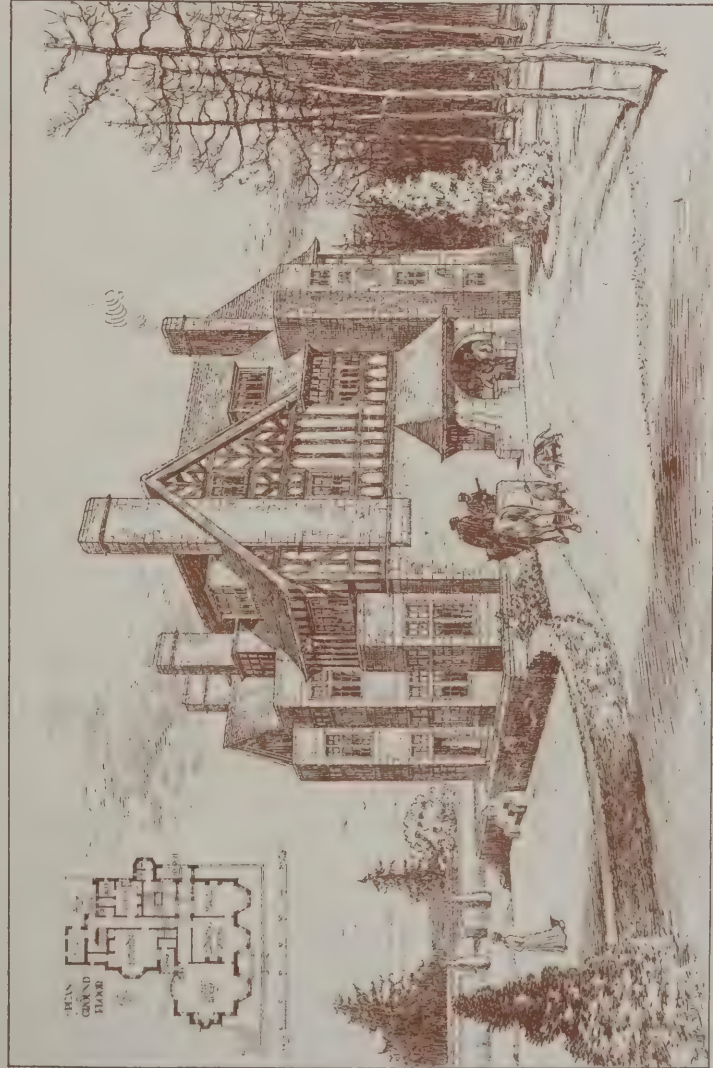


FARM HOUSE, TENTERDEN, KENT (REMODELLED).

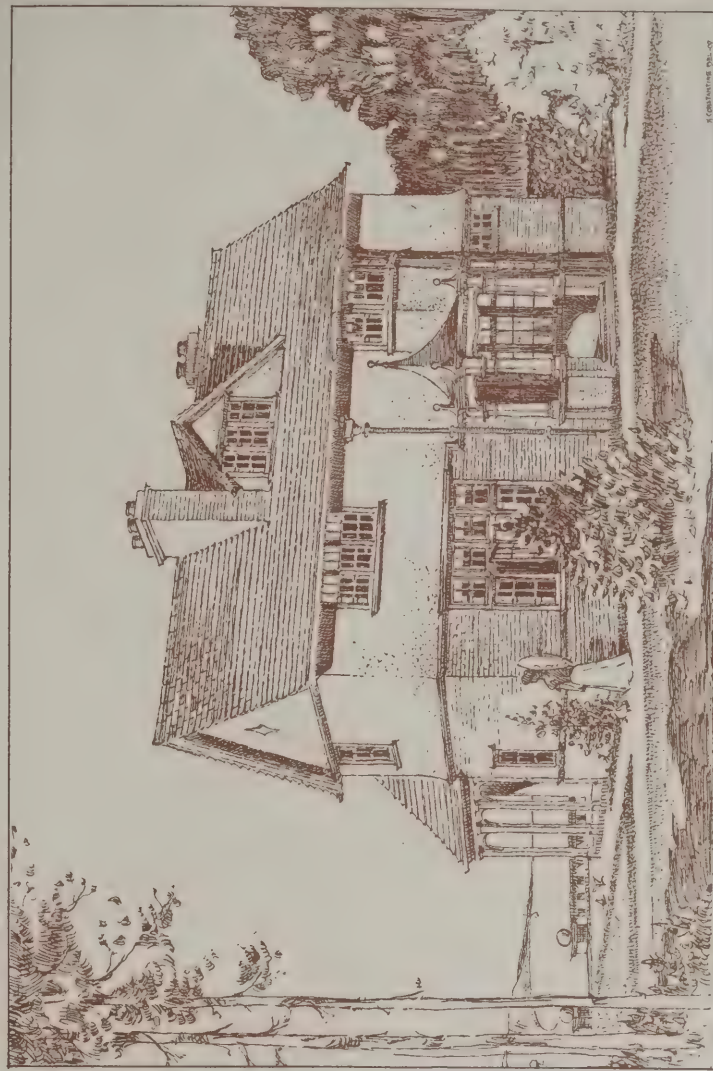




DESIGN FOR COTTAGES, SOUTHOVER, SUSSEX.



DESIGN FOR HOUSE AT CROWBOROUGH, SUSSEX.



DESIGN FOR WEEK-END RESIDENCE, CASTLE SCENE ESTATE,
HYTHE, KENT.

The Architect.

THE WEEK.

IMMUEL KANT, whose name is still pronounced with reverence by German metaphysicians, or, in other words, by the greater part of his countrymen, was a man of decorum and regularity in his death as in his life. His final words in 1804, "Es ist gut," might be said to be a prophecy of all he accomplished. The cloud which was hovering near his house in Königsberg was, according to a poor soldier, the soul of the philosopher on its way homewards, and the remark was approved by his sons and students. His burial was orderly as his life. Sixteen days were allowed for people to do homage to the remains, then there was a public funeral and the coffin was deposited in the vault reserved for the professors in the church of the University. After a few years it was placed apart and not was railed. But in the years which followed, when it was too engrossed with struggling for existence against the French to think about the coffin and its contents, and when about eighty years after KANT's death it was resolved to do him reverence, the problem of the whereabouts of his remains was as uncertain as those discussed in his lectures. All that can be said is that he was buried somewhere in the little church known as the "Stoa Kantiana." At the same time the people of Königsberg consider it is inevitable to be unable to point out a memorial of the philosopher to strangers. There is a tomb of KANT close to the palace, but it is little more than a reproduction of one of the subsidiary figures of the monument of FREDERICK THE GREAT in Berlin. It was proposed to place the memorial in a prominent position in the cathedral, where it would suggest to the extent of equality with Duke ALBERT I., the founder of the University.

It is said to be said that one of the reasons which led to the Haussmannising of Paris was to find employment for workmen who might, if they were at leisure, employ themselves to the danger of the Empire. The decision to build new schools in the city might have been inspired by a similar policy. On Friday last it was proposed in the Municipal Council to raise a loan of seventy-seven millions of francs, or over 3,000,000 sterling, for the building of schools. Having suppressed the Congregationalists, it is necessary to find new buildings as substitutes for those in which they taught. The schools and other buildings belonging to the Orders have been appropriated in a way which does not testify to the financial wisdom of the French rulers, but possibly it is desirable to suggest that the schools were not adapted to the training of the citizens of the future. There was opposition to the proposal. The loan will be repaid as follows:—For infant schools 60,340,000 francs, for higher grade schools 7,730,000 francs, for two "lycées" for girls 10,505,000 francs. The Government has only a first instalment of the sums which will be repaid in Paris.

The Panthéon of Paris has been subjected to experiments which would have amazed SOUFFLOT, the architect. Alternately necropolis and church, M. DUJARDIN-BEAUMETZ, the Under-Secretary of Fine Arts, now is making it "le Temple des Apothéoses." As an experiment, he proposes to hold fêtes which will connect the dead men to whom the building is dedicated with the modern life of France. With that intention professors of the Conservatoire have been invited to prepare hymns which will be suitable to the occasion. M. NENOT, the architect who has charge of the Panthéon, is now engaged in preparing a scheme of decoration for one of the fêtes. A commission has been given to M. SEGOFFIN to prepare a memorial of

VOLTAIRE, and to M. BARTHOLOMÉ for one of ROUSSEAU. Several groups of sculpture are in hand, and M. DUJARDIN-BEAUMETZ hopes that some artist of genius will be inspired to create as the central adornment a great group which will be a glorification of France, and as large as so lofty a temple will allow without appearing to diminish the proportions of the shrine.

THERE can be no question that one of the most effectual ways of making colonists feel there are bonds between them and the mother-country would be by a reduction of postal rates. The Post Office is, however, a most profitable department, and there are objections to any diminution of its receipts. By degrees we may expect to have the reform carried out. But in one sense British literature of the present day, as found in periodicals and newspapers, is an influence hardly less potent than private letters in connecting this country with the Colonies. Yet there can be no doubt that the charge for sending publications abroad is not only excessive, but there are risks of non-delivery which are insufficiently considered. Any excess of weight, which is determined only by the authorities, is enough to prevent the receipt of a newspaper, and in that way an injury is inflicted the origin of which is not easily traced. The Colonial Postage Reform committee are endeavouring to obtain a reduction of postage rates, for magazines and newspapers especially, and their efforts deserve the support of all who desire to see the Colonies and Great Britain knit still closer.

THE city of Buenos Ayres is to be transformed, and the Argentine Government have prevailed with the Municipal Council of Paris to allow M. BOUVARD, the Director of the Architectural Department, to become the principal adviser for the improvement. He set out on his journey last week, and is accompanied by two architects—M. FAURE-DUFARRE and M. DELATTRE. M. BOUVARD can only remain a few weeks in Buenos Ayres, but his visit will be repeated from time to time until the works are accomplished. In 1910 the centenary of the Republic will be signalled by an international exhibition, for which M. BOUVARD's experience in the organisation of the Paris Exhibition of 1900 will be utilised. It is natural for Frenchmen to be gratified by the selection of M. BOUVARD for so important a commission. But when it is desired to have a beautiful city, where is there a better model than Paris, the amenity of which is in M. BOUVARD's charge? It is also gratifying for Frenchmen to know that the Mexican Government have solicited a Frenchman to design important buildings, and the new University of California is also being carried out by another Frenchman.

READERS of "The Forty-Five Guardsmen" will remember the scene of the execution of SALCÈDE in the Place de la Grève. At the last moment he recognised the Duchesse DE MONTPENSIER, who wore a page's uniform. Afraid of discovery she rushed towards the door of a house at the corner of the Rue de Mouton, which closed behind her, and no one else was allowed admission. It is remarkable that in the house in question, which was known as the "Maison de la Lanterne," M. BERTHELOT, the great chemist, who was buried with all the honours which France could bestow on an illustrious son, was born in 1827. The improvements all round the Place in which the Hôtel de Ville stands were fatal to the old structure which was made famous by DUMAS and BERTHELOT. However, a model was prepared of the Place as it appeared in the time of LOUIS PHILIPPE before the alteration, in which the corner house is accurately represented. The model has been preserved and will soon be seen in the wonderful Musée de Carnavalet, with which all lovers of Paris should be acquainted.

FAULTY SPECIFICATIONS.

WHY is it that architects so often write such unsatisfactory specifications? Or, perhaps, we might rather ask how it is that they allow such specifications to be written and to be sent out from their offices? For there is no doubt that the specification is too often written by an assistant or quantity surveyor rather than by the designer of the building. Such vicarious production of an important instrument for the realisation of the designer's conception cannot but result in an imperfect attainment of that realisation. For the deputy writer of the specification obviously cannot know all that is in the mind, or perhaps even imperfectly adumbrated in the sub-consciousness of the designer, and hence develops an inevitable tendency to vagueness and an adherence to traditional precedent. Is not the *modus operandi* very frequently adopted in the preparation of a specification that of utilising as a model one that has previously done service for a more or less similar building, and copying wholesale therefrom clause after clause with possibly only the slightest modification? And most frequently has not the model itself been concocted in like fashion from some still older example? Tracing back the pedigree of the older example, is not the parent of our twentieth-century architect's specifications one that he has copied in his pupilage days from his principal's productions? In all probability his principal's latest example had a similar ancestry, so that the original progenitors of our specifications of to-day first saw the light in many instances away back in the remote past of the eighteenth century.

It is from such blind adherence to precedent that we still find it prescribed that "all the fir timber is to be the best Memel, Dantzic or Riga," in spite of the fact that there are scores of other ports on the White Sea and Baltic coasts from which excellent qualities of timber are daily being sent to England. Again, the builder is told that his joinery is to be prepared from "the best Christiania deal," although it is scarcely possible for him to buy decent deal from that port even if he were to try, which he certainly would not, knowing full well that the writer did not mean what he said, did not know what he meant, and would not recognise what he asked for if he got it. Such stipulations as to the quality of timber to be supplied might have meant something in the days of our great-grandfathers, but now they serve only as indications of incompetence or indifference on the part of the writer. Nor is it only the obsolete reference to ports of origin that casts such stigma. The ever-recurrent word "best" is equally unmeaning. Every builder knows that the highest grade of fir and deal is practically impossible in building, and that any architect who asks for "best" is simply writing nonsense.

Nor does the matter end here. When a specification with such descriptions comes into the hands of a contractor for tendering, what course is he to pursue? The honest builder, being also most probably a reasonably careful man, assumes that a high grade is required; his cut-and-run competitor seeing here a loophole for scamping, is in this part of the work able to price lower. The same thing probably occurs in other matters, and so although the honest man may be content to work at a smaller profit than the other, and may actually put a lower figure on those parts of the work not open to evasion, he is worsted in the competition, the unscrupulous man gets the job, and the employer pays more dearly for what he receives.

It would be a revelation to the writer of such faulty specifications to glance through a sale catalogue of one of our leading wood brokers or to spend an hour in the yard of some of the prominent timber merchants. Thus he would learn what kinds of timber are on the present-day market, and how he should describe the particular kind most suitable for his purpose and most advantageous for his client.

Nor is it only in relation to fir and deal that a man who blindly follows precedent goes adrift. In the case of hard woods also he is hopelessly behind the times. The description of mahogany is probably limited to "Spanish" and "best Honduras." Tabasco is not mentioned by him, and he probably has but the vaguest idea of what it is like. He does not realise that the price of mahogany may range from ninepence to half a crown per foot super, and he is unable to decide what quality is desirable for his client's purpose, or at least he has not troubled to make it clear to the builder. Surely a more satisfactory procedure would be to follow the advice of high-class merchants, and specify "the mahogany is to be obtained from Messrs. So-and-so, whose price is . . ."

What is true with regard to the specification of timber applies also no less forcibly to stone. "All stone is to be the best of its respective kind." "All steps are to be rubbed York stone" of such and such size. One might imagine that all the stone in the county of broad acres was of one kind and of one quality. That Dewsbury and South Oram, Huddersfield and Robin Hood, Scotgate Ash and Bramhall Fall are all one and alike. That there is no distinction of hard and relatively soft stone in Yorkshire or even that there is no difference between one variety of "hard York" and another.

As with "York stone" so with "Bath." The ancient precedents do indeed distinguish between "Corsham Down" and "Box Ground," but although most practising architects have received a box of samples from the Bath Stone Firms, Ltd., their specifications in too many cases still run on in the old way, and repeat the timeworn and out-of-date formula as if they were unaware of the existence of, let us say, such a stone as Monk's Park, or, if aware, were careless as to whether in some instances this or some other description might not for some particular purpose be more suitable than the two typical examples of Bath stone recognised in the mid-Victorian age.

Why is it that so many architects neglect—we will not say decline, for that would probably entail too much trouble—to avail themselves of the opportunities afforded by our merchants and manufacturers are ready enough to provide for discrimination between, not necessarily good and bad, but between suitable and unsuitable varieties of material for the particular building in hand? Can it be the fear of displaying ignorance that prevents them from utilising the wisdom of experts, even though the experts may be sellers of the goods of which they have no knowledge? The man who knows most is the one most ready to admit that he does not know everything. The man who is most eager to conceal his ignorance is the man who has most to conceal. Trouble it certainly is not to obtain information. A postcard or telephone call to any of our advertisers would at once bring the assistance required to prepare a satisfactory specification, adequate in describing without any uncertainty the kind and quality of materials which the employer's interest demands from the contractor, and enabling the latter to estimate with precision in making his tender.

Timber and stone do not exhaust the class of materials vaguely and insufficiently described by the verbiage of antique precedents. Compare for example the criterion of the quality of Portland cement based on the traditional specification clause with that of the British standard specification for Portland cement. Is it any wonder that the acute foreigner finds it easy to foist his rubbish on our market and worth his while to falsify descriptions and labels? Remember that the British standard is a standard, not an ideal or the gold water-mark of British cement manufacture, but the measure of the ordinary work of any decent, respectable factory. The stuff that would just satisfy the requirements of the traditional clauses in specifications is to-day scarcely to be found amongst the products of good English manufacturers of Portland cement, and these traditional clauses are now hopelessly obsolete.

however suitable they may have been to times past, when it was a legitimate question whether Roman or Portland cement should be used for any particular work.

We might continue to multiply instances in connection with other trades—iron, steel, lead, glass—to show how very far behind the times are many specifications put out at the present day by architects, to the disadvantage of their clients, the discouragement of manufacturers and merchants who are striving to improve their products and to develop hitherto neglected stores of material. The reputation of the architects suffers in the eyes of those with whom they have to deal, the honest and competent builder is handicapped and the scrupulous sharper is favoured.

We would urge the laggards in building methods to wake up, to take advantage of the Building Trades Exhibition which opens to-morrow, to get in touch with up-to-date merchants and manufacturers and learn from them, as can be easily and pleasantly done, how to diminish faulty specifications from their offices for ever.

THE DURABLE AND THE TRANSIENT.

ALTHOUGH usually placed first in editions of the plays, it is believed by scholars that SHAKESPEARE'S "Tempest," if not the last written of his works, belonged at least to the latest period of his activity as a dramatist and represents his benignest wisdom. The most familiar lines in it are those about the solemn temples, the gorgeous palaces, the cloud-capp'd towers dissolving like the insubstantial pageant which was introduced for the entertainment of two of the characters. Simple as the passage may appear, MACREADY, who was one of the most earnest of the students of the plays, was unable to decide how it should be delivered, and so to make a compromise with his artistic conscience. One evening it was declaimed in a solemn and sorrowful tone, and on another it was spoken trippingly on the tongue as if only minor importance were to be attached to the lines. It is easy to understand the reason of the grim tragedian's hesitation. If the words were taken as they would be interpreted by a Buddhist, there was little use in any work of man's, for even the most enduring of them all were doomed sooner or later to dissolution. SHAKESPEARE did not often refer to the practice of building, and he may have thought, like HORACE in an earlier age, that his own compositions were destined to outlast the noblest structures of stone.

What makes the words appear more remarkable is the time of their delivery. The reign of ELIZABETH and the early part of the reign of JAMES I. formed a most remarkable building age in England. New mansion houses for her reception were supposed to be most passing to ELIZABETH. It is supposed that through statecraft she inspired many of the nobles to expend their fortunes on great houses, and in that way prevented the application of the money to purposes of which she could not approve. We have only to contrast the visions of building with which BACON was inspired with the pessimistic conclusions of SHAKESPEARE in order to realise how differently men could consider the same subject about the same time. It would be interesting if we could have a disquisition by Sir HENRY WOTTON on the words of the two writers. There is no doubt that although the ex-ambassador and the Provost of Eton was a sermoniser he would have sided with BACON rather than with the dramatist.

There is, of course, undeniable truth in SHAKESPEARE'S words, and a similar thought must have struck serious men in all ages. It is like the old "Vanitas vanitatum." We possess, however, a varied history of architecture, because from earliest time men acted in defiance of such a theory of the inevitable ruin of all things. Even the Buddhists, although they were confident that everything was fleeting, erected stambhas, stupas, topes, "rails," chaityas, viharas which have

endured owing to their massive construction. Christian preachers were also obliged to accept and explain the nothingness of earth and of whatever man could do while a resident on it. Yet we know that from the beginning of our era efforts were made to erect churches which would be magnificent and enduring. The inconsistency between theory and practice was endeavoured to be explained by WORDSWORTH when he said "they dreamt not of a perishable home who thus could build," and described ecclesiastical buildings "as everlasting piles, types of the Spiritual Church." The poet was more true to himself in saying that if he had to abandon the world he would not seek refuge in one of the cloisters, but in some dry nook scooped out of living rock. Eastern hermits and other ascetics not only came to a like conclusion, but acted on it.

It is to be feared that in modern times there are indications that men are willing to depart from ancient customs concerning building. They realise the dissolving powers of destiny and are not disposed, like their predecessors, to contest them. In England especially it is found that a great house entails so much expense an owner can only use it on rare occasions. At the time when SHAKESPEARE wrote English gentlemen felt it was necessary to express their worth and state by the possession of becoming residences. WOTTON'S memorable words, "Every man's proper Mansion House and Home, being the Theater of his Hospitality, the Seate of Selfe-fruition, the comfortablest part of his owne Life, the Noblest of his Sonnes Inheritance, a kinde of private Princedome; nay, to the Possessors thereof, an Epitomie of the whole World," expressed what was accepted in the sixteenth and seventeenth centuries as an almost national duty. In our time it is not possible to act upon that principle more than partially. A country gentleman of any standing has interests in London which require careful personal attention. He may also consider it necessary to spend a part of every year in travelling, and the fraction of the year which can be devoted to rural life is limited. It is no longer necessary to have a house in London—a flat is accepted as an equivalent. Hospitality may be displayed elsewhere without any of the ancient ceremony. Not only dinners can be given in hotels, but the practice is becoming more general of having celebrations of weddings and the like in similar places. The middle classes have also become imitators, and the number of people who now make it a rule to let their houses for longer or shorter terms is incredible to all but house agents.

That the public mind is perverted on the subject of building is shown by the circumstance that London does not possess a municipal building which in any way corresponds with its magnitude, wealth or power. There was no outside approval except among architects when it was proposed to erect such a building, and there would be no protest if, as is not unlikely, the newly constituted County Council were to announce that the competition was postponed or set aside. To anyone who considers how close is the connection between business and a suitable building for the transaction of it, the disregard of the conditions under which the Council's officials have to work is a matter for serious reflection.

There is another circumstance which is also worth attention. When it was proposed to erect very cheap cottages the original intention was to accommodate workmen and others of a humble class. The idea was at once adopted for the benefit of occupiers of another sort. Cottages or bungalows of limited accommodation, and which could be put together for a sum comparatively small, were at once offered to those who claimed to be superior to workmen, but who wished to escape from the monotony of life in one place when it could be obtained without much cost. Residences of the kind will be seen in the Building Exhibition which is about to be opened, and many other examples can be discovered without difficulty in different parts of the

country. It would seem as if the "simple life" structures were destined to be supplementary to flats, and that a somewhat novel system of housing was about to be more generally adopted than could have been anticipated some years ago. In connection with this revolution—for it is nothing else—we must also notice the objections which are raised to modern dwellings in large blocks and the endeavour to supersede them by cottages. Public schools, which a few years ago were so elevated as to become landmarks in some districts of the Metropolis, are in the future to be represented by buildings of one or two storeys in height. Everywhere, in fact, are signs of a departure from conditions which at one time were supposed to be inevitable and unchangeable.

It is also remarkable that the demand has created a supply for construction which differs from what was consecrated by time. Instead of taking stones from a quarry and shaping them into desired forms by hand, artificial stones, either in solid blocks or moulded or ornamented, can now be supplied without delay. The interior of a building as well as the exterior can also present novelties. Partitions are now obtainable which enable rooms to be arranged almost as soon as the outer walls are completed. Staircases can be more quickly set up than scaffolding, and it is known that in American cities offices are occupied before the whole of the exterior is completed. If the buildings are to dissolve as if they were exhalations, according to SHAKESPEARE, it can soon be said of them that they arose as quickly as those imagined by the poet. If desired, it is also feasible to have magnificence on a short notice, for the division of labour is so perfect and manufacturers are so willing to meet all demands if money is forthcoming that we may expect to see some day—

A wilderness of building, sinking far
And self-withdrawn into a wondrous depth,
Far sinking into splendour without end!
Fabric it seemed of diamond and of gold,
With alabaster domes and silver spires,
And blazing terrace upon terrace, high
Uplifted; here, serene pavilions bright,
In avenues disposed; there, towers begirt
With battlements that on their restless fronts
Bore stars—

produced with the expedition of a pageant on the stage.

It is doubtful, however, whether real magnificence will be sought, although it could be furnished. The stern necessities of building are shortly to have the upper hand, and all features which might be considered as essential to show are likely to be sacrificed. We can see a suggestion of what is coming in the paper which was read by Mr. E. T. HALL at the last meeting of the Architectural Association. The high-class permanent sanatoria already existing, he said, ranged in cost from 350*l.* to 600*l.* per bed, and even to over 1,000*l.* But, according to Dr. HERON, "a sanatorium well equipped for the service of the poor should not cost more than 80*l.* per bed." If one class of patient can be accommodated so cheaply, why not others? Consumption, like death, levels distinctions, and to a utilitarian philosopher it must seem to be a mockery to expend 800*l.* or 1,000*l.* per bed in a hospital if the money cannot purchase curative needs. But to erect sanatoria at so cheap a rate Mr. HALL proposed to utilise materials of a different kind to those in similar buildings, and which might not receive the sanction of a local board if one existed in the district.

If an economical system can be adopted for a sanatorium, people will ask why similar materials should not be employed in buildings of different classes where economy must be respected. The answer is that by-laws must be obeyed to the letter, and we all know to our cost that one great obstacle to the erection of new buildings at the present day arises from the system which is enforced by local authorities. They have little choice, it must be allowed, for they have to carry out the rules and regulations which come from

Whitehall, and which were prepared solely to prevent evils which are the result of dishonesty. Unfortunately there is a class of men who if they are not fined and threatened with grave punishment will use materials which are dangerous to the occupiers of houses and to other people also. A too lax interpretation of by-laws would create buildings of a kind which it would be an advantage to have dissolved quickly as if they were only the visions of a nightmare. By-laws tend to solidity and to sanitation, but the public seem disposed to sacrifice solidity, at least, for quick production and economy. The problem is therefore one which it is difficult to solve. Architects no doubt suffer by the interference of men in office who are without any skill in architecture, and the annoyance is increased because it seems to be due to the belief that architects also are disposed to sacrifice some of the essentials of good building for the sake of profit.

It is always difficult to discover the true origin of prejudices. It is not unlikely that the change in the opinion of Englishmen, which causes them to forget canons of construction which have come down to us from ancient times, has arisen in some measure from the marvellous success of the Japanese. Many travellers who visited the islands fell into the stereotyped way of describing the ancient buildings of the country. The people are proud of their past, and as ancient robes and ancient examples of pottery are carefully preserved in families, some remains of ancient temples are honoured and upheld for the general good. But everyone knows that the peculiarity of Japan is that in its buildings, like works of art, are as flimsy as SAKYA MUNI could have desired. The drawings on paper or silk and the screens of those materials are in keeping with the character of the habitations. LAFCADIO HEARN, who was the lecturer on English literature in the Imperial University of Japan, and who became as much a citizen as was possible for a stranger who was a Japanese in his heart, has revealed to us that what seems best in Japan is really no more than such an insubstantial pageant of towers and palaces and temples as PROSPERO might have evoked to charm FERDINAND and MIRANDA. He speaks in one place of a district that seems to be enchanted; the pale yellow walls are coped with blue and pierced with elfish gates, and each vista gave him, he says, the same thrill of pleasure as would a perfect expression of a thought in a poem. And yet when analysed he has to own in what it consisted:—

The wonderful walls were but painted mud, the gate and the temples only frames of wood supporting tiles; the shrubbery, the stonework, the lotus ponds, mere landscap gardening. Nothing solid, nothing enduring; but a combination so beautiful of lines and colours and shadows that no speech could paint it. Nay; even were those earthen walls turned into lemon-coloured marble and their tiling into amethyst; even were the material of the temple transformed into substance precious as that of the palace described in the Sutra of the Great King of Glory—still the æsthetic suggestion, the dreamy repose, the mellow loveliness and softness of the scene could not be in the least enhanced. Perhaps it is just because the material of such creation is so frail that its art is so marvellous. The most wonderful architecture, the most enhancing landscapes are formed with substance the most imponderable—the substance of clouds.

LAFCADIO HEARN believed that whatever makes life beautiful in any land is derived from illusions. It is possible in Japan, when under the glamour of novel conditions, to create beautiful things out of the substance of clouds, but we doubt if a Japanese artist or poet could create a vision of beauty from the substance of a London fog. We live, perhaps, under unfavourable conditions, but they must be obeyed. The Japanese, although they reside in ramshackle structures, have accomplished as great deeds as if they lived in Roman palaces. But it was not the simplicity of their habitations which created a nation of heroes. Their houses are, no doubt, suggestive of Buddhist beliefs, for the

doctrine of the unreality of all things seem to be embodied in the temples as well as in the houses. Street improvements can also be accomplished in a Japanese city at a rate which would appear startling in England. But if we were to set about pulling-down substantial buildings and substituting for them shanties corresponding with those of the Japanese, it would not follow that our moral character would be elevated by the transformation. Those who point to Japan as an example of what can be done cheaply and expeditiously to provide accommodation for all classes should remember that the Eastern people are obeying their traditions just as we are in our way. They can supply our imagination what we have to do in solid materials, and their experience is of little use to us, especially in all that relates to the permanent in building.

NEW BOOKS.

THE additions to the literature of construction in different forms continue to increase. This is a peculiarity which characterises the present time. Formerly men trusted to their training as apprentices and their subsequent experience. Price books alone received attention. Nowadays apprenticeship is of a different character. It is not considered necessary for workman to impart information, and young people who wish to be masters of a subject have to rely in a large measure for instruction on books and technical classes. It remains to be seen whether the new race of artificers are superior to their predecessors, but if they are inferior it will not be the fault of publishers. Technical manuals abound, and they are generally well adapted for use. The "Modern Plumber and Sanitary Engineer," which is edited by Mr. G. LISTER SUTCLIFFE (the Gresham Publishing Company), promises to be adapted for a type of the best class of technical treatises. Plumbing or sanitary work a few years ago was supposed to be an incidental part of the very varied business of any ironworker who opened a shop in town or country. Nobody required about his ability in drainage. The men who were employed were without adequate control, and it was inevitable that carelessness and dangerous blunders should arise. Although the Plumbers' Company unintentionally may have created a monopoly, and their examinations are not sufficient, there can be no doubt the Company's organisation has produced a general desire for work which will be protective against evils under manifold forms. Sixteen specialists will contribute to the new treatise. If, as we may be confident, all will resemble the first division, it will not be difficult for a workman of ordinary intelligence to understand not only the theory but the practice of plumbing. It may be too much to expect that a novice, after reading the descriptions and studying the illustrations, would be able to accomplish a wiped joint which should be efficient and not unpleasant to look at, but he might at least understand what he is aiming at and the process which will lead to success. The first section, which deals with materials, is by the editor. The second, on the "Elements of Practical Plumbing," is by Mr. JAMES GAMMIE, who is known as a teacher in various metropolitan schools and as a craftsman. The third is by Mr. J. W. HART, and includes a chapter on "Ornamental Leadwork," or rather as much as is likely to be required at the present time. Almost every page is a diagram or illustration of a kind which it is easy to comprehend. The work when completed would be well adapted for prizes for successful students in the examinations of the Plumbers' Company, the City and Guilds Institute, &c.

A volume which is arranged on a different plan but is equally well adapted for the use of special students in "Carpentry and Joinery," edited by Mr. PAUL N. CASLUCK (CASSELL & Co.). It also embodies the work of several contributors. There are 567 pages, but the

illustrations number 1,800. The latter are all carefully drawn, and besides plans and sections of details conventional or isometrical views are given. In fact, the illustrations by themselves would be almost sufficient to suggest the work which the carpenter or joiner will have to perform. The views of buildings or parts of them may not be suggestive of high-class architecture, but it is not the purpose of the volume to teach design. History is neglected, and the work in fact is devoted to English practice of the present time in all its varieties. The price of the book is only 7s. 6d., and it would be difficult to discover a cheaper or more useful volume on a technical subject.

"The Principles of Architectural Design," by Mr. PERCY L. C. MARKS (SWAN SONNENSCHN & Co., LTD.), is based on articles which appeared in *The Architect*. There is no more difficult subject, and it requires no small amount of courage to undertake it, especially if the author introduces designs of his own. Mr. MARKS shows great tact throughout the pages, and nobody can charge him with presumption. The articles in this Journal were confined to exterior design; in the volume they are supplemented by others relating to interiors. A great many architects have allowed sketches to be made from their works, and the selection in all cases reveals that Mr. MARKS is a careful observer. His collection of scraps or fragments is of exceeding interest. In the text the author does not pose as an infallible authority. We have, rather, a student speaking to other students in a friendly and sincere manner. A great many subjects are touched upon and the remarks are always pertinent and honest. The volume forms an indispensable companion to the author's "Principles of Planning."

The sixth and concluding volume of "Modern Buildings, their Planning, Construction and Equipment," edited by C. A. T. MIDDLETON, A.R.I.B.A. (the Caxton Publishing Company), has appeared. The subjects are miscellaneous buildings and their fittings, builder's plant and scaffolding, and South African planning and construction. But those headings do not convey a sufficient notion of the variety which is in the volume, as well as in each of those that came before it. In hotels, for instance, plans are given of the new Piccadilly hotel, in which a difficult and costly site is utilised with great skill and respect for economy. It seems a descent from such a building to treat of dairies, stables, bakeries, laundries and the like, but architecture must now deal with works which used to be supposed as far outside its province. The descriptions of the plants required for large and small building works will often be found useful, for if there are not sufficient appliances on the site work is likely to be delayed. The chapter on the requirements in South African work, by Mr. H. S. EAST, is one of the useful series relating to the requirements of the Colonies. Under present circumstances some bravery is required in an Englishman who would attempt to seek a practice in South Africa. But judging by the illustrations, fine buildings have been lately completed. The Duke of WESTMINSTER has had erected a house at Thabanchu (Orange River Colony) which in style resembles an old Dutch farmhouse. The walls are of a beautiful freestone of a warm, cream colour and the roof is of imported Bridgwater tiles. Sir J. L. HULETT's mansion is more grandiose, for it suggests Georgian or Italian mansions which at one time were prized in England. Mr. EAST believes that experience in South Africa is necessary for any architects who aspire to success. He says he has had several opportunities of studying plans, working drawings and details of houses designed by British architects for South Africa. "In the best, although the defects and differences may seem but small to the outside eye, they (the defects) are often of such a character as to nullify many excellent points in the plans and design. In the worst, the houses are but travesties of what a South African house should be."

The descriptions of buildings are supplemented by a South African specification. The elaborate index suggests the vast number of topics which are treated in the six volumes. The work is of unique character, and much will be found in the pages beyond what generally forms part of treatises on building. The number of writers who have co-operated in the production gives a freshness to the treatment, and the volumes in consequence are unusually interesting. The illustrations are numerous and elaborate, and all who are concerned in the production have loyally seconded the editor in his desire to present a work which can be referred to with confidence.

The Slate and Tile Tables compiled by Mr. O. LLOYD OWEN (Criterion Press) are intended to show at a glance "methods of ascertaining the cost of roofing materials, their covering capacities at various laps and the conversion of any given price to its requisite equivalent." Unlike most volumes which consist of tables, the figures are of a size that is easily legible, and are not closely packed in a way which fatigues the eyes. These can be consulted without the least difficulty, and can be used for many hours at a stretch. We have met with no better collection, and it is unnecessary to say that time will be saved by consulting them and accuracy insured.

SCHOOLS AT CRESSING, NEAR BRAINTREE.

THIS village school was designed by Messrs. CLARE & ROSS, M.S.A., of 1 West Street, Finsbury Circus, E.C. The interior is furnished throughout with a brown glazed-brick dado, capping and skirting, and the walls above are faced with carefully selected Fletton bricks, flush-pointed and dis-tempered.

Accommodation is provided for 120 children, and the

school, which is divided by screens into three sections can be thrown open to hold a meeting of 300 persons. The playground occupies a quarter of an acre, and is surrounded by an unclimbable iron fence. On the east side of the school is a six-roomed house for the head mistress. Mr. FRANK JOHNSON, of Chelmsford, was the builder. Ventilation is by windows and "Offa" patent inlets, with openings in the ceiling and concealed roof ventilators for extraction. The rooms are warmed by LANDERS'S patent grates, which supply warm fresh air to the classrooms, and, by means of supplementary flue on the back, are made to ventilate the cloak-rooms as well.

Swivel shutter partitions were supplied by the North of England School Furnishing Company. The walls outside are faced with local red bricks, and the roofs covered with Tilberthwaite Westmoreland green slates in diminishing courses. The windows are solid frames filled in with lead glazing, and metal casement to opening lights. The ceilings are plastered and barrel-shaped throughout.

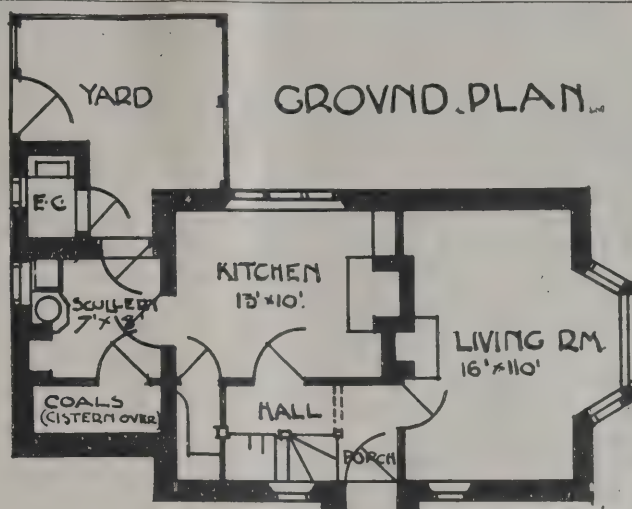
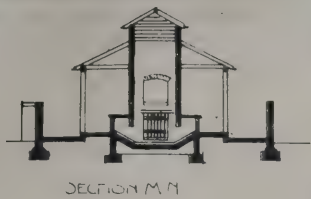
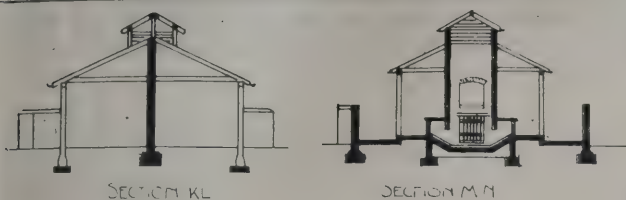
Beverley Minster has been insured for 66,100*l*. According to Canon Nolloth thirty statues were being added to the west front, and it was intended to restore some of the rich carved work of the niches. Notwithstanding what had been said by ultra antiquaries, they would not be deterred, but intended to restore in such a manner as would compare favourably with the old work.

The Proposed technical college for Aberdeen will have five departments corresponding with the leading industries of the district:—(1) Engineering; (2) Architecture; (3) Chemistry; (4) Artistic Crafts; and (5) Fisheries and Navigation. The cost of building and equipment has been estimated, apart from sites, at about 100,000*l*., and the annual expenditure at 15,000*l*.



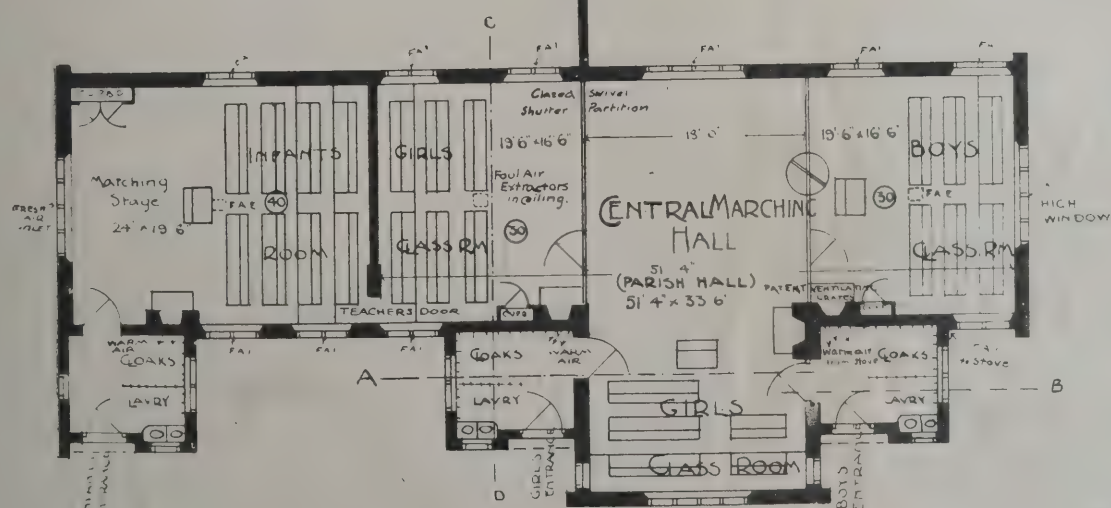
VILLAGE SCHOOLS, CRESSING, ESSEX.

[Clare & Ross, Architects]



GIRLS & INFANTS PLAYGROUND

BOYS PLAYGROUND



PLAN

NOTES AND COMMENTS.

As long as buildings have to be erected according to designs, we suppose there will be disagreement about the amount of architects' fees. The percentage commission is often said to be the cause of extra expenditure, and payment in a sum to be agreed upon is sometimes proposed as a substitute. According to the *Inland Architect* of Chicago, a variation on the lump sum plan has been found to work very satisfactorily in American practice, both by the owner and the architect. This provides for the establishment at the start of a fixed price as the cost of the proposed building. The minimum price to be paid the architect is also fixed in advance. This may be a lump sum determined on a basis a little under the Institute schedule, say of 4 per cent. A further agreement between the owner and the architect provides that the latter is to receive, as additional compensation, a commission of 10 per cent. upon what he saves the owner on the cost price as fixed in advance. One architect's returns under such an arrangement equal $7\frac{1}{2}$ per cent. of the final cost of the buildings, and the owner is satisfied that he builds at a price appreciably less than would be possible under the usual plan. Probably this arrangement would not be equally satisfactory for all classes of buildings. It has been found to work well with such buildings as factories and warehouses, classes where it is not difficult to fix in advance a fair cost price, nor to readily detect as the work progresses inferior workmanship and materials. An important consideration in such a plan, of course, is that the owner must have absolute confidence in the integrity of his architect.

AUSTRALIA is found to be richer in marbles than was supposed. An exhibition was lately held, under the auspices of the Royal Victorian Institute of Architects, which was successful. Marble from Croajingalong quarried in any desired dimensions could be put upon the market at 2*l.* per ton. But as yet the financial questions are not worked out definitely. It is evident that the organisation of the workmen will have to be changed if the marble is to attain commercial success. At present it appears the quarriers consider 5*l.* a week is sufficient earning, and as soon as they reach that sum work is suspended. Orders cannot therefore be fulfilled with punctuality. The following resolution was adopted:—"That in the opinion of the Institute the marbles exhibited are of excellent quality, and that it would be to the advantage of members if they could be placed on the market for use in buildings." The success of the Croajingalong experiment has inspired others.

HEXHAM, which stands on the river Tyne, was the centre of one of the early dioceses of England. In A.D. 706 WILFRID, who was head of the monastery of Ripon, was appointed to the see. He was a traveller and had visited Rome more than once. When the works at the abbey church of Hexham were recently undertaken, it was anticipated that many relics of WILFRID's church would be revealed. Some Roman stones were found, which had been preserved in the crypt. But according to the rector, the Rev. E. SIDNEY SAVAGE, the only complete piece of detail which belonged to WILFRID's church or cathedral is a large slab about 2 feet square and 6 inches thick, moulded on two of its edges with a section similar to those on stones at Barnack and Peterborough. At the end of a step in the well stair is a piece of carving in the form of a volute. There are also parts of the carved string-courses of the church, with which it seems to have been liberally furnished both inside and outside. Other remains are a good stretch of the foundation and lower courses of the north wall, parts of the foundation of the west and south walls, and a great mass of foundation of apparently a great pier near the centre of the church and in close proximity to the crypt. The bottom of this was only reached at a depth of 19 feet from the

surface, and the mass is about 12 feet by 9 feet in length and breadth. The abbey church dates from the twelfth century.

A FEW years ago we had the privilege of reproducing the principal water-colour drawings by COTMAN, of Norwich, from the collection of Mr. JAMES REEVE, which afterwards was purchased by the Trustees of the British Museum. An article by Mr. A. P. NICHOLSON in the last number of the *Nineteenth Century* gives some account of COTMAN and other representatives of the Norwich school. COTMAN used in 1834 to visit ARTHUR STARK, who lived in Chelsea. It was intended that COTMAN should design some pictures which STARK was to execute. The project was not realised. According to Mr. NICHOLSON, at that time COTMAN must have been a picturesque figure, for "he used often to walk the streets of London in a riding coat, gaitered and spurred, carrying a riding-whip and accompanied by two great bloodhounds in a leash. Doubtless it was the habit of his Norfolk days, which he had not yet discarded." COTMAN is badly represented in public galleries. The *Dutch Galliot* in the National Gallery is a notorious forgery, and should be turned out.

ILLUSTRATIONS.

VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON.

SEVERAL years have elapsed since the competition was decided for completing the South Kensington Museum. The treasures attracted so many visitors, although the exterior continued to recall the "Brompton boilers," it may have been supposed by the Treasury that the erection of other buildings such as the Science Schools was more urgent; besides, more opportunities were given to the students of the College of Art to observe building works. It will be seen that Sir ASTON WEBB has not accepted the FOWKE or SCOTT traditions, and has treated the front with great freedom. The statues of artists appear as part of the masonry and could not be detached without loss. They are truly decorative elements. The last report of the Board of Education states that the four following students, MESSRS. GOULDEN, VINCENT HILL, STEVENSON and BOYES were asked by Sir ASTON WEBB, R.A., to execute, under the direction of the Professor, statues of LORD LEIGHTON, Sir JOHN MILLAIS, G. F. WATTS and CONSTABLE, for the façade of the new Victoria and Albert Museum. They made the models in clay and then carved the statues *in situ*, the whole work being carried out to the entire satisfaction of the architect. This appropriate opportunity of applying the studies of the school to the decoration of an important building has not only contributed much to the progress of those actually engaged on the work, but has also been of advantage to the other students of the school, who have followed the work from the first sketch to the finish.

COMPETITION DESIGN FOR CHALKWELL HALL SCHOOLS, WESTCLIFF-ON-SEA.

THE site for the Chalkwell Hall schools is irregular in shape, but an effort was made to have uniform areas for the playgrounds and to allow the admission of sunlight to every classroom. The latter are lighted from the left with the exception of the double classroom. In some cases windows are provided on other sides to give natural cross ventilation in addition to artificial. All windows are carried up to within 6 inches of ceiling line. For ventilation BOYLE's fresh-air inlets are provided. Heating is effected by ventilating radiators. The teachers' rooms secure perfect supervision of playgrounds, halls, &c. The floors of classrooms and halls are to be laid with wood blocks. The total cost of buildings, including architect's fees, was estimated at 14,400*l.*

HEAD-QUARTERS FOR THE ESSEX COUNTY POLICE,

PREHISTORIC MAN IN SHROPSHIRE.*

IT is difficult within the compass of a short paper to give a clear idea of the story of a period whose limits we are unable to define with exactness, but which covered many centuries. The task, however, is rendered more easy in the case of Shropshire than in the case of more southern counties by the fact that the story does not begin so early. The first inhabitants of Britain were the men of whom the races are to be found in the river drifts of the Thames valley and elsewhere in the south, and these were followed by the cave dwellers. Both these are classed under the term Palæolithic, and date back to a time when England was joined to the Continent and the conditions of climate were very different from what they are now. It has been generally accepted dictum that no Palæolithic remains are to be found north of a line drawn through Derbyshire, and though in recent years some doubt has been thrown on this by discoveries in the drift of the valley of the Trent, no races have up to the present been found in Shropshire. We may, therefore, at any rate until further discoveries, dismiss the idea that the Palæolithic hunter roamed its forests in pursuit of mammoth or elk; in that era it was probably either submerged or had a climate too rigorous for human habitation. In time, however, Palæolithic man passed from the scene, and after an interval which we cannot count in years another race appeared in Britain to whom we give the name of Neolithic. What was their connection with the Palæoliths we cannot tell, or whether they were connected at all. They had some points in common with them, but rude as Neolithic civilisation still was it showed an advance on that of the previous race. It is with the coming of these Neoliths that the story of Shropshire begins, and it will be best understood by a reference to geography. By this time the British Isles had practically taken their present form, and were separated from the Continent by the channel which still divides them. The climate, too, had become comparatively temperate and the conditions of life were much what they are now. The internal aspect of the country as regards its physical features was but little different; mountains stood where they stand at present and rivers flowed in the same courses. This must be borne in mind whenever we attempt to deal with the history of Shropshire. In prehistoric times no less than those which came later its geographical character is largely the key to its story. It must be borne in mind, then, that what is now the county of Salop consists of two portions, divided by the river Severn, of which the northern half is for the most part flat and the southern almost entirely made up of hills. The Severn forms a natural highway connecting the county with the south, while in the west, in what is now Wales, its hills pass into rugged mountains and fastnesses. On the one hand, remote from the Continent, it was slow to feel European influence, but, on the other hand, it could not ultimately escape that influence because the only escape from it was into the mountains or the sea. So it is that Shropshire has been the battle-ground of advancing civilisation from the most ancient down to the most modern times.

In the prehistoric period, by which we mean roughly the period ranging from the earliest times to the coming of the Romans, we have to deal with the invasion and settlement of three different peoples. The first of these is that which is known by the name of Iberians, who possibly are represented in modern times by the inhabitants of the Basque provinces on each side of the Pyrenees. Their hold in England was extensive. Their characteristic features are to be traced not only in Wales—especially in the south and the border counties, but in Yorkshire and several other parts of England. They were not, however, allowed to maintain possession undisturbed, but were driven westward by an invasion of Celts, an Aryan race, whose original home seems to have been Central Asia. These were known as Goidels, and they were in turn themselves driven westward by another Celtic people known as Brythons. Each of these invasions indicated an advancing wave of civilisation which was marked by some special characteristics, though which was common to all. It is the aim of this paper to fill out the outline thus presented by the light of actual discoveries in the county.

On the principle, then, which is laid down in the first number of the *Spectator*, that every reader wishes to begin with knowing the personal appearance and condition of the characters introduced, there come the questions:—What

were the physical characteristics of our prehistoric ancestors? Whom did they resemble of the human types with which we are now familiar? These questions are answered by the human remains disinterred from sepulchral mounds of the period, and the correctness is no longer doubted. The non-Aryan Iberian race were short of stature, the men not exceeding 5 feet 6 inches and thick-set in figure, their special characteristic being the length of their skull, such as may be seen in a specimen found near Wroxeter and preserved in the Shrewsbury Museum. The outline of the face was oval, and the jaws did not project, but the forehead was comparatively low and the nose was aquiline.* The type, as already mentioned, is still to be found in several parts of the country, especially in South Wales. It is not uncommon in Shropshire, and the modern representatives enable us to complete the picture of their Neolithic ancestors. They had black hair and black eyes, and except for the shortness of their stature were a handsome race, possessed of considerable mental capacity.

The Celts who followed were of widely different appearance from the Iberians. In contrast with the dolichocephalic, or long skulls of the earlier race, their own were brachycephalic, or round; their faces were angular, their jaws were prominent and their cheek bones stood out under a high broad forehead. Their height averaged 5 feet 8 inches, and we know from their modern representatives, which are everywhere in Wales and the borderland, that they had fair complexions with red hair and blue eyes.

We turn now from the people themselves to their surroundings and pursuits. First as to their home. To a certain extent all through the prehistoric period, and especially in the earlier Neolithic period, the inhabitants both of Britain and the Continent lived either in pit dwellings or lake huts, exchanging them as time went on for stone huts above ground. In order to understand these customs we must bear in mind that in prehistoric times Shropshire was a vast forest, except on the tops and higher slopes of the hills, and what there was of valley not covered by trees was largely given over to water in the form of river, or lake, or marsh. The range of spots on which human habitation was possible was limited, and was still further affected by the humidity of the climate. We have no statistics of prehistoric fever and ague, but even Neolithic man must have found out that life was longer under some conditions than others. It is, therefore, in accordance with expectation that we find a Neolithic settlement of pit dwellings on the summit of the highest hill in Shropshire. Abdon Burf, on the top of the Brown Clee, consists of an enclosure surrounded by a stone rampart, and within it are numerous depressions whose appearance points clearly to their being pit dwellings; but they have never been scientifically investigated, and until careful excavations have been made it may be wise to a certain extent to suspend judgment. At present the only direct evidence seems to be the discovery a few years ago at the foot of the hill of a polished hatchet of local stone, which is now in the possession of Lord Boyne. Another Neolithic settlement, similarly situated on the summit of Rock Hill, near Clun, was investigated by the late Mr. George Luff, who found a considerable number of stone implements, which are now in the Shrewsbury Museum. The same sort of evidence, though on what may be called a smaller scale, points to the existence of a similar settlement on a piece of high ground in my own parish. It is the only spot in the neighbourhood with a Celtic name, "Pentre," and the only spot, as far as I know, near which flints have been found. Within sight of it also were dug up two early cinerary urns which I shall allude to later on.

Shropshire, however, in Neolithic times had within its borders a considerable area covered by water. The neighbourhood of Ellesmere is still a lake country, and meres must have been much more extensive in early days. Mr. Luff was of opinion that there was in prehistoric times a large lake at the foot of the hill on which he found the implements referred to; and in my own parish Bomere Pool is the largest survival of a series, which can easily be traced all through the neighbourhood. It is highly probable that hut dwellings existed on the borders of some of the Ellesmere meres, and a few years ago it was thought that traces of such a settlement had been discovered. Investigations left the case not proven. That the country, however, was occupied by a considerable population is shown by the fact that no less than three canoes made of tree trunks have been discovered at different times in the

* A paper by Rev. Prebendary Auden, read at a meeting of the Cadoc and Severn Valley Field Club, published in the *Shrewsbury Chronicle*.

* Boyd Dawkins, *Early Man in Britain*, pp. 311-6.

peat, one of which is to be seen in Ellesmere town hall. Sometimes the home of the prehistoric inhabitant found its protection in a somewhat different form. In the neighbourhood of Baschurch is a spot called The Berth, which approaches in some respects what in Scotland and Ireland is known as a crannog. It consists of two elevated portions of ground which originally stood out from a morass which entirely surrounded them. These islands, as they were then, formed the settlement, and no doubt were crowned with huts. The morass is now dried up and the huts have vanished, but there remains an equally interesting trace of their occupation. The two mounds are still connected by an artificially formed causeway, some 150 yards in length and 4 yards wide, while another causeway gave access to what we may call the mainland. A somewhat similar prehistoric settlement in my own parish is much less generally known. Those acquainted with Bomere will remember that, between the pool itself and the marsh known as Showmere, the land forms a ridge along which runs the cart track from Bomere Farm to the keeper's cottage. Probably few, however, will have noticed that at each end of this ridge, not far from the houses just mentioned, it has been artificially cut through, so that the water of the present deep lake, like that of the more shallow one which occupied the marsh, would be connected, or be crossed only by a narrow causeway. The island thus formed would be an ideal place of safety in early times, and though at present, as far as I know, nothing in the way of prehistoric remains has been found at Bomere, it is, to say the least, not unreasonable to claim it as a relic of Neolithic times. On the top of Corndon are heaps of stone which appear to be remains of huts which were above ground as distinguished from pit dwellings. In this connection it may be well to mention the camps of refuge which those who lived on or near the hills seem invariably to have had. These appear not to have been primarily constructed for permanent habitation, but were places to which they could betake themselves, with their cattle and other belongings, in times of danger. It is impossible to name all that exist in Shropshire, or to say to what exact period each one belongs. It is hardly too much to say that every hill has its earthwork or "camp" of some kind, and many of these go back to Neolithic times, though they were probably utilised afterwards by other races down to historic times. Indeed it is almost certain that parts of the dyke which we attribute to the Saxon king Offa date back to a far earlier period, and that his work was in many places not to construct but only to make connecting links between defences ready to his hand.

We now turn to the tools and implements used by our prehistoric ancestors. The Iberians had only those made of stone, while the Goidels brought with them implements of bronze and the Brythons were acquainted with the use of iron. It is not meant that these respective materials were used exclusively by each people mentioned. The use both of stone and bronze continued side by side with that of iron down to the close of the prehistoric period, but it is convenient to divide it into a Stone Age, a Bronze Age and an Iron Age.

What traces then have we of these three ages in Shropshire? Before, however, proceeding to speak of these in detail, I must remind you again of the physical characteristics of the county, namely, that the north is flat and the south is hilly: in other words, the north would always be easily accessible by an invader and easily conquered, while the south would afford fastnesses to those in possession from which they would be dislodged with difficulty. The result was that in the Celtic invasion, while the old race held its own among the hills of the south, the invading race with its more advanced civilisation took possession speedily of the northern plain and settled down there. This course of events, which is according to our expectations, has an interesting confirmation in the implements which have been discovered. The bronze implements have all, roughly speaking, been found north of the Severn, while those of stone have been found south of it, the bronze in the plain and the stone among the hills.

Among the relics of prehistoric life which have been found, the first place may be given to the implements—mostly of flint—found by Mr. Luff in the neighbourhood of Clun, and now deposited in the Shrewsbury Museum. They include arrow-heads, scrapers—probably used in skinning animals—and stone rings, which may have been spindle whorls used in weaving or weights for fishing lines. Mr. Luff hazarded the conjecture that they were an early form of money. Alongside of these in the museum are a

number of axes and hammers, some of which were found in Shropshire. These are mostly of polished stone other than flint, but the hammers belong to a somewhat later age, being large in size and perforated to receive a handle, instead of being themselves inserted in a handle, which was the primitive form.

Clun, however, is not the only part of the county which has yielded a comparatively rich harvest of stone implements. Mr. T. R. Horton has collected a considerable number from Harley and the neighbourhood, some of which he kindly allows me to exhibit to-night. It seems clear that the high ground of which Kenley may be taken as the centre was the seat of an important Neolithic settlement, which the camp on Acton Burnell Hill may be a further remnant. The traces of Roman roads and settlements in the neighbourhood go to confirm this. In their conquest of the original occupants of the region the Romans discovered its beauty, and opened it up for their own occupation. The contents of Mr. Horton's collection are for the most part parallel to those gathered by Mr. Luff, and clearly belong to the same stage of civilisation.

We pass to the age of Bronze. This, it will be remembered, is a mixture of copper and tin. There are a few instances in which implements have been found of pure copper, but those who discovered the use of copper very soon found that it was much more durable and useful if it was alloyed with tin, and so bronze implements became comparatively as numerous in the second prehistoric period as stone had previously been, though it must be borne in mind that stone continued still to be used. Bronze-cutting implements show a considerable variety of shape and skill in manufacture. At first they were clearly modelled on the shape of the stone implements—a flat piece of metal with a cutting edge—but by degrees a stop-ridge was elaborated to give firmness to the handle and then gradually wings were added, which developed into a socket. The specimens in the Shrewsbury Museum embrace examples of all these stages and so tend to show that the Bronze Age in Shropshire extended over a considerable period. Several specimens from the county are enumerated in Sir John Evans's "Bronze Implements," but there are also several to be seen in Mr. Beville Stanier's museum at Peplow. These were apparently all found in the neighbourhood of the Red Castle at Hawkstone, and the collection includes also an example of bronze spear heads, of which there are two in the Shrewsbury Museum. Spears and daggers, as well as arrows, formed the offensive weapons of the Bronze period, the defensive weapons being a small round buckler of which an example was found some years ago near Ellesmere.

It will be sufficient to make only a passing allusion to the connecting link which we yet have in Shropshire with prehistoric times, viz. the coracles still in use on the Severn. They are the direct descendants of the boats in which our remote ancestors fished in the same river. Fishing was one source of their food supply, another being, of course hunting, but even the earliest Neoliths did not depend wholly on the chase, as their predecessors, the Palæoliths had done. They cultivated the ground and used its products both for food and clothing. They were acquainted with various kinds of grain, and wore garments made from flax, as well as those made from the wool or the skin of beasts.

No doubt in all these things there was advance through the prehistoric period, and with regard to many is not possible to say when they were introduced, but the second Celtic invasion—that of the Brythons—was apparently marked, like that of their predecessors, the Goidels, by one very distinct change. This was the introduction of iron, which more perhaps than anything else has in every age since swayed the destinies of the world. It did not at once supersede either stone or bronze, but soon proved itself so useful and so capable of serving many purposes that they gradually fell into disuse, and there was developed an Iron Age that, in a sense, has lasted till our own time, and so by degrees prehistoric man passed in historic—the man of whose doings we conjecture into the man of whose doings we know.

It remains, however, that I should say a few words about our prehistoric ancestors in death as well as in life. It is from sepulchral mounds that the clearest intimations are derived of what were their customs while living. The dolichocephalic Iberian race buried their dead in long oval-shaped barrows, the body being placed in a sitting posture under stones which are often now to be seen above ground, and are known as cromlechs. The posture of the

body was probably derived from the manner in which they were accustomed to sleep in their huts. Long barrows which have been carefully explored have usually contained stone implements of various kinds, both alongside of the body and in the substance of the mound itself. The latter fact has led to the suggestion that at the time of the interment flints were scattered on the grave in honour of the dead as we scatter flowers, and that our own custom is, in fact, a survival of it. The Celtic race appear to have introduced some changes in their mode of burial: They still heaped barrows over their dead, but they were smaller and round in shape, and they introduced or adopted at an early period the custom of cremation; and from this time onward burning seems to have existed alongside of burial. The period of these interments is marked as before by the implements or ornaments found. The barrows of Shropshire almost without exception are round and belong to the Celtic race, but very few have been properly examined. In the case of those on the "Old Field," now used as the Ludlow racecourse, the interments had followed cremation, and the fragments of metal were of bronze. The practice of cremation brought into prominence another criterion of prehistoric civilisation. A certain amount of coarse pottery has been found in the long barrows of the early Neoliths, but when cremation became an established custom, urns for containing the ashes became a necessity, and such cinerary urns have been found in considerable numbers. Those of early date are easily distinguished from those of the Roman period by the poor quality of the pottery and the rudeness of the ornamentation. I am able to-night to show you the fragments of two such urns found in my own parish, to which I have already alluded. They were discovered about 2 feet below the surface of a field at Ryton, and about a yard from each other. The first stood upright, the second was inverted. They belong to the late Bronze or the early Iron Age. Very similar urns were found on the "Old Field" at Ludlow. It was, no doubt, in connection with burials that stone circles were originally formed, the upright stones at first marking the boundaries of a barrow. The only circle now remaining actually in Shropshire is Mitchell's Fold, near Minsterley, of which some of the upright stones stand about 6 feet out of the ground, but the remains of several others are to be found in the neighbourhood just outside of the county. It is curious that they should be confined so entirely to this corner, and difficult to account for. It may arise from the fact that these circles became associated with worship, even if they had not such a purpose from the first. Much obscurity naturally surrounds the subject, and possibly there was considerable difference between the religious cults of the non-Aryan Iberians and the Aryan Celts, but there can be little doubt that the sun entered largely into their worship. Anyone who has stood within the circle of Mitchell's Fold and looked on the panorama of hills around can well believe with what emotion those who erected it would greet the first beams of the orb of day as it rose above the eastern heights, and excuse them if they adored it as their god. Superstition, no doubt—a time of ignorance, no doubt—but such as the great Creator winked at. It is, to my thinking at least, a pleasant fancy that our rude forefathers saw in the sun the highest effulgence of the Divine glory. Let us leave them waiting for the dawn.

SOCIETY OF ORDAINED SURVEYORS.

THE general examining board of the Scottish Society of Ordained Surveyors has issued its report for the session 1906-7. For the preliminary examination there were as usual two diets of examination held during the year—in April and October. Seven candidates in all were examined, of whom four were for re-examination. Of the seven examined five candidates are now through the examination. There were three diets of the final examination held during the session. One candidate came forward at the April diet for the second division and passed therein. At the October diet one candidate came forward for the first division and failed. One candidate came forward at a special diet in January for examination in both divisions, and succeeded in the first division but failed in the second division. During the year four indentures and three discharges have been registered. The Council, in its eighth annual report on the work of the past session, states that the draft modes of measurement for minor trades, after having been fully discussed and amended by the members at several special general meetings called for the purpose, were remitted to a committee to be revised and completed, and afterwards submitted to

the Society for the final approval of the members before printing. The draft "table of fees" has now been printed and circulated among the members for perusal, and a special general meeting is being called for the same.

SCOTTISH NATIONAL GALLERIES.

THE Secretary for Scotland has appointed the following to be the members of the Board of Trustees for the National Galleries of Scotland, which is to be established as from April 1:—Sir Thomas D. Gibson Carmichael (chairman), Sir John Stirling-Maxwell, Sir James Guthrie, Lord Provost of Edinburgh, Lord Provost of Glasgow, Mr. James Murray, M.P., Mr. John Ritchie Findlay.

The National Galleries of Scotland Act, under which the trustees have been appointed, provides that a board shall be established to manage the Scottish National Galleries and for other purposes connected with the promotion of the fine arts in Scotland. The duties hitherto undertaken by the Board of Trustees for Manufactures in Scotland will be entrusted to the new board, and the buildings presently vested in the Board of Manufactures, known as the Royal Institution, the National Gallery, the National Portrait Gallery, and Dunblane Cathedral, shall be vested in the Commissioners of Works, in the case of the two first-mentioned buildings for such purposes as may, with the consent of the Treasury, be prescribed. As, however, the Town Council of Edinburgh have resolved to establish a municipal school of art in Edinburgh, and have agreed to take over, as from April 1, the management of the School of Art presently carried on by the Board of Manufactures, the Secretary for Scotland prescribes that—"From the powers, duties and liabilities vested in, or imposed on, the Board of Manufactures by any letters patent, Treasury minute, deed, or other instrument, which shall be vested in, transferred to and imposed on the Board, shall be excepted the powers and duties vested in or imposed on the Board of Manufactures for carrying on a school of art."

ST. MARY-LE-BOW AND ST. STEPHEN, WALBROOK.*

ST. MARY-LE-BOW Church is one of ancient foundation, although the present building only dates from 1671. John Stow, as is usual with him, tells us much about the earlier church. He died some sixty years before the Great Fire of London, so that we have the advantage of learning from his "Survey of London" many things about the churches which the fire destroyed. One important matter, however, we always miss in his writings. We are not able to picture from their perusal the architectural character and the ornamental Gothic details which abounded. We can only judge from the examples which are left to us that ecclesiastical London, in a structural sense, was a city of infinite architectural beauty. Stow tells us that "St. Mary Bow in the reign of William Conqueror, being the first in this city built on arches of stone, was therefore called New Mary Church, of St. Mary de Arcubus, or Le Bow, in West Cheaping." He instances a similar example of the use of the word "Bow" in Stratford bridge, which was built by Henry I's queen, Matilda, with arches of stone, and was thus called Stratford-le-Bow. The antiquity of the Court of Arches may be judged from the fact that John Stow mentions it; he says that the Court "is kept in this church, and taketh name of the place, not the place of the Court; but of what antiquity or continuation that Court hath there continued I cannot learn." The older church had its vicissitudes. In the year 1090 the roof was blown over by the wind, and several persons were killed; four of the rafters, in length 26 feet, "with such violence were pitched in the ground of the High Street, that scanty 4 feet of them remained above ground, which were fain to be cut even with the ground, because they could not be plucked out, for the City of London was not then paved, and a marish ground." Then again in 1196 a certain person of seditious tendencies, possessing an aristocratic name, William Fitz Osbert, seized upon Bow steeple, and fortified it with munitions and victuals. But his triumphant defence was short-lived; fire and smoke were brought to the aid of the attacking forces and bloodshed ensued, and his inglorious career was ended by hanging at Smithfield Elms, whither he was dragged by the heels.

Again in 1271 disaster occurred to Bow Church, when a great part of the steeple collapsed, killing many men and women. In 1284 one Laurence Duckett, a goldsmith, came

* A paper read at a meeting of the Upper Norwood Athenæum by Mr. T. Pitt, F.C.S.

into collision with one Ralph Crepin in West Cheap, and having grievously wounded him, fled into Bow Church. Ralph Crepin's friends entered the church at night and killed Duckett by hanging, after which they hung him up in such a manner as to suggest suicide; in fact, this view of the matter was taken at the inquisition (or inquest, as we should call it now), and Duckett's body was dragged by the feet to a ditch without the City for burial there. But the truth of the matter afterwards came out, and Jordan Goodcheape, Ralph Crepin, Gilbert Clarke and Geoffrey Clarke were attainted, a certain woman named Alice, the chief cause of the mischief, was burnt, and sixteen men were drawn and hanged, besides others that, after long imprisonment, were "hanged by the purse." The body of Duckett was taken up and buried in the churchyard, and the building itself was interdicted, the windows and doors being stopped up with thorns. We have said that the steeple fell in 1271, and it appears from Stow's record that the rebuilding was only partial at first and was gradually added to until at length, in 1469, it was ordained by Common Council that the Bow bell should be nightly rung at nine of the clock. Then John Donner, mercer, by his will of 1472, left two tenements in Hosier Lane for the maintenance of Bow bell. The couplet relative to the late ringing of Bow bell has often been quoted: here is what John Stow says regarding it:—"This bell being usually rung somewhat late, as seemed to the young men 'prentices and other in Cheap, they made and set up a rhyme against the clerk, as followeth:—

Clarke of the Bow bell with the yellow locks,
For thy late ringing thy head shall have knocks.

Whereunto the clerk replying, wrote:—

Children of Cheape, hold you all still,
For you shall have the Bow bell rung at your will."

Among the generous givers to the fund for repairing the old steeple were Robert Harding, goldsmith, sheriff in 1478, 40*l.*; John Haw, mercer, 10*l.*; Dr. Allen 4*l.*, and Thomas Baldry 4*l.* The steeple was finished in 1512, and the arches were constructed of Caen stone, which was delivered at the customers' quay for 4*s.* 8*d.* the ton.

The names of City men of standing are always interesting, and, in addition to those already given, Stow tells us that the following were buried in the old church and had monuments there:—Sir John Coventry, mercer, mayor 1425; Richard Lambert, alderman; Nicholas Alwine, mercer, mayor 1499; Robert Harding, goldsmith, sheriff 1478; John Loke, sheriff 1461; Edward Bankes, haberdasher, alderman 1566; John Warde; William Pierson, scrivener and attorney in the Common Pleas; Ade de Buke, hatter.

A stone building called a "seldam," or shed, was erected by King Edward III. on the north side of the church facing Cheapside, then known as West Cheap. The object of this structure was to enable the king and his court to witness the jousts and processions which were frequently held in those days. It was probably not without reference to that fact that the present external gallery in the tower facing Cheapside was constructed.

Writing upon the subject of ancient crypts in the "Transactions Cambridge Camden Society" in 1840, Mr. Benjamin Webb, afterwards the Rev. Prebendary Webb, M.A., F.S.A., remarks that of the crypts which escaped the flames in the Great Fire many have since been restored and many more lost sight of. He refers to the following as perhaps the most interesting of such as remain—one beneath the chapel of St. James on the Wall, one beneath St. Mary-le-Bow Church, one in Aldgate beneath a private house, one in Corbel Court, Gracechurch Street, one beneath the chapel of St. Etheldreda, and one beneath Gerrard's Hall in Basing Lane. Only two of these crypts remain. Of the crypt of Bow Church Mr. George Gwilt, F.S.A., writing in 1835, thus describes the structure:—"The walls of this crypt remain nearly entire. It is divided into three portions; the centre or nave is 48 feet 7 inches long from east to west by 26 feet 7 inches wide. On either side extends an aisle or corridor the same length as the nave, by 14 feet 5 inches wide. The whole extent of this crypt covers a space 78 feet by 60 feet. Communications between each of the aisles and the nave are obtained by four lofty doorways on each side, each 4 feet wide. The walls, which are over 5 feet thick, are carried up to the springing line of the arches in neat and regular courses of block and block masonry. Above that line they are of rubble intermixed with Roman brick. The groined arches are mostly of an elliptic form, but those in the nave, which turn from north to south, are

semicircles, somewhat elevated above the springing levels. The arches and ribs are turned with rubble masonry and Roman brick, and appear to have been originally stuccoed or plastered over. Four windows may be distinctly traced in the most northern wall towards Cheapside, although they are now masoned up, and one at the end of the nave. Three of the columns remain, the other three, with their superincumbent arches, have been removed. The columns which remain are destitute of decoration to their capitals, but they approach nearer to the lofty porches of the Lombardic style of the eleventh and twelfth centuries than generally occurs in similar buildings of that period in this country."

The tower of the earlier church was surmounted by four pinnacles from which flying buttresses supported a central pinnacle. This probably suggested the idea to Wren, which led to his adopting a similar plan in the construction of the tower and spire of St. Dunstan-in-the-East.

The church was the first to be rebuilt after the Great Fire, although repairs to St. Sepulchre and St. Christopher, Threadneedle Street, were commenced in the previous year, 1670; in these cases rebuilding was not necessary. Four other churches in the immediate neighbourhood of St. Mary-le-Bow have disappeared, and the parishes are now united: they are Allhallows, Honey Lane; Allhallows, Bread Street; St. John Evangelist, and St. Pancras, Soper Lane. The association of John Milton with Allhallows, Bread Street, is recorded on a tablet placed on the house



ST. MARY-LE-BOW.

which occupies the site of that church, with a medallion having the poet's head in relief. Another tablet, which was placed on Allhallows Church early in the nineteenth century was removed in 1876, when that church was destroyed, and placed on the west wall of St. Mary-le-Bow. It records the poet's birth in Bread Street on Friday, December, 9, 1608, and his baptism in Allhallows, Bread Street, in the same month.

The present tower of St. Mary-le-Bow consists first of a plain square tower 32 feet 6 inches wide by 83 feet in height, above which are four storeys averaging 38 feet each: the first, a square belfry, adorned with Ionic pilasters, is 39 feet; the next, which includes the beautiful circular peristyle of twelve Corinthian columns, is 37 feet; the third comprehends the small lantern, and is 38 feet high, which is also the height of the spire, the whole making a height of 235 feet (Fergusson). The spire is surmounted by the famous dragon, of which it was predicted that "when the dragon on Bow Church kisses the cock behind the Exchange great changes will take place in England." This actually happened in 1832, when the two figures were down and cheek by jowl in the repairer's yard. Then came the Reform Bill.

St. Stephen, Walbrook.

The author of the "Survey of London" records two churches of St. Stephen, Walbrook; the present building is a third. Writing in 1598, he says that "the fair church of St. Stephen was lately built on the east side of the street called Walbrook, for the old church stood on the west side, in place where now standeth the parsonage house, and therefore so much nearer the brook, even on the bank." He does not tell us anything about the first church, but gives the history of the one standing in his own day. Robert Chichley, who was mayor in the year 1428, gave the land for the building of this church, 208 feet by 66 feet, and had the privilege of laying the first stone. He further gave 100*l.* towards the cost and gave the timber for the procession way and the aisles, and also the lead. The church, which was finished in 1439, was 125 feet long by 67 feet. In Stow's time it contained monuments to Thomas Southwell, first parson of the new church, who was buried in the choir; John Dunstable, "master of astronomy and music," 1453; Sir Richard Lee, mayor; Rowland Hill, mayor in 1549; Sir Thomas Pope, first treasurer of the augmentations, with his wife Dame Margaret; Sir John Cootes, mayor in 1542; Sir John Yorke, knight, merchant taylor, 1549; Dr. Owen, physician to King Henry VIII. Robert Chichley added to his other benefactions a proviso in his will that on his mind day (the anniversary of his death) a competent dinner should be ordained for 2,400 poor men, householders of the City, and every man to have twopence in money. He was brother to "Herry Chechile," archbishop of Canter-

while 26*l.* were received for lead washed out of the ruins. Sir Christopher Wren rebuilt the church in 1672, and it is considered to be his most successful work after the cathedral. A loan of 500*l.* was obtained from the Chamber of London, and Sir Christopher was entertained to dinner at the Old Swan in Fish Street by the vestry, while a gratuity of 20 guineas was given to the Surveyor-General's lady for encouraging and hastening the rebuilding. The patronage of the living had come into the hands of the Grocers' Company, and their arms occur in the panelling; in December 1672 the court of assistants of the company were invited to attend the first stone-laying on the 17th of that month. The stones were laid by Sir Robert Hanson, Lord Mayor, Sir Thomas Chitchley (of the Privy Council) and Sir John Robinson (Lieutenant of the Tower). Sir Thomas Chitchley was a descendant of the Chichley who founded the previous church, he gave 100*l.* to the building fund. How the new structure pleased the vestry may be judged from the record that they ordered in 1673 that Dr. Christopher Wren, "in consideration of his great care and extraordinary pains taken in the contriving the design of the church and assisting in the rebuilding the same, be presented him or his lady 20 guineas in a silk purse; and Mr. Woodrofe, the surveyor, with 5 guineas, and that they both be invited and desired to dine with the vestry at the Swan in Old Fish Street the next vestry day, which is appointed this day fortnight."

The church is an oblong, or parallelogram, in plan, and since the floor is 6 feet 6 inches above the street level, it is reached from Walbrook by a flight of stone steps. The building has five aisles or arcades in width and six in



ST. STEPHEN, WALBROOK.

bury at that date. Henry Chichley was himself rector of St. Stephen, Walbrook, from March 30, 1396, to September 10, 1397.

Born at Higham Ferrers, he was educated at Winchester and New College, Oxford, and after diligent study of canon and civil law, took the degree of doctor in that faculty. His first preferment seems to have been St. Stephen's, from whence he migrated to Salisbury, becoming archdeacon in that diocese. King Henry IV. took notice of his eminent qualifications, and sent him as ambassador-extraordinary to Pope Gregory XII. at Sienna. This pope made him bishop of St. Davids and consecrated him with his own hands, and in 1414 he was translated to Canterbury, which archbishopric he held for twenty-nine years.

Another notable personage who held the living of St. Stephen's was John, afterwards archbishop of Thebes and ultimately bishop of Carlisle. He died in 1537 and was buried at Stebenhithe (Stepney).

The parish accounts and vestry minutes of St. Stephen, Walbrook, are unusually interesting specimens of their kind, and their pith is contained in two articles by Mr. Thomas Milbourn in the "Trans. London and Middlesex Arch. Society," vol. v., and in the "Trans. St. Paul's Ecclesiological Society," vol. i. From these it does not appear that any record was made of the stirring days of 1665 and 1666, when the Great Plague and the Great Fire ravaged the City in turn. The church was destroyed in the fire, and *l.* were paid for pulling down the wall "next Mr. Polexfens,"

length, arranged by the columns. The latter, supporting the dome, are arranged to form the nave, side aisles, transept and chancel. The entrance porch has a plain ceiling in one compartment, with bold cornice; the doorway into church from top of steps has a kneed architrave, ornamented with side scrolls which support the cornice; in the frieze a head keystone and drapery. The great piers are Corinthian, being plain shafts resting upon octangular pedestals, supporting an exceedingly rich foliated entablature on which spring the groins of the arcades; the soffit of the arch has a rich border of fruit and flowers. The several arcades that diverge and fill the entire scene (within them the various windows, both circular-headed and oval), set in complete view the dome. This is divided into eight great compartments, each containing semi-compartments filled with palm-wreaths, roses and other ornaments. There is a circular lantern in the centre of the dome. As in most of the City churches, carved woodwork is plentiful; here there is wainscot panelling, a west screen and gallery, the pulpit and sounding-board and a very interesting font cover. The glass in the east window was inserted by the Grocers' Company in 1851. It is by Willament. That in the other windows, by Gibbs, was put in in 1862 as a memorial to Dr. Croly, a former rector of some note. The organ was built in 1765 by England, but was taken out and re-erected in St. Bartholomew the Great a few years ago.

The large picture of the Martyrdom of St. Stephen is by West.

A "RAPHAEL" OR A FORGERY?

THE following memorandum respecting a painting in the National Gallery which is alleged to be a modern forgery has been addressed to the Trustees by Sir E. J. Poynter, P.R.A. :—

70 Addison Road, Kensington, W. : March 1907.

As an attack has been made on me in the *Athenæum* containing some serious misrepresentations with reference to a picture of the school of Perugino in the National Gallery representing the Baptism of Christ (No. 1,431 in the catalogue), and as the Trustees may have seen the letters in the *Athenæum* (which were copied into some of the daily papers) without having seen my reply, and may think in consequence that the statements as to the picture being a modern forgery may be true, I think it advisable to write a short account of the transaction connected with the picture to circulate among the Trustees and others who may be interested in the matter.

The picture in question was purchased by me in Rome in 1894, and was attributed to Perugino.

I need hardly say that the picture is unmistakably a genuine work of the Umbrian School of about the year 1500.

I did not absolutely accept the picture, which was covered with an old varnish which had become very yellow by time, as by Perugino himself, although undoubtedly of his school, and before purchasing it I went several times to the Vatican Gallery, where there are several works by Perugino and his scholars and followers, and came to the conclusion that, although not certainly by the master himself, so beautiful a little work would be a valuable addition to the national collection; and I decided to purchase the picture. Before placing it in the Gallery, however, I was able to compare with it the photograph of a similar picture which had a few years previously been offered to Sir Frederick Burton as a gift to the collection by Mr. G. F. de Zoete, and which had been placed for a time in the Gallery. But Sir Frederick Burton, ultimately coming to the conclusion that Mr. de Zoete's gift was not by the master (Timoteo Viti) to whom it was attributed, asked Mr. de Zoete to take it back and give another picture in its place, which Mr. de Zoete was good enough to do. The photograph showed what, indeed, I had no doubt of, that the picture which I had purchased was not the picture which had been offered to Sir Frederick Burton.

The result of my examination of the works of the school of Perugino in the Vatican Museum was to lead me to the conclusion that the picture which was offered to me for purchase might be the work of the young Raphael, certain of his peculiarities being very marked in it. As, however, some qualities which we generally find in his work are less conspicuous, I did not feel sure enough of the attribution to catalogue it under the name of Raphael, but gave it the name under which I had purchased it; in the next edition of the catalogue, however, I classed it as "ascribed to" Perugino, a phrase which, as every one knows, means that a picture has with some degree of reason been attributed to a master, but that the authorities of the National Gallery do not fully accept the attribution. Since then I have had further reason to believe that my attribution to the young Raphael may be nearer the mark, but I should not even now like to be positive on the point.

On January 26 of this year a letter appeared in the *Athenæum* from a certain Mr. Fisher, stating that a picture of the Baptism of Christ acquired for the National Gallery in 1894 and ascribed to Perugino in the catalogue is the same picture as had been offered to Sir Frederick Burton, and had, after hanging in the Gallery for some weeks, been rejected, after he (Mr. Fisher) had pointed out that it was a forgery by a modern imitator of old masters named Micheli. Mr. Fisher did not mention me by name, but as he said that he need not say that it was not Sir Frederick Burton who had bought the picture now in the Gallery, and as I was Director in 1894, the accusation was plain enough that I had purchased for the National Gallery, under the name of Perugino, a modern forgery which had already been rejected by my predecessor only a few years previously. Why Mr. Fisher waited thirteen years to point this out it would be hard to say. Lord Carlisle called my attention to this letter, and thought it advisable that I should reply to it; and as Mr. Fisher's letter was a misstatement of fact, and not merely an expression of opinion, of which I should have taken no notice, I acted on Lord Carlisle's suggestion; but it was then too late for a letter to be written for insertion in the *Athenæum* that week, and as I thought it probable that Mr. de Zoete would either be still in possession of the

picture, or would know where it was if he had parted with it, I wrote to him at once.

Meantime a second article of a vituperative nature, following up Mr. Fisher's attack, and mentioning me freely by name, appeared on February 2 from the pen of Mr. Brockwell, who seems to be the "Art Critic" of the *Athenæum*. I waited next week till the last moment in hope of a reply from Mr. de Zoete before writing to the editor of the *Athenæum*, but receiving none, I sent a letter, briefly stating that the picture in the National Gallery is not Mr. de Zoete's picture at all; and as I felt pretty sure that Mr. Fisher's next move, when his blunder was shown up, would be to assert that the picture in the Gallery is, therefore, another forgery, I added some details concerning the removal of the varnish by Mr. Dyer, which showed that the picture, of which the tempera had become as hard as flint, was undoubtedly of many centuries' standing (which, I may add in parenthesis, did not stop Mr. Fisher from making, on the following Saturday, the assertion which I had anticipated).

The day after I had sent my letter to the *Athenæum* (which was printed on February 9) I received a letter from Mr. de Zoete telling me that the picture which he had offered to Sir Frederick Burton had been in his possession until last spring, when he had presented it to the museum at Canterbury, where it now is, and adding that he had written to the editor of the *Athenæum* to that effect. This letter, which would have effectually exposed the egregious blunder which Mr. Fisher had made, and shown up the incompetence of their "Art Critic," the editor of the *Athenæum* thought fit to suppress, although he allowed further letters from Mr. Fisher and from Mr. Brockwell to appear on the following Saturday, in which they made a painful attempt to exculpate themselves, while he, at the same time, intimated that the correspondence must cease.

I should add that the reason of the delay in Mr. de Zoete's reply was that I misdirected my inquiry in the first instance, and it was two or three days before I found the right address.

The Trustees of the National Gallery may, I think, rest assured that the picture which is the subject of this letter is a perfectly genuine work by a scholar of Perugino, probably done in his studio, and, in my opinion, possibly by the young Raphael. The most characteristic point, besides the beautiful painting of the figure of the Saviour, is the drawing of the hands, which is precisely Raphael's. I made drawings of the hands in the early predella pictures by Raphael in the Vatican and the method of treatment is identical and peculiar to Raphael. On the other hand, the heads are not specially Raphaellesque, nor is the colour as pure and transparent as is usual even in his early work; at the same time such characteristics as do not agree with what we know of his work might possibly be due to its being a youthful performance. I mentioned that I had since found further reason to think that Raphael may have been the painter of our picture. The painting of the trees is quite peculiar and different from the treatment to be found in the works of Perugino, or, indeed, of any work of the school that I had seen. Some two or three years afterwards I saw the predella painting of "St. John Preaching," by Raphael, belonging to the Marquis of Lansdowne, and was very interested to find in it the same treatment of the leaves of the trees—that is to say, that instead of the minute and delicate sprays of foliage, so characteristic of Perugino's own work and of, as far as I know, most of his followers, the trees have only a few sprays of large and freely painted leaves. This appears to be some confirmation of my view.

Mr. Heseltine informs me that a foreign critic pointed out to him that the picture is probably a work of the young Raphael.

EDWARD J. POYNTER.

Mr. de Zoete's letter to the editor of the *Athenæum*, which was not published, contains the following passage:—"Thenceforward" (that is, after the picture offered to Sir Frederick Burton had been returned to him), "down to the spring of last year, when I presented it to the city of Canterbury, that painting never left my possession, though Mr. Fisher and his unnamed friend are treating as identical with it the picture now in the National Gallery (No. 1,431). They would, therefore, appear to be incapable of distinguishing one artist from another, for the painting now in the National Gallery and the one I gave are entirely different in touch."

An article by M. Durand-Gréville, in the *Bulletin de l'Art Ancien et Moderne*, p. 70, of apparently the week ending February 16 (I have only an undated cutting from the paper), is an independent support to my view that the little work in the National Gallery may be by Raphael.

KING EDWARD'S SCHOOL, BIRMINGHAM.

THE history of Birmingham's premier school dates back far beyond the reign of Edward VI. Indeed, it was in the last years of the fourteenth century that the public spirit of certain citizens of the market town of Brynmyncham first laid the foundations for one of the finest educational establishments in the country.

True, the founders of the "Gild of the Holy Cross" had no thought of schools or scholars in their minds when they gave of their substance to establish that brotherhood; yet the King Edward VI.'s School of Birmingham is the direct descendant of the guild which was founded in August 1392, and which in 1536, out of its revenues of 31*l.* per annum, maintained three priests (at a stipend of 5*l.* 6*s.* 8*d.* each) and several subordinate officers, and which had spent its surplus income in the commendable, though purely secular, work of the "reparycion of certain brydges and highways." The charges for this "reparycion," says the *Birmingham Daily Post*, fell at the dissolution of religious houses upon the townsmen, and they, desirous of obtaining some return for their new liabilities, petitioned for a restoration of the funds to the town in the shape of an educational establishment.

After a very considerable delay their petition was answered, a charter for the establishment of "a Grammar school" was granted on January 2, 1552, certain lands of a small yearly value were given to the new foundation, and the Guildhall, situate "on the turnpike road leading to Halesowen," was thenceforward to be used as a school, one master and one usher being appointed, and "twenty men of the more discreet and trusty inhabitants" being nominated as governors. Birmingham then was a place of about 700 houses and a population of, perhaps, 3,500; and this, apparently, was the first school that had ever been established here—such education as its inhabitants had formerly possessed having been given by the clergy.

History is silent as to the conduct of the school for some years after its foundation. Indeed, it is not until a century later that any exact records can be obtained. In 1654 the master was in receipt of a stipend of 40*l.* per annum. Twenty-two years later this had been increased to 68*l.* 15*s.* and a house adjacent to the school. In the same year (1676) the usher was paid 34*l.* 6*s.* 8*d.* and was granted the use of a house in Moor Street. Probably "the usher" in this year was Mr. Joseph Withers, as to whose appointment, in 1673, the records relate that he was examined by "three able divines," for whose modest entertainment at the Swan 2*l.* 9*s.* 4*d.* was paid by the governors. Prior to this, in 1667, the 200 boys on the foundation arose in force and "barred out" the master. This was a memorable occasion and long regarded by the Edwardians as one of the glorious traditions of their school's history. About this time the funds appear to have been very badly mismanaged, and in 1685, as the result of serious and continued disputes between the governors, a new charter was obtained but never enforced. This mismanagement appears to have continued throughout the Hanoverian period, and in 1824, when 100 boys were on the foundation, and the income amounted to 3,000*l.*, someone wrote of the school as "a nest of peculation."

Exactly 200 years ago, in 1707, the ancient Guildhall, a timber-framed structure of which (did it exist to-day) the city would be extremely proud, was pulled down, and the "old" Grammar school—a curious quadrangular building of red brick, in the approved architecture of the Queen Anne period—was erected on the site. This was subsequently "beautified" by a range of urns above its balustrade, and by a statue of Edward VI., for which Sir William Wilson, Sutton Coldfield's native sculptor, was paid 25*l.* in 1718. Doubtless the new building was, in many ways, an improvement upon the Guildhall, but it was as a shell without a kernel, for in 1734 it was reported that "the chief master had no scholars under his care." Perhaps he occupied his leisure by admiring the "picture of ye royal founder, King Edward VI.," and its admirable frame, for which, in 1682, the governors paid the respective sums of 2*l.* and 3*l.* 9*s.* 6*d.* Or, may be, he spent his time in longing for those good days of which he would read in the school accounts, as for instance:—

1679. Two quarts of sack, part of examiner's entertainment . . . 4*s.* 8*d.*

1706. Paid for wine to treat the bishop . . . 8*s.* 6*d.*

The old school may still, perhaps, be remembered by a few Birmingham people. It was pulled down in 1833, when the present handsome building, designed by Sir Charles Barry, the architect of the Houses of Parliament, was erected at a cost of 40,000*l.*

HOLYROOD CHAPEL.

THE restoration of the Chapel Royal, Holyrood, has been considered by the Building Trades Exchange of the City and District of Edinburgh and the Edinburgh, Leith and District Building Trades Association. A joint committee was appointed to make an examination of the structure. At a meeting on March 26 the following report was submitted and adopted:—

In pursuance of the instructions given to them the joint committee (twelve in number) visited the Chapel Royal on Thursdays, March 14 and 21, and, having carefully examined the building as it exists, they beg to report as follows:—

1. *South Arcade and Wall Above.*—The height of this wall is 42 feet 6 inches from the ground and it is 4½ feet thick. At a point nearly opposite the centre of the nave it has at wallhead an inclination inwards to the extent of about 14 inches. From this point the inclination lessens as it approaches the respective ends. The whole of this masonry shows slight decay on the surface; although patched with cement at some parts, it is otherwise in good condition. The enforced curvature inwards forms a sort of arch favourable to the reintroduction of the great vault, which, once in position, would be the most effectual means of preventing further movement.

2. *East Gable.*—This wall is not exactly vertical. The lower portion inclines slightly outwards and the top portion inwards. Considering its thickness, and the fact that its share of proposed load would be quite inconsiderable, there can be no question as to its reliability. The remarks in (1) as to decay on surface apply here also.

3. *North Wall.*—This wall is 27 feet high by 3 feet 3 inches thick, and inclines outwards to the extent of about 3½ inches; there is, however, ample evidence of the fact that this inclination is of old standing, and that the subsequent erection against the wall of seven buttresses, each 6 feet 9 inches by 4 feet 2 inches on plan over base, has been sufficient to prevent further movement. The wall itself is in good condition and the buttresses especially so.

4. *North Pillars of Arcade.*—The north pillars need not be specially referred to, seeing that only a portion of two remains.

5. *West or Front Wall.*—This gable, which has its lower portion 10 feet thick (above base course) and the upper portion 6 feet thick, inclines outwards about 4 inches. The 6 feet thick upper portion referred to being to the inside of wall counteracts any tendency to further inclination outwards, and heightening the wall and giving it a share of load from roof could not operate prejudicially in any way.

6. *South Buttresses.*—There are two sets of buttresses on this side of the building. The lower ones, 10 feet in advance of the aisle wall, are, along with the flying arches, in good order; the tops of these buttresses have been removed presumably because they interfered with the view from the palace windows. The upper buttresses on top of aisle wall remain intact with one trifling exception.

Observation on the Foregoing.

1. The masonry of south pillars (seven in number) may each be taken as having above base level a superficial area of about 14 feet. Having regard to the safe carrying load per square foot of bearing surface applicable to stone in masonry, it appears to us that these pillars as they stand can safely receive a load much greater than any complete restoration of the chapel could possibly bring to bear upon them.

2, 3, 5, 6. The foregoing observation as to safe load applies equally to these sections.

Generally.—Our examination of the building and full consideration of the whole subject enable us to report that no question of weakness or instability in respect to the existing walls can be seriously entertained; that restoration of the chapel can with safety be effected, and would permanently secure the preservation of these walls; and that, with careful handling, a structure could be produced worthy of the historic memories attaching to this ancient chapel.

Adopted by and signed for and on behalf of the Council of the Building Trades Exchange of the City and District of Edinburgh, and the Edinburgh, Leith and District Building Trades Association.

PATRICK KNOX, president, Building Trades Association.

W. GRAHAM-YOOLL, president, Building Trades Exchange.

JAMES CAMERON, Secretary.

Edinburgh: March 26.

MODERN LANDSCAPE ART.

AN address was delivered at the opening of the exhibition of the Dundee Art Society by Mr. D. Y. Cameron, A.R.S.A., entitled "Some Thoughts on Natural Beauty with Reference to Modern Landscape Art." He began by remarking that the practice which prevailed in Dundee of having its annual exhibition opened with an address on some art topic was unique and interesting. It was a practice which he had not heard of elsewhere, and showed that the people of Dundee were interested in art and art thoughts to an exceptional degree. It also proved that the people of Dundee were an intellectual people, and he felt that he was now addressing the art, intellect and last, but not least, the beauty of Dundee, and was therefore in a very difficult position. The quest after beauty, he said, must be the first prompting in the true artist's work, and the desire to reproduce beauty was what led some—perhaps the world said far too many—to depart from the ordinary ways of men and follow art in their desire to exhibit to others their sense of the beautiful. This line of beauty showed itself early in nearly all—a fact which would suggest that if education could be so adapted as to develop and not, as it frequently did, retard this natural love, then all would have a joy added to their lives and be able to realise more fully the overflowing beauties of the fair world in which we live. Of old the great beauty of the world was one of the strongest arguments for the existence of God. Men realised that there must be a Divine source from which all this glory of the earth found birth. Was this argument any less potent in our time? Mere evolution could never have given to us the world of beauty we knew, and all the earth and all upon the earth must recognise in our cup of beauty which runneth over the master hand of the Supreme Artist. The vision of beauty as seen in modern days was a very different one from that of the ancients, and they had but to study old and new art to see how great was the difference. The landscapes of the old masters, judged by modern standards of natural truth, were oftentimes impossible, formal and conventional, but, in spite of this, full of that mental distinction and sense of style without which a picture might be interesting but never impressive, and very seldom great. There was in these old landscapes a pure and restful liveliness—rare and refined in their beauty, and with that holy reverence for pure colour which made them always a memory of gladness. To-day the calm had given way to restlessness and experimentalism, with little trace of that distinction so universal in the past. But if it lacked some qualities, it had other and very precious ones. The beauty sought after in recent times was of that intimate character which showed real study and very often deep knowledge. The painter sought for the beauty which was real, not formal, and full of nature's variety. Perhaps the photograph had influenced it as it had done portrait-painting, and taken something of the poetry away and denied it something of the rarer beauty of the dreamer's vision. The true landscape-painter was not necessarily a reproducer of the well-known spots beloved by the tourist. He should not be a superior kind of photographer, but rather an interpreter—a student of the moods of nature, a painter of the landscape of dreams—if he was truly to move men. Nature was his great mistress, from whom he must extract all the secrets he could, and lavish on her all his love. They could not overestimate the great part which imagination had played and must play in the world. It was the mover and inspirer of men, and an age without great imaginative men and leaders was not likely to be a fruitful one. If this be so in the great world of action, it was none the less true in the world of art, where without imagination linked to an over-mastering sense of beauty the finest could not be accomplished. Would that they had more of these qualities exhibited in their picture galleries. It would be well if from the rush and jostle of the active world men could turn aside for a little and find among pictures the beauty and refreshing their souls must often crave after, for was there not a voice even in the most material which called him aside to song and beauty? Art at its highest should always be the great revealer of beauty, the harbinger of joy, the messenger of hope. In the art world the greatest endeavour of the many schools for many years had been to realise light, for light was beauty and beauty was the end of art. So if they desired to enjoy the full glory of natural beauty they must open their hearts to nature's great message of love to man. They must ever be her lovers and worshippers, and hear her calls to love in the fragrant hours when she laid herself to rest in the holy hush when day passed into starry night,

and again when day all glorious leapt from out the darkness and light was over all the earth. The study of the life and works of Turner more than any other painter exhibits the evolution of landscape-painting from the older formulas and through varied lines until in that group of his latest work, now hung in the Tate Gallery, the highest chord ever yet attained is struck. They seem to go as far as ever paint can go in the rendering of light. Turner's power to awake the imagination, united to his overwhelming sense of beauty, leaves him thus far in the world's record unapproached in landscape art. If he has shown the wonders of light, in later days Whistler has cast the magic and spell of his art into the twilight and the night. His nocturnes are among the great creations of art of all time, and no one before had penetrated the night as he has done and found it was not darkness at all, but only the weirdness of veiled light. Turner and Whistler are supreme among the creators of beauty. They are the poetry and the music of modern art, the fruits of the love of nature expressed so richly in the finest literature of the last century. Art's highest achievement is to reveal beauty and to bring joy into life, to paint not the gloom of Salvator Rosa, but the glory of Turner and the mystery and magic of Whistler. Light is beauty and beauty is the end of art.

GENERAL.

The Municipal Council of Paris have purchased the *Adam and Eve* and several other works of the late M. Falguière, the sculptor. M. Carolus Duran has presented a portrait and M. Rodin a bust of the artist.

An Exhibition of old Umbrian art is to be opened in Perugia on the 22nd inst. and will be on view until November.

The London Geological Field Class has arranged its excursions for the study of the London district, under the direction of Professor Seeley, F.R.S., to begin on Saturday, April 27. Mr. J. W. Jarvis, St. Mark's College, Chelsea, S.W., is honorary secretary.

The Selection Sub-Committee of the Scottish Modern Art Association, which has been formed to secure representative specimens of contemporary Scottish art for the benefit of the nation, has purchased the landscape by E. A. Walton, R.S.A., at the Royal Glasgow Exhibition of Fine Art. The picture was awarded a gold medal at the International Exhibition at Munich last year. Mr. Walton belongs to the Glasgow school.

Mr. L. F. Vernon-Harcourt, M.A., M.Inst.C.E., was appointed external examiner in civil engineering at the last meeting of the Birmingham University Council.

Mr. W. A. Inderwick, on his retirement from the office of mayor of Winchelsea, has presented the original seal of the town to the Council. It was probably struck between A.D. 1280 and 1300.

Professor A. H. Church will deliver a lecture at the Royal Institution on the 12th inst., the subject being "Conservation of Historic Buildings and Frescoes."

M. Emile Bertone has been appointed architect to the Palais de l'Institut, Paris, in succession to M. Moyaux, who has reached the age limit.

The House No. 57 in the Rue d'Argout, Paris, is shortly to be demolished for the extension of the Rue de Louvre. It was there Charlotte Corday lodged prior to her assassination of Marat.

The Rochdale Corporation have decided to make a new street leading from the bottom of Blackwater Street to the Esplanade, at an estimated cost of 14,000*l*. This will effect a considerable improvement in the centre of the town.

Mr. Enoch Tempest, the contractor for the Walshaw Dean reservoir scheme of the Halifax Corporation, now nearing completion, has sent in a statement of claims for extras amounting to 77,606*l*. 9*s*. 7*d*. The waterworks committee have the claim under consideration.

The Lower Arcade (south side) of the lady chapel, together with apse, of the Liverpool Cathedral, is now complete, the masonry having reached a height of about 14 feet. The north side is being proceeded with. Adjoining this are two vestries, which lie between the chapel and the chapter-house and abut on the east wall of the main building. The vestry walls are already more than 8 feet high. A further and notable step in advance is the commencement of the superstructure of the main building, the part now in hand being the arcade and north and south walls of the choir.



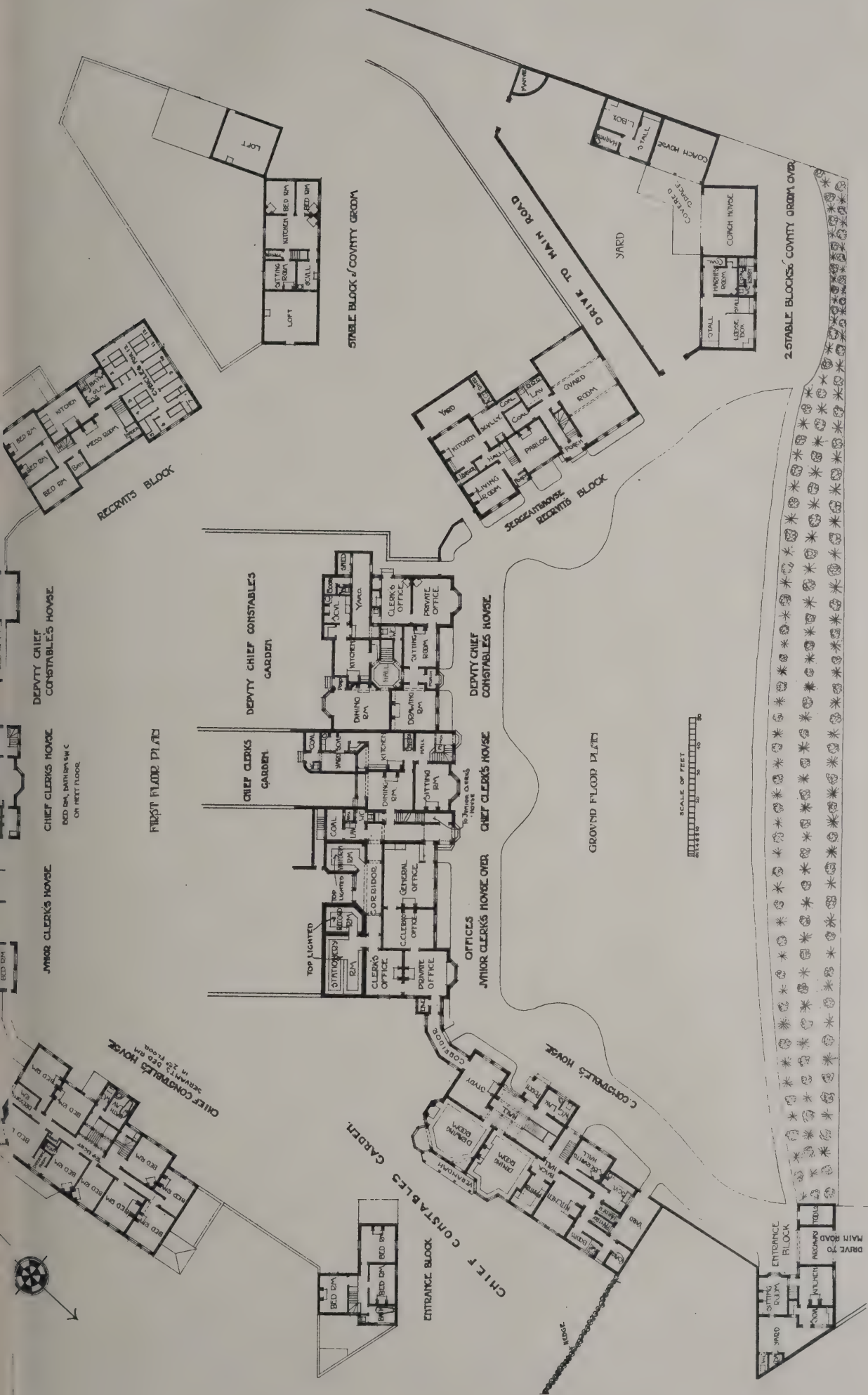
PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.



INK-PHOTO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

The Architect, April, 5th 1907.





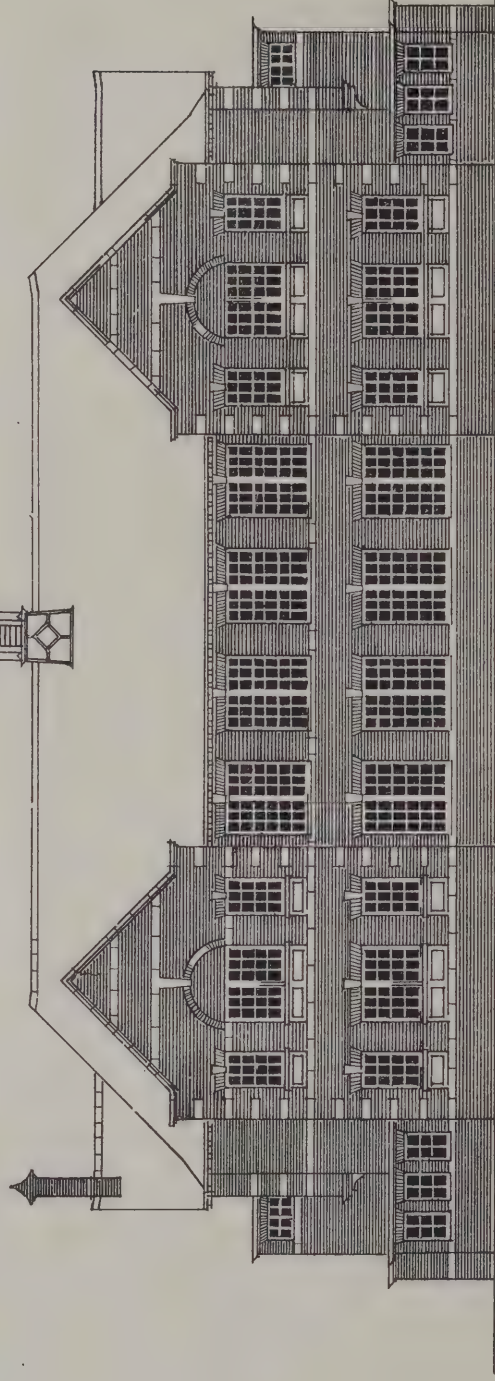
HEAD-QUARTERS FOR THE ESSEX COUNTY POLICE.
Messrs. CLARE & ROSS, M.S.A., Architects.

1/14 PHOTO SPRAGUE & CO. LTD. 1 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE CHALKWELL HALL SCHOOLS

WESTCHURCH-ON-SEA.

DESIGN A.



MIXED SCHOOL
ELEVATION TO MAIN ROAD



INFANTS SCHOOL
ELEVATION TO MAIN ROAD

SIDE ELEVATION

- ARDINAL POINTS FROM REPORT:
1. SUNSHINE ADMITTED TO EVERY CLASS RM.
 2. DIRECT & WELL DISTRIBUTED LIGHT.
 3. WINDOW HEADS 7' FROM CEILINGS.
 4. CLASS RMs ALLOW OPEN DIRECT FROM HALLS.
 5. ARTIFICIAL VENTILATION COMBINED WITH HEATING GIVING WARM FRESH AIR.
 6. PERFECT SUPERVISION OF ALL PARTS FROM TEACHERS' ROOMS.
 7. LEFT HAND LIGHT TO ALL CLASS RMs DESKS EXCEPT PART OF DOUBLE CLASS RMs.
 8. SHORT WIDE CORRIDORS.

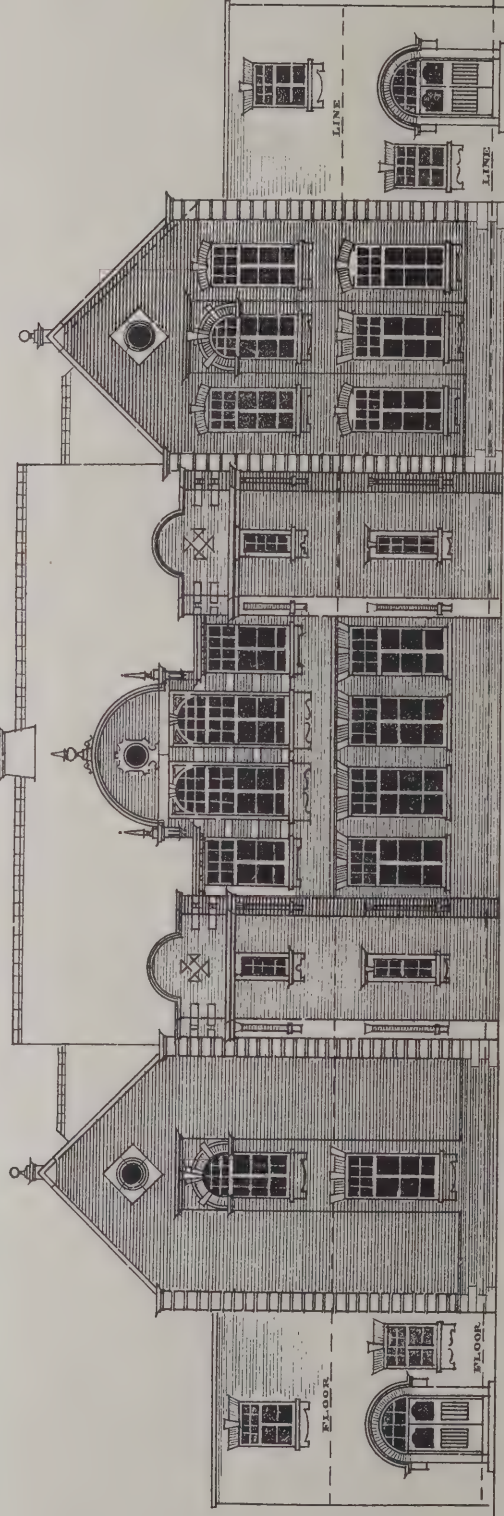


PHOTO LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FITTER LANE, E.C.

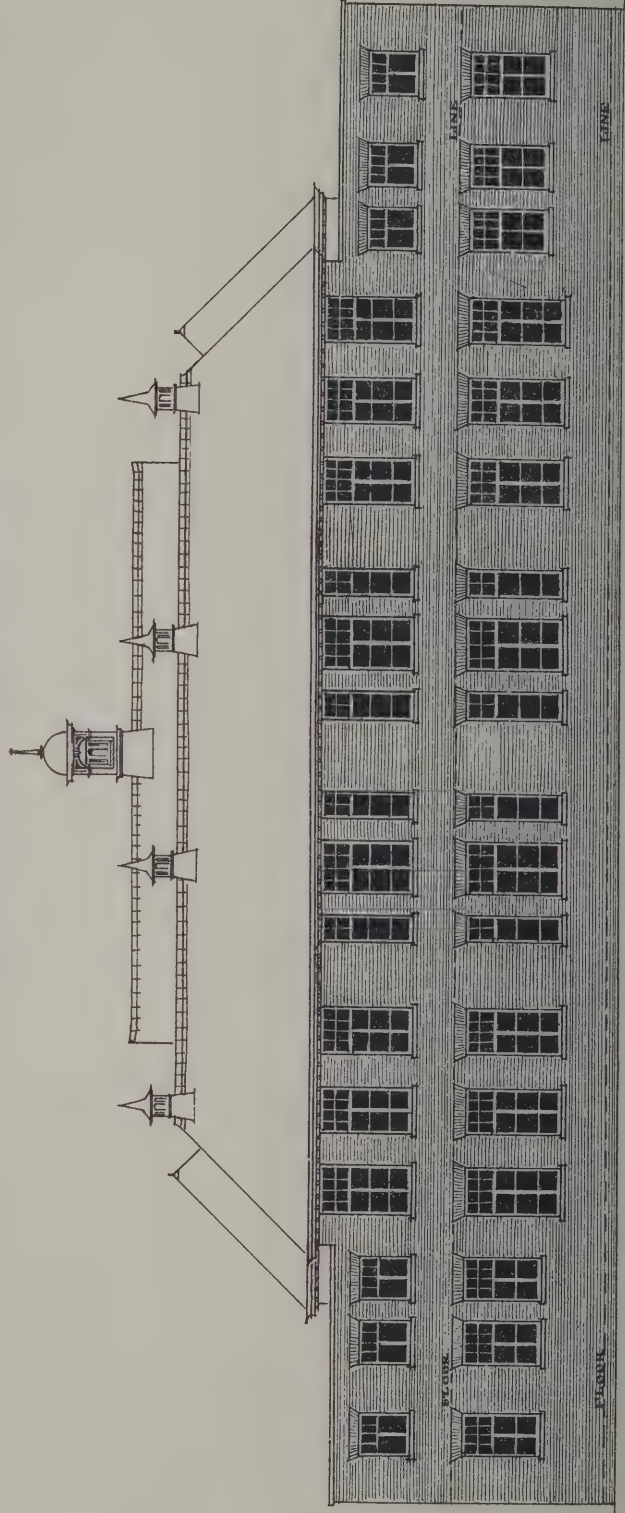
COMPETITION DESIGN FOR THE CHALKWELL HALL SCHOOLS, WESTCLIFF-ON-SEA.
By Messrs. CLARE & ROSS, M.S.A.

THE CHALKWELL HALL SCHOOLS, WESTGIFT-ON-SEA.

DESIGN B.

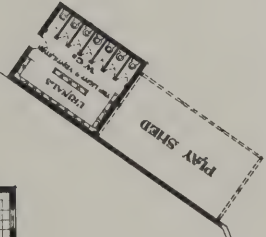


FRONT ELEVATION - MIXED





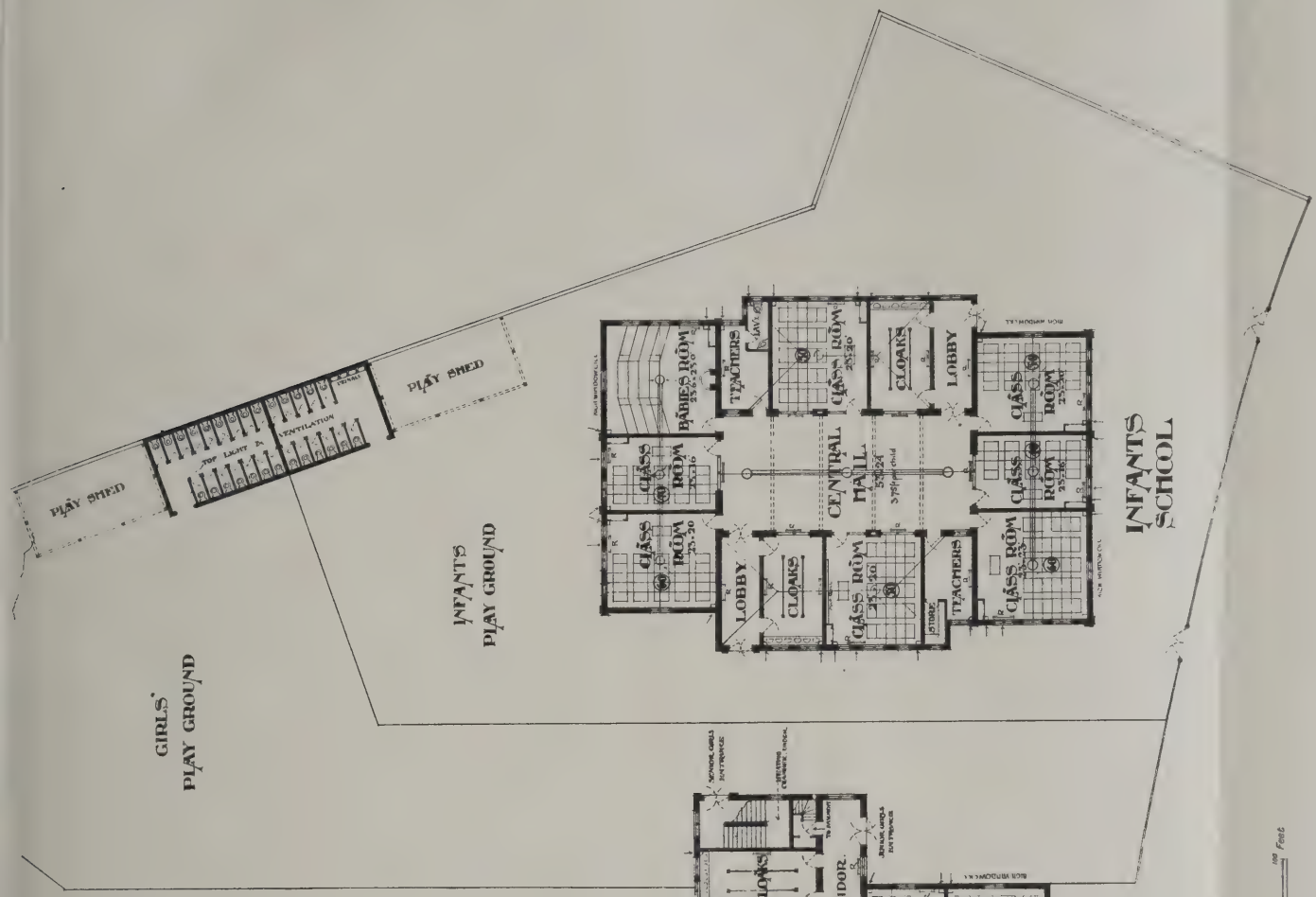
FIRST FLOOR PLAN
MIXED SCHOOL



BOYS' PLAY GROUND



GROUND PLAN
MIXED



INFANTS
SCHOOL

The Architect.

THE WEEK.

GOLD medallions are not modern creations, although owing to the value of the material few of the earlier examples have survived. Professor WEIL at the last meeting of the Berlin Archæological Society described five which were discovered in Aboukir in 1902 and are now in the Royal Museum, Berlin. The only Greek examples known before 1902 were three in the Louvre, which were found at Tarsus in 1862. Recently others were obtained in Egypt. The medallions from Aboukir have portraits of ALEXANDER THE GREAT, who was the first to introduce an effigy of a living ruler on Greek coins. It is supposed they were presented to his victorious commanders after successful battles. The Roman emperors, in their imitation of Greek customs, it is believed occasionally adopted the practice of conferring similar medallions on rare occasions.

FROM the statement of the First Commissioner of Works on Monday, the restoration of Holyrood Abbey may be considered as abandoned. Mr. HARCOURT said they were taking the necessary steps for the preservation of the ruins, but as to the bequest by the late Earl of LEVEN AND MELVILLE for the restoration and rebuilding, that was a matter with which he was not personally or officially concerned. The bequest was left on the condition that the work should be carried out by a specific architect and two specific trustees, and failing the action of these trustees the legacy lapsed into the residue of the estate. Both trustees declined to act for reasons which they stated, and therefore the money cannot be available for any other purpose. That is a correct statement as far as it goes. But if the restoration as proposed by Lord LEVEN, according to the plans of Mr. Ross, could be shown to be reasonable, there would be little difficulty in applying the money to that purpose. There are no doubt rival interests in the case, and they have been the principal obstacle to the realisation of Lord LEVEN's last wishes.

As a sufficient sum of money was not collected to purchase Mr. HOLMAN HUNT's brilliant *Lady of Shalott*, the committee have had to be satisfied with *The Ship of the Painter*. The picture was suggested by the lines of "In Memoriam," about the fair ship which bore ARTHUR HALLAM's remains from Italy to England. Mr. HUNT gives the following account of its production:—"Deeply entranced by the poetry of a vessel traversing the globe under the immensity of stars, bearing its freight of human joys and woes, I undertook the picture on a peninsular and Oriental steamer which yet retained the method of steering immortalised by TENNYSON in his poem on the return of the body of HALLAM to "rest beneath the clover sod." I made elaborate studies both by night and day in preparation for the picture on board ship, and I painted it, while still all was fresh in my mind, when arriving in Jerusalem." It is a realistic representation of the deck of a steamer on a fine night, but it is not exactly the work which should be placed in the National Gallery as most characteristic of the artist's powers.

IN the French Salon which is about to be opened will be a collection of the decorative pottery of Sèvres, which was modelled in the eighteenth century. It may seem out of place among modern works of art, but there is no likelihood of the living exhibitors objecting to the rivalry. MARIE ANTOINETTE and the Princess LAMBALLE were especially interested in the royal pottery, and a large number of groups and statuettes were produced to please them. Many examples were placed in the

boudoirs of the Trianon, Versailles, Meudon, Marly and Fontainebleau. From the account books of Sèvres it appears that within a limited period there were no less than 620 independent productions of one class. Recent searches have been rewarded by the discovery of moulds for 585 of them. The remainder are supposed to have disappeared during the confusion which followed the invasions of 1814 and 1870. M. BAUMGART, the director at Sèvres, has selected 180 examples for the Salon, where they will receive unusual attention as recovered treasures.

EARLY in April of each year the prudent *bourgeois* in Paris repeats the stereotyped laments about the folly of men preferring art to trade, especially when they are unable to attain sufficient merit to secure admission for their pictures to the Salon. This year is no exception. The artists who can claim to be "hors concours"—about 2,000—are sufficiently numerous, without other aid, to fill the wall space of the galleries. Yet in addition 3,206 paintings were sent in by 1,603 artists. The jury could not find room for more than 905, or less than a third of the number submitted. In the rival Salon a similar, if not a greater, competition occurred. There is some reason, therefore, for men who are engaged in ordinary business to be amazed at the fascination which art exercises over men and women who are not possessed of extraordinary talents, but who submit to privations with the self-sacrifice of religious votaries. Those whose paintings are rejected are sure to imagine the jury were not impartial, but how can men consider the qualities of more than one hundred works per hour with any exactitude?

IT needs no great imagination to believe that before long REYER's noble opera "Salammbô" will be heard in Carthage, where the scenes are supposed to have occurred. There may be differences between archæologists concerning the site of the Phœnician capital, for both the original city and the Roman city which took its place are alike in ruins, as they were impartially treated by Byzantine and Arab hordes. But the excavations of BEULÉ, REINACH and DELATTRE have given more definiteness to the theory relating to one part of the vast waste. If excavations could be systematically conducted the question might be settled. At least the Musée Lavignerie would be enriched, whether the objects found were Phœnician or Roman. Meanwhile, the advantages of the coast remain. Not long since it was proposed to use the late Empress of AUSTRIA's "Achilleion" in Sicily for a marine hotel. The distance from that island or from Malta to the coast of Tunis is of little account. If, as has been suggested by a society in Tunis, a bathing establishment of the modern kind were once established on the site, there would be not only an end to further tampering with the remains, but an army of explorers would be created. If America were not so remote the enterprise of the travellers who visit Europe would soon accomplish wonders and give delightful surprises by discoveries.

THE venerable JOHANNES SCHILLING, the German sculptor, has become blind. He is in his seventy-ninth year, but at the time of his sudden affliction he was still actively occupied with his art. He will always be associated with the Franco-German war, for he executed several of the large memorials which were raised in various parts of the empire. His vigour was equal to the undertaking of colossal works. The *Germania* for the monument on the Niederwald is 34 feet in height. He executed the statues of the Emperor WILLIAM I. for Wiesbaden, Hamburg, Prenzlau, Dortmund, and others of BISMARCK and MOLTKE. Few artists have accomplished so much in a period of thirty years, and the recollection of his industry should console the artist in his darkness.

THE CHOICE OF MATERIALS.

ONE of the most perplexing of the modern architect's functions is the selection of suitable materials for the buildings he is called upon to design. And under the term materials we include specialised forms of construction which, from the architect's point of view, are the *materia aedificanda* of the structure he intends and expects to see "in being," as much as bricks, stones and timbers in their original simplicity.

Take, for example, the one item of thin partitions, of which there are more than a score at present on the market, illustrating the universal principle that no sooner does some ingenious inventor produce something new and useful than a crowd of imitators rush in with more or less barefaced copies, eager to share in the profits that the novelty promises.

The same thing has occurred with "enamel" paints, with sawdust and magnesian plaster floorings, with fire-resisting floors, and many other departments of the building trade.

How is an architect to choose judiciously between the rival claimants to his favour? The fact of an article being patented is of small value. British patents are too easily obtainable to admit of their serving as credentials, and most architects nowadays are sufficiently wide awake to know that "barking" patents are rampant in the building trade, and that as often as not the distinguishing feature of a patented article is a detriment rather than otherwise to its efficiency.

The consideration of price is undoubtedly one that has great influence on the decision of an architect, who frequently has behind him a client desirous of having his wants supplied at the lowest possible figure. Thus there is an excellent chance for the manufacturer who can produce something as good, or even nearly as good, as his rivals, but at a lower price.

Cost, however, is not by any means a paramount factor in many cases. It is an architect's duty and, in most instances, his desire to get the best value for his client's money, and he realises that it is often and, indeed, generally wiser to receive 10 per cent. better value for 5 per cent. increased outlay than to save the last halfpenny.

One important question then that the architect has to settle is that of value for money. The low-priced article is cheap if it answers the purpose perfectly, but if it does not do so it is no longer cheap but dear.

It is an axiom with many artistic and observant designers that from the æsthetic point of view the most suitable materials for the exterior of a building are those indigenous to the locality. Certainly a red-tile roof in Westmoreland or a red-brick front in a Cotswold village would jar upon our sense of fitness, partly, no doubt, from the force of association, but to some extent by reason of their lack of harmony with the feeling of the local landscape, in which not only the prevailing types of vegetation and foliage and the physical contours of the country are factors, but also the atmosphere, the moods of which, infinitely variable though they be, yet seem to be classified into sympathetic groups in different districts. As an illustration, where but in the eastern counties would CONSTABLE have found his especial rendering of cloud form and atmosphere? Sympathy with the environment provided by nature is thus one of the considerations that will guide the artistic architect in his choice of materials. Even green Westmoreland slates and red Fareham bricks are not everywhere beautiful, and however desirous the manufacturer or merchant may be of an universal market for his particular products, he must not be surprised at a want of appreciation on the part of artistic architects, even though the objector may be able to give no better reason than "I do not like it," or "I prefer so-and-so," for artistic judgment is very frequently a matter of instinct, or feeling, or sub-conscious mental activity, call it what you will; it is elusive and difficult to define, even apparently illogical.

Sympathy with environment is not the only matter

the artistic architect has to achieve in his choice of external material. There must also be harmony amongst the components of his design. If he has determined on a green-slate roof his walls must be in accord. If he intends to have red brick walls his roof must be adapted to their dominant tone. Not necessarily must they repeat the key, for there is harmony of contrast as well as of unison. The trader should therefore study or learn—the two are not synonymous—the particular classes of other materials with which his own are in accord, and play up to the disposition of the architects he hopes to number amongst his patrons. For instance, some natural stones have an excellent effect with red brick, but are execrable in conjunction with white bricks or stocks.

One thing the trader must not forget is that most modern architects are well aware that no one thing is universally applicable; that in building matters "So-and-so's pills" will not "cure every disease under the sun." If he has but one article to sell his market must be limited, and if he desires a more extended vogue for his productions he must vary their lines of applicability.

How is the architect to form a correct opinion as to the value for money of, say, the score and more of thin partitions that clamour for his adoption? He will naturally give weight to any tests that may have been made by reputable and recognised authorities. The reports of KIRKALDY, the British Fire Prevention Committee and other trustworthy investigators assist him in making a selection, and so it behoves all who have to sell specialised items of construction to submit their particular wares to test, for if some of their trade rivals can show results of successful tests, and they have not faced the ordeal, their pretensions and assertions are subject to considerable discount. True it is that there is a certain amount of gullibility amongst architects, and plenty of business has been done on that basis, but it is but an uncertain foundation for permanent success; and we could point out several instances of concerns that have, as it were, grown with the rapidity of JONAH's gourd and come to as untimely an end.

Although some architects have the good fortune to be always busy, yet even with them there are periods of more and less activity, whilst the rank and file, the majority, fluctuate between times of busy-ness and slackness.

We have heard of many instances of the slack times being employed for careful and often unobtrusive investigation by architects of various classes of specialised material and construction, and this certainly appears to us to be a wise way of utilising the quiet time, to study the choice of material. When the instructions for the design of a building have been received, there is usually a rush and bustle to approximate to the client's ideas of reasonable expedition. There is then no time to investigate and weigh carefully the merits of a score of rival forms of thin partition, whatever may be the particular class of material in question.

Obviously, then, it is during the architect's slack time that the manufacturer and merchant should redouble their activity. Then it is that their advertisements should be most prominent and persistent, that the travellers should be increased in number, that when the architect has time to listen the trader should be most intent upon obtaining a hearing.

As the present is beyond question a generally slack time for architects and contractors, we quite anticipate a more than usual number of visitors to the present Building Trades Exhibition and a greater devotion of time to it by those visitors. But the exhibitors must not be disappointed and disheartened if they do not book as many definite orders as on previous occasions. They must be content with sowing the seed and leaving the harvest for the future. It must not be forgotten that the seed will require watering and cultivation. The advertisements and the travellers must be kept going. Tact, however, is necessary. We were rather

amused at the scorn with which one of our architect friends showed us a card he had received from one of the exhibitors, with the request, "If you call, may we ask you to kindly hand this card to our attendant?" Why should he carry their card rather than anybody else's? If theirs, why not another hundred or two? Why should he load himself with lumber to please the exhibitors? Especially as this particular firm left him to utilise someone else's ticket of admission, we fear this exhibitor will not see our friend when he visits the exhibition.

JOHN STOW.

THE name of JOHN STOW is never likely to be forgotten, for is it not associated with the City of London, and where is a more enduring memorial? Yet the members of the London and Middlesex Archaeological Society, who on Saturday placed a wreath on his tomb in the church of St. Andrew Undershaft, and listened to an address concerning him were well inspired. At a time when celebrations of English worthies are common, JOHN STOW's labours merit to be recalled. He was the earliest of our topographical antiquaries, and he was endowed by nature with most of the qualities which were essential for the work he undertook. As architects we must regret he did not describe the impressions he received from the contemplation of the old buildings he saw around him in London, but if he were more emotional his statements might be received with less confidence.

It is believed he was born in 1525, somewhere in the parish of St. Michael, Corrhill. He was the son of a citizen who belonged to the Company of Merchant Taylors. He was also a tailor, and it was jestingly said that he "stitched up English history." An irresistible impulse compelled him when he was about forty to abandon a business which was likely to have been well established and profitable, in order to devote himself to collecting the records of his country, or, as he says, to address all his cares and cogitations to the studies of histories and search of antiquities, which he admits were for him "delectable studies."

According to STRYPE, it was at the suggestion of ROBERT DUDLEY, afterwards Earl of LEICESTER, that the "Summary of the Chronicles of England" from the time of BRUTE was commenced. His Lordship was a patron of literature, and we suppose rewarded Stow on accepting the book. But his aid could only be temporary, for it is evident from petitions addressed to the lord mayor, aldermen and commoners of London that Stow was in a state of poverty during the greater part of the time he was studying and writing. Besides the "Summary of the Chronicles," he printed an abridgment of it; he also wrote his "Flores Historiarum, or Annals of this Kingdom," and a continuation called "Annals, or a General Chronicle of England." For a time he was compelled to suspend his labours, as a rival chronicler appeared in RICHARD GRAFTON, the printer. Stow charged him with dishonest dealings and with reaping the fruits of his labours. The history of England may be said to have occupied JOHN STOW between 1562 and 1598. The toil required in the compilation of his books would have daunted any man who was not an enthusiast. In our time, when facilities are given, the study of ancient manuscripts is not an agreeable task. When Stow endeavoured to utilise them, it must have appeared like entering into chaos. He told his readers how, "painfully to my great cost and charges, and not for hire," he brought things to light out of many old hidden histories and true records of antiquity. If he asked for support it was in order to rescue other accounts of events from oblivion. One black-letter volume was only, as it were, the prelude to another, for no indifference on the part of his fellow-citizens could damp his ardour.

STOW was thirty-three when ELIZABETH came to the throne, and it might be supposed he would share in

the interest shown to literature, especially when he had the patronage of LEICESTER. The drama was the chief gainer, and the history of England was only acceptable when seen on the stage. As an antiquary Stow was supposed to be in favour of the old system which the TUDOR family had set aside, and on that account could not be approved by the Court party. He was regarded as a suspicious person, and a search was made in his house. It was found that by his own labours he had accumulated materials for his "Chronicles," that he possessed not only fabulous books and tracts relating to medicine and surgery, but fantastical Popish books printed in old times and others written in old English on parchment. Whether he suffered in consequence of his possessions is not known, but on a second ecclesiastical inquisition his property was confiscated. His brother was the principal witness against him, and it is no wonder that afterwards "he was very careless of scoffers, backbiters and detractors."

Between Stow's researches and the literature of the time there could be little in common. He sought truth above all things, and would be opposed to adaptations of it which were produced to please the groundlings. BEN JONSON said that "JOHN STOW had monstrous observations in his Chronicle," and in all ages it has been difficult to reconcile archæology with the necessities of the drama. It is strange that one of the few puzzles in the "Survey" relates to theatres. When describing Shoreditch, he wrote:—"And neare thereunto are builded two publique houses for the acting and shewe of comedies, tragedies and histories for recreation. Whereof one is called the Courtein, the other the Theatre; both standing on the south-west side towards the field." They are the only playhouses mentioned by him. Unquestionably there was a theatre in Shoreditch known as the Courtein, and the name survives in Curtain Road. But nothing is to be discovered about one known as the Theatre, unless a stage for open-air performances went by that name. Stow at least rendered one service to literature, for, as he relates, the works of CHAUCER, "the most famous poet of England," were by him "corrected and twice increased through mine own painful labours, and again beautified by me, collected out of divers records and monuments, as also explained the old and obscure words." His edition of CHAUCER appeared in 1597.

The next year was published a quarto volume, "A Survey of London," on which the reputation of Stow is based. His "Chronicles" are rarely exhumed to be looked at as curiosities of typography, while his description of the city which "BRUTE, lineally descended from the demigod ÆNEAS, the son of VENUS, daughter of JUPITER, about the year of the world 2855, built near unto the river now called Thames, and named it Troynovant or Trenovant," is likely to be familiar to the famous New Zealander before he begins to sketch the ruins of St. Paul's. In it Stow combined research and observation. To gain his evidence he had to give "many a weary mile's travel, many a hard earned penny and pound, and many a cold winter night's study." But he was familiar with London for more than seventy years, and his youthful remembrances continued to be clear and definite. The description of Goodman's Fields, which was once the property of the Poor Clares or Minories, must always charm:—"Near adjoining to this abbey, on the south side thereof, was sometime a farm belonging to the said nunnery; at which farm I myself, in my youth, have fetched many a halfpenny worth of milk, and never had less than three ale pints for a halfpenny in the summer, nor less than one ale quart for a halfpenny in the winter, always hot from the kine as the same was milked and strained." ISAAC WALTON could not produce a more pleasing picture.

He may have lived then in or near Aldgate, for he relates that he witnessed an execution before the door of his house. The criminal said from the ladder, "Good people, I am come hither to die but know not for what offence." A few innocent words spoken to a clergyman

were misinterpreted and in those days life was not valued. Stow is commonly supposed to have cared only for antiquities, but strange accounts could be drawn from his "Survey" about the manner in which the people of London lived in the sixteenth century. They reveal that Merry England was characterised by scenes which were tragic.

Although much has changed, it is surprising how many resemblances exist between the London of to-day and Stow's London. It may seem incredible to find the traffic nuisance in the sixteenth century was as perplexing as it is now. According to Stow, "the number of cars, drays, carts and coaches, more than hath been accustomed, the streets and lanes being straitened, must needs be dangerous, as daily experience proveth." There was a law against "shodde carts" or carts with iron tires unless they were for the service of the prince, but it was disregarded. Coaches were no longer confined to persons of distinction, "for the world runs on wheels, with many whose parents were glad to go on foot."

Old St. Paul's Cathedral was then the principal building in London. In his prosaic manner Stow describes the different parts and gives dimensions, but there is nothing to suggest the effect on spectators. He was a witness to some of the changes in the building. In 1549 the Duke of SOMERSET ordered the chapel founded by GILBERT BECKET, the principal magistrate in the reign of King STEPHEN, and which was re-edified in the reign of HENRY V., to be pulled down and the site converted into a garden for the petty canons. A chapel of the time of HENRY VI. was also demolished to make room for a house. HOLME'S College was suppressed about the same time. In 1561 the great spire was struck by lightning, and "within the space of four hours the same steeple, with all the roofs of the church, were consumed, to the great sorrow and perpetual remembrance of the beholders." Energy was shown in the restoration. The roofs were re-covered by 1566, but the tall spire was not to be renewed. Stow was evidently suspicious about the cause, for he says:—"Concerning the steeple, divers models were devised and made, but little else was done, through whose default God knoweth; it was said that the money appointed for new building of the steeple was collected and brought to the hands of EDMOND GRINDALL, then Bishop of LONDON." In HOLLAR'S engraving of the building as it appeared in 1656 two storeys of the square tower are alone seen.

Stow's poverty is evident from his selling to CAMDEN six volumes of LELAND which he had transcribed for an annuity of 8*l*. Soon afterwards he became destitute. His case was brought before JAMES I., who was supposed to be a scholar, and therefore would admit the claim of a man who had devoted nearly half a century to the history of England. JAMES munificently granted to the "very aged and worthy member of our City of London" letters patent under the great seal authorising him "to collect amongst our loving subjects their voluntary contribution and kinde gratuities." The date of so important a document was March 8, 1604, when Stow had attained the age of seventy-nine. In other words, he obtained a privilege corresponding with the wearers of the blue gown in Scotland, of whom EDIE OCHILTREE was an illustrious representative. BEN JONSON told DRUMMOND that Stow once asked a couple of mendicants how much they required to admit him to their order; by royal warrant he was allowed to ask for food or money without the payment of fees. As he died on April 6, 1605, he was able to follow the profession of mendicancy for only a year. In that time one parish rewarded him with 7*s*. 6*d*. His biographer, STRYPE, wrote:—"Tis strange to me that the City of London, to which he had done such service and honour in writing such an elaborate and accurate survey thereof; nor the wealthy Company of Merchant Taylors, of which he was a worthy and creditable member; nor lastly, the State, in grateful remembrance of his diligent

and faithful pains in composing an excellent history of the Kingdom, neither of them had allotted him some honorary pension during life."

Stow was buried in St. Andrew Undershaft, a late Gothic church, and somehow his widow was enabled to erect a memorial of him in terra-cotta, which still exists, representing him as seated at a table with a pen in one hand and a volume before him. Whether his remains are there is doubtful, for MAITLAND says the corpse was removed in 1732 to make room for another. When living Stow was, according to one of his friends, "tall of stature, leane of body and face, his eyes small and chrystaline, of a pleasant and cheerefull countenance, his sight and memory very good; very sober, mild and courteous to any that required his instructions; and retained the true use of all his senses until the day of his death."

THE ALHAMBRA.

WHEN we find a publicist of the standing of the Marquis DE ALTA-VILLA imploring the Spanish Government to show more energy in restoration of the Alhambra, it may be assumed that serious danger is impending over the Moorish palace. Spaniards have been for generations familiar with anticipations of its fall, and as time runs on they have concluded that by some mysterious means the buildings will hold together. We may therefore believe that if a gentleman of high position takes up the subject it is because he is aware of a change in the conditions, and that ruin is not a remote contingency. Few buildings have had so many enemies, and the wonder is how so much remains after what they have done.

The Alhambra could be included with buildings of a different class as evidence of the remarkable creative power which was manifested in the thirteenth century. Concrete and brick were the principal materials used in the walls, and yet the praises of the different parts which are expressed in the inscriptions are not exaggerated. When one of the gardens is supposed to point to columns which seem to be blocks of pearl, and halls which make the stars grow pale, we must remember that the brick-work was veiled with materials of a more precious kind. Mosaics, tiling, gold and colours were most apparent, and if there was expense it was repaid in beauty.

But from the character of the decoration which was so lavishly introduced there was a temptation to vandalism. The Moors did not enjoy the completed palace for more than two centuries. After the surrender to FERDINAND and ISABELLA an effort was made on a wholesale scale to deprive the Alhambra of whatever was essential to its beauty, but which was supposed to be dangerous to all who looked upon the symbols and ornament. CHARLES V., when his turn came to reside in it, endeavoured to impart a Flemish character to the halls. At a subsequent time the Alhambra was utilised as a hospital and a convict settlement. All the inmates and their hangers-on knew that they could damage the building to any extent which was profitable. Fortunately the Spaniards were afraid of the consequences of possessing Moorish spells in their houses, and curiosity hunters were too cowardly to journey to Granada. There is some satisfaction in remembering that an Irish refugee, RICHARD WALL, in the eighteenth century used his power to prevent further injury.

His preservation was only temporary. The old indifference was soon tolerated. Governor after governor was allowed to do as his whims dictated, and it might be imagined that an official wreaked vengeance on the Alhambra as if it were the cause of his exile in such quarters. Even when the French invaded Spain and the buildings were seized, it was only by chance they were not all blown up when evacuation became a necessity. French writers endeavour to excuse the misdeeds of their countrymen by ascribing them to the fatal necessities of war, but nobody outside France is convinced. According to WASHINGTON IRVING, modern

travellers are indebted to a couple of women who served as caretakers, and were worthy of the title, for the retention of the Moorish characteristics which the Alhambra still presents. After the women's departure the buildings were used to confine galley slaves, and gangs of them were kept at work in loosing the tiles of the walls and throwing them over the battlements. The original wealth of the palace must have been astonishing to allow depredations during so many centuries, and justified the poets who described it by comparing it to some living being of unparalleled beauty. As one of the inscriptions stated:—"Every art has gifted me with its elegance, splendour and perfection. Those who behold me take me for a female. Indeed, when the spectator has attentively examined my beauty, he will find reality to exceed the most extravagant conceptions of his fancy. He will see the full moon beam forth from the rays of my light, and its halo leave me to enter the mansions of the sky."

The visitor who now sees the Alhambra will require to exercise his imagination before he can accept the Moorish poet's words as applicable. Long years of unbridled vandalism have shown their force in all directions. After seven centuries the brickwork where seen is not comparable in colour with that of England which may be a century or two old. Moreover, the Moorish prince, like the majority of Easterns, did not erect a residence which would amaze spectators by its external appearance. Whether small or large, a mansion was intended for the owner's own delight, and he thought only of the embellishment of the interior. That principle has been observed in the Alhambra.

With all its beauty it is remarkable that the Alhambra, or rather the principle which it exemplifies, has never been adopted for English use, although we have acclimatised many styles. When the reproduction of part of it was first opened at Sydenham it received far more admiration than any of the other examples of ancient architecture. OWEN JONES imagined that a style of work which he had so long admired was to come into favour, and his exposition of the principles adopted by the old Moorish artists was so logical, it might be easily concluded there was no style which was equally consistent and better adapted for imitation by rational people. The name was adopted for the building in Leicester Square, but it could not be said that it bore much resemblance to the Moorish palace. On the Continent a few theatres were erected in which the imitation was closer, and they suggested that the style could be used to advantage for that class of building.

Without regarding the Alhambra as a model—for it may as well be admitted that Eastern and Western art are never likely to agree—all who love architecture must desire to see the group of buildings preserved, although they are no longer in their pristine state. That does not necessarily mean that costly new works should be undertaken in the Moorish style. At present it must be allowed there is a good deal of comparatively modern work which is accepted as ancient. The Carcel de la Reyna, or Queen's prison, with its iron grills, at once calls up ancient legends about the punishment of guilty wives, but it is merely a seventeenth-century gallery. The Peinador de la Reyna might be supposed to be a reserved place for devotion, but it also is not of Moorish origin. Similar additions would only increase the anomalies of the place, and may be omitted with advantage. With that exception, the effort which the Marquis DE ALTA-VILLA proposes is deserving of support in all civilised countries. Spain unfortunately is not in a condition to expend large sums on ruins which are more prized by foreigners than by Spaniards. But it is not impossible that a comparatively small sum, if wisely expended, would prevent a collapse. Something should be done, for it must be remembered that the Red Palace alone enables us to realise the refined luxury of Moorish princes, and a style of architecture in which prayers and moral precepts were converted into decoration.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. Edwin T. Hall, vice-president, in the chair.

The decease of George W. Hamilton Gordon, director of public works, Orange River Colony, was announced.

The CHAIRMAN said he had much pleasure in introducing to those who did not know him Mr. Stanley Hamp, who had undertaken to read a paper at the meeting. Mr. Hamp, he said, was the partner of their president, Mr. Colcutt, who had been most anxious to attend, but owing to recent illness their President had gone to Spain to recuperate in health.

Hotel Planning.

Mr. HAMP, in introducing the subject of his paper, showed how development in hotel construction had gone hand in hand with improvements in locomotion, and he put upon the screen illustrations of some interesting old examples of inns which still survive. Reference was made to the inn sign-boards of olden days, to the origin of some of the signs, and to the accommodation and characteristics of the old inns as described in literature of the period. Motorists, the author thinks, will probably bring back to the inns on our rural high roads much of the custom and prestige which they lost through the disappearance of the stage coach. Hotels used in the past for coaching and posting purposes have more than sufficient stall accommodation for present requirements, and it would be a simple matter to adapt it for motor garage.

Discussing modern hotels, which he divided into three classes—viz. residential hotels, commercial hotels, railway hotels—the author said that as regards design the usual tawdry and showy character should be avoided, and the building be designed with a simple architectural treatment. It should be, as far as possible, fireproof, and should have one or more fire-escape staircases arranged with escape exit at each corridor. It should be so planned as to minimise the staff as far as possible. The main entrance should be inviting, the rooms light, but not too large. There should, if possible, be only one entrance and exit for the staff.

The usual accommodation of the modern hotel might be stated to consist of a lounge or winter garden, dining-rooms, restaurant, coffee-room, with services adjoining, reading and writing-room, small drawing-room, smoking and billiard-room with bar attached, ball-room with reception-room attached, office and manager's room, gentlemen's lavatory and cloak-room, ladies' retiring and toilet-rooms. In the basement are situated the kitchen department and offices, the staff dining-rooms, servants' hall.

Often one or two private dining-rooms are required. In the provinces a large hall for public banquets and meetings is necessary, in which case a separate service should be arranged with a separate kitchen. In large hotels a barber's shop is a useful adjunct. The author recommended also for large hotels a bakery and a dairy as well if it can be afforded. The upper floors are usually devoted to bedrooms, bath-rooms, w.c.'s and service-rooms, of which there should be one on each floor fitted with sinks, hot plates, &c., in direct communication with the kitchen, and adjoining which the service lifts to carry coals, &c., should be arranged. Ladies and gentlemen's lavatories should be away from each other, and cut off from the main corridor by a ventilated lobby. The dining-room, especially in large towns, should be provided with an orchestra, and where a ball-room is impossible the dining-room should have a dancing-floor. Some of the rooms on the upper floors should be arranged in suites, with sitting-room, one or more bedrooms, with communicating doors, small hall, from which should lead bath-room and w.c. Communicating doors between rooms should be double, sash windows made reversible so as to be cleaned from the inside, and double windows fixed to windows facing main thoroughfares. Heating coils should be placed in all public rooms, staircases, corridors and landings; and fire-alarms and hydrants provided in all public corridors.

The author summed up as follows the essential features in planning an hotel:—(1) The maximum amount of light and air; (2) a simple and direct plan; (3) a proper distribution of the working and managerial parts of the hotel, and easy and direct service communication to the public and private rooms; (4) centralisation of kitchen and office; (5) perfect sanitation; (6) adequate means of escape in case of fire and panic. The author dealt with these points in some detail, and touched upon such matters as telephone service, "vacuum" cleaning, &c.

On the subject of ventilation, reference was made to the system in use at the Midland Hotel, Manchester. Here, by means of two fans revolving 180 times per minute, 2½ million cubic feet per hour of fresh air, cool in summer and heated in winter, are introduced into the building. The air is filtered through a screen of special material, which has an area of 320 square feet exposed to the air inlet. This screen extracts all the soot and chemicals, clearing the air as it passes through, the largeness of the area of the screen making the resistance to the fans as little as possible. The air extraction and ventilation of the guests' rooms should be absolutely separate from the other portions of the buildings, and special attention should be given to the extraction of air and heat from the kitchens, laundries and such places, especially if they are in the basement.

As regards fire alarms, the author considered the right course was to give the alarm only to the officials and the staff. If a universal alarm be given a serious panic might easily arise, whereas the action of a well-trained staff might avoid a serious outbreak in the event of actual danger. One service-room on each floor should be equipped with an indicator and an alarm bell. On the face of the indicator would be numerous little apertures of about 1 inch square, each aperture representing a corridor on the various floors. Therefore, should a fire break out in the main corridor on the sixth floor and the alarm be given, the bell would ring in the service-room on each floor, and upon every indicator would appear a red disc in the aperture, "Main corridor, floor sixth." Thus the staff on each floor would know exactly in which corridor the fire had broken out.

The internal arrangement of kitchen and offices most concerns an hotel manager, and the architect should, where possible, consult him if he is to obtain satisfactory technical results. The kitchen is the laboratory where the reputation of the hotel is made or marred, and the kitchen staff should be given plenty of light and ventilation; the ranges, grilles, ovens and hot plates should be of the best procurable, and plenty of utensils should be at hand. The walls of kitchen, scullery and larders should be either white tiles or glazed brickwork, and the floors of stone, or "granolithic" or terrazzo. With the application of electrically-driven propelling fans and tubes for the supply of fresh air, and extracting fans fixed at the top of vent tubes and vent shafts, it is now recognised that the most convenient position for the kitchen is in the basement.

The author dealt in detail with the requirements and arrangements of the various sections of the kitchen department, the position of the service-rooms, ice and ice-making department, sculleries, pantries, larders, various stores, cellars, lifts, &c. In conclusion a list was given of the fittings installed at the recently opened University Hotel.

Numerous plans and views of hotels in Great Britain and abroad were exhibited as illustrations.

Mr. JOHN SLATER, in proposing a vote of thanks to Mr. Hamp, said they were very greatly indebted to him for the trouble he had taken over the paper, and for the numerous drawings which accompanied it, and for the lantern slides illustrating matters appertaining to a large hotel. It was almost impossible to follow the paper in many of the details which had been described, because the buildings would require hours of study before one could criticise the arrangements with any advantage. The views of the old inns were extremely interesting, and a new charm was added to them by the narrative which gave the history of the curious distinguishing signs which still survived. The wording of the signs was also interesting since it was often found to be a corruption of the original. Mr. Hamp had said in his paper that there should be only one entrance for the staff. That was a counsel of perfection, but they had the London County Council to consider, and in their regulations as to building there were special provisions dealing with the means of exit. The doors, too, had to be so arranged that they could be opened by a mere push from the outside. Mr. Slater said he happened to be engaged on a hotel and he had pointed out to the County Council that under such requirements it would be almost impossible to manage a hotel satisfactorily. If doors were opened too easily the entrance of undesirable people into the hotel was difficult to control. The County Council were aware of this objection, but they argued that they were more concerned in the safety of people in cases of fire or panic. The Council did not seem to realise that in modern hotel building the material used in construction was fireproof, and that there was little chance of fire breaking out. There was the risk of panic from smoke, and this necessitated separate exits from all floors. In London the

sites for hotels were costly and the provision of separate exits created a very great difficulty in planning. Mr. Hamp had advised the arrangement of the kitchen on the ground-floor. That was also a counsel of perfection, because there were few hotels where the area of the site was sufficient to enable the architect to include the kitchen and service-room on the same floor as the coffee-room and dining-rooms. It was, however, better to put the kitchen in the basement than on the top floor as was done in certain hotels some years ago. The lavatory arrangements always required careful consideration, and Mr. Slater was inclined to the opinion that it was desirable to have the water-closet and bath-room together.

Mr. E. A. GRUNING seconded the vote of thanks. He said he himself had studied hotel work for a long period, and he could recognise the difficulties Mr. Hamp and his well-known partner had overcome in the successful planning of the Savoy Hotel. The architects in hotel work were often hampered by the nature of the site, the nature of the requisitions and the nature of the trade that was carried on. The paper was full of information, but, the speaker added humorously, the cook was the man to be considered, and yet the arrangement of kitchens was not exhaustively treated.

Mr. WM. WOODWARD supported the observations made by the two preceding speakers. He thought they would all agree that the planning of a hotel required as much skill, thought and knowledge as was essential to any building. The enormous amount of detail that went to the making of a successful hotel required both skill and experience in arrangement. He ventured to suggest, after having used the Savoy Hotel, and after staying at the delightful hotel in Algieras, that, in his opinion, there was no firm of architects who knew better how to design and equip a hotel than the partners, Messrs. Colclutt & Hamp. In the paper Mr. Hamp had summed up the requirements of an hotel in one sentence, and the plan which could conform to those requirements would fulfil all that was necessary both for the client and the public. With varied sites to be dealt with it would be difficult to secure a general arrangement, but the speaker thought there was one feature which should be common to hotels—he referred to the necessity for simplicity in plan, more especially with regard to upper floors. Another important point touched upon in the paper was the economy of service. There were one or two hotels in London which it was quite impossible to make financial successes because the arrangements for service had been so badly planned. Ventilating and heating in hotels was a subject which Mr. Woodward considered should be left very properly to an expert who was thoroughly accustomed to that branch of work. The speaker also drew attention to the need for good locks on the doors of bedrooms. He also pointed out the desirability of perfectly sound-proof partitions, double doors between the rooms and double windows.

Mr. ERNEST RÜNTZ said he had not been able to be present during the whole of Mr. Hamp's paper, but it had been his privilege some ten months before to hear the author's views in a lecture on the same theme. At that time Mr. Rüntz was in the throes of preparing a paper to be delivered before a society of Welsh architects, and he found Mr. Hamp's lecture of great service to him. With regard to the discussion, the speaker said the meeting was considering a subject which should have received earlier and greater attention. The paper dealt with one of the most essential features of life in the present day. Mr. Rüntz then showed how the development of hotels had gone hand in hand with the progress and change of means of locomotion. Mr. Hamp had traced, he said, the course of such development, and the speaker suggested that the beginning of modern hotel enterprise was exemplified by the one at St. Pancras, built by Sir Gilbert Scott. Referring to the point in the paper treating of the economy of service, Mr. Rüntz said the solution of the problem depended upon the site and the nature of the hotel to be erected. There was no doubt that in the Savoy Hotel the architects had to deal with great difficulties. The sites of the Ritz and the Waldorf hotels did not present such problems, and in his opinion there were no better examples of hotel planning. The arrangement of the kitchen was a most important matter, and Mr. Rüntz said that in order to insure success in this department of work he did not complete his plans until the manager of the hotel was appointed and his approval gained. In the New Gaiety Restaurant they had to plan for a service which could deal with public dining-rooms and residential flats in the same

building. They arranged therefore for kitchens in the basement and on the top floor of the block, and the scheme worked admirably. Mr. Rüntz did not think it was possible to fix upon any absolute principle in planning until the class of business to be undertaken by the hotel was made known to the architect, and even then the plan should develop from the suggestions of those who were to govern the whole concern.

The CHAIRMAN in putting the vote of thanks to the meeting, said they had had one of the most interesting evenings of the session, because Mr. Hamp had brought to their notice a subject which was one of the most up-to-date problems in any big city. The paper drew attention to so much detail in hotel planning that it would serve as a textbook for those who were undertaking hotel construction.

TESSERÆ.

Northern and Southern Gothic Sculpture.

IN the hands of the northern builders sculpture often became rather the means of explaining and animating the stories of their stonework than a matter of abstract decorative science. Flowers were painted red, trees green, and faces flesh colour, the result of the whole being often far more entertaining than beautiful. And also, though in the lines of the mouldings and the decorations of shafts or vaults a richer and more abstract method of colouring was adopted (aided by the rapid development of the best principles of colour in early glass painting), the vigorous depths of shadow in the northern sculpture confused the architect's eye, compelling him to use violent colours in the recesses, if these were to be seen as colour at all, and thus injured his perception of more delicate colour harmonies; so that, in innumerable instances, it becomes very disputable whether monuments even of the best times were improved by the colour bestowed upon them, or the contrary. But in the south the flatness and comparatively vague forms of the sculpture, while they appeared to call for colour in order to enhance their interest, presented exactly the conditions which would set it off to the greatest advantage; breadth of surface, displaying even the most delicate tints in the lights, and faintness of shadow joining with the most delicate and pearly greys of colour harmony, while the subject of the design being nearly in all cases reduced to mere intricacy of ornamental line, might be coloured in any way the architect chose, without any loss of rationality. When oak-leaves and roses were carved into fresh relief and perfect bloom, it was necessary to paint the one green and the other red; but in portions of ornamentation where there was nothing which could be definitely construed into either an oak-leaf or a rose, but a mere labyrinth of beautiful lines, becoming here something like a leaf and there something like a flower, the whole tracery of the sculpture might be left white, and grounded with gold or blue, or treated in any other manner best harmonising with the colours around it. And as the necessarily feeble character of the sculpture called for and was ready to display the best arrangements of colour, so the precious marbles in the architect's hands give him at once the best examples and the best means of colour. The best examples—for the tints of all natural stones are as exquisite in quality as endless in change, and the best means—for they are all permanent.

Early Altar Screens.

As soon as ever the Church, delivered from persecution, had leisure to turn her attention to the details and arrangements of her temples, we find the altar immediately separated by a screen from the choir. The first reference to it which we have is in the description given by Eusebius of the church of the Apostles, founded at Constantinople by Constantine the Great. Here it was reticulated, and of brass gilt. The second Iconostasis of which we know is still in existence in the rock-church of Tepekerman in the Crimea. This was built by the Arians about A.D. 340. It is of stone; on each side (for it is returned to the north) it has four piers which support the roof, and the balusters between them are so contrived as very strongly to set forth the cross. The third instance is the magnificent erection described by Eusebius in the church of Tyre, built by Paulinus. This was of wood, so exquisitely sculptured as to be reckoned one of the wonders of Asia. In the same century, St. Gregory Nazianzen already attaches a mystical signification to the altar screen. He calls it "the screen which divides the two worlds, that which is everlasting and that which passeth away, the boundary of gods and men."

And again, everyone is acquainted with the firmness of St. Ambrose in forbidding the Emperor Theodosius to remain within the cancelli during the time of the Holy Mysteries. Thus, in the fourth century we see that the Iconostasis, though certainly not then known under that name, was, under various titles and in various forms, so universal in the East as to be acknowledged as a symbol, and in all probability was just as general in the West. And at the commencement of the fifth century other examples occur in the latter. Thus St. Augustine, in relating the miracle that was wrought on Easter Day at Hippo on a young man afflicted with palsy, says that when it happened he was holding "the cancelli of the Holy Place, where was the Martyrium." The expression shows clearly enough that no screen dividing choir and nave can here be thought of. In like manner St. Paulinus, in describing the church of St. Felix at Nola, mentions the three doors to the cancelli, just as there are at present in the Iconostasis of the greater part of Eastern churches. Italy, then Egypt, Libya, Greece and Asia Minor had, the Iconostasis before the year 420 as the rule, and to all appearance the universal rule, of their churches.

A New Style.

It seems taken for granted by some people that the formation of a uniform style after the model of those that have been is the grand desideratum, and it may be that the method suggested is the only one by which such a result could be obtained. But then it is not necessary that such a style should be established in order that architecture may progress. We look not that our painters should give the same features or attitudes to their figures, the same composition or tone of colouring to their pictures, nor do we ask this monotony of our sculptors; wherefore, then, should it be demanded from architects? The day has passed when the works of a nation should be reckoned in the aggregate, or their growth described as regularly as that of a vegetable. We want neither a new nor a universal style. It were better that we knew nothing about styles; the very name of them is a bane and a hindrance to the architect, however useful to the antiquary. Let us leave it to posterity to classify our productions, and be sure that if we work simply, neither copying nor striving for singularity, we shall not then so belie the feelings of our age and country but that they must impress themselves upon our work, though we perhaps may see it not. We shall at least do that which shall have an appearance of life, and which, rudely it may be yet surely, shall pierce to the sympathies of men. Each architect should shun plagiarism as a stain on his reputation, and then all beauty is common to him, for columnar architecture and delicacy of moulding and precision of symmetry are not the inalienable property of the Greek, though his school and peculiar orders are. Lofty and graceful proportion, vigorous light and shade, fairy tracery and fretted vaulting are not a Gothic patent, though each cathedral, with its own crisp foliage and quaint imagery and curious penetrations and varied details, left to us throughout the length and the breadth of our land as a record of the labour and zeal and love of their builders, is as it were a sign-manual which it is forgery for us to repeat. The well, however, whence they drew is open to us, and we may do more and better than they, since they have shown us how, and we have not all that lesson to learn for ourselves.

Vitruvian "Decorum."

The sixth branch of study dwelt upon by Vitruvius he designates under the head of Decorum, and by that we may consider to have been implied what we should call now, in structure, its prudence and fitness. Decorum measured out the precise amount of ornament to be incorporated in every part of the structure. It maintained the due relation of size between the various parts of a building; it prevented secondaries being drawn into the position of primaries and vice versa; it gave extra stability to the part intended either for defence or special dignity; it gave vigour and simplicity of form to those parts of the structure most exposed to the action of the elements, and due protection to the more delicate accessories of the structure. It insured the spectator's gathering a right impression of the character and purport at once of the building and of its author, on leaving it as well as upon arriving at it. It insured harmony between his first and last view of the building; it made him reach it with joy and leave it with regret. It was, in fact, the application to it of a cultivated and intelligent good sense; the quality of all others which is perhaps most wanting in the majority of our structures of the present day.

NOTES AND COMMENTS.

A CURIOUS problem awaits solution by the French Ministry of Fine Art. In the first place, it relates to an equestrian statue of NAPOLEON I., which at present might evoke associations not entirely favourable to the Government. Then the artist to whom the work is to be credited has to be officially ascertained, which means a roundabout process, although private people could settle the matter in a few minutes. It appears that in Grenoble there was a bronze equestrian statue of NAPOLEON which was set up in 1867, but after the failure of 1870 it was taken down. The Council believed it to be a work by GILBERT, who was known principally as an architectural sculptor. He died in 1891, and does not seem to have troubled himself about any statue in Grenoble. The Council did not care about the pieces into which the work had to be divided, for it was not cast as a whole. They applied to the local department of artillery to remove it, and may have supposed it would supply material for cannon. It was found to be in the way. A couple of years ago the War Minister applied to the Fine Arts Minister to remove the pieces, and after much investigation of the circumstances an order was given to send the work to the asylum for obsolete sculpture, representing kings, ministers and other great men in Paris. In the numerous documents it was entered as a work by GILBERT, and to the official mind it will always appear as such. Another version of the affair has now to be told. M. NIEWERKERQUE, who was in favour in the court of NAPOLEON III. and was appointed superintendent of fine art, was an amateur sculptor. A statue of NAPOLEON I. was required for Grenoble, and he showed his discernment by giving the commission to M. FRÉMIET, who designed the popular equestrian statue of JOAN OF ARC in Paris. A beautiful steed, which was a gift of ABD-EL-KADER, was used as a model, and the uniform of NAPOLEON was exactly copied. M. FRÉMIET now professes to be ignorant of the fate of his work, and does not trouble himself about it. It is doubtful whether he will visit the dépôt where the pieces are entombed. Meanwhile the Administration of Fine Art can take no cognisance of M. FRÉMIET, for all the official documents ignore him. The work is recorded as one by GILBERT, and as municipal, military and art administrators have agreed, who will have the hardihood to suppose they are not correct?

A CORRESPONDENT who lately visited the shores of the Baltic in order to observe the methods employed in the amber industry boasted that he picked up a small portion of the valuable resin, and was able to put it in his pocket. That might not seem much of a feat to most people, but when it is known that the Prussian Government have monopolised the amber industry, and that the police are sharp-sighted, there was some risk in the little transaction. Painters will not object to the arrangement, for probably the amber varnish which is now to be obtained is superior to any produced by a private maker. The official chemists have found that the finest varnish can be produced from waste known as colophony, and it is easily soluble. In the discussion on Dr. LAURIE's paper (see p. 244) something was said about amber varnish, and he admitted that some of the samples which he obtained, although described by that name, probably did not contain any amber. Artists' colourmen will have to be careful about what they sell, otherwise foreign products will be preferred.

THE French Commission of Historic Monuments are supposed to have control over every ancient building in the country which possesses architectural interest. There are, however, exceptions to the majority of laws and regulations, and among the important examples unrecognised by the Commission is the Bishop's Palace at Lisieux. It adjoins the church of St. Pierre, which

was formerly the cathedral. Why it has escaped the Commission's notice is owing to its excellent condition, which enables it to be used as a law court, a library, a prison and public offices. The Department of Calvados is responsible for its upkeep and has faithfully conserved it. As it adjoins the public garden, which is almost unique in beauty, any neglect of the palace would be more marked than in an ordinary case. The building is constructed of brick and stone and was erected in the seventeenth century by Maréchal GOYON DE MONTIGNON. There is a fine staircase with a ramp of wrought-iron which leads to the Salle Dorée, a noble room with a sculptured and painted ceiling. There are a few old paintings on the walls, which are hung with Cordova leather. The Chambre Rouge is used as a council chamber. The condition of the building could not be improved if controlled by the Historic Monuments Commission.

"HADFIELD'S Manganese Steel" is known wherever metals are used. Some years ago Mr. R. A. HADFIELD granted a license to the TAYLOR Iron and Steel Company of the United States for its production. A skilled expert from England was employed for about nine months. The company professed to have subsequently introduced improvements which they regarded as trade secrets. An assistant superintendent having left the TAYLOR Company's service to enter the works of a rival company, an injunction was applied for to prevent his divulging any of the TAYLOR Company's secrets. It was stated that by the agreement signed by him the secrets governing the HADFIELD process were to be considered confidential only until the expiration of the life of the HADFIELD patents. The New Jersey Court of Chancery came to the following conclusion:—"A manufacturer of steel used secret methods in his business which yielded an improved product, and engaged an employé who contracted to serve for five years and who agreed not to divulge any of the secret processes. A competitor induced the employé to break his contract of employment and to enter into a contract of employment with him. The first manufacturer was entitled to an injunction restraining the employé from disclosing the secret processes, and to restrain the competitor from using information acquired from the employé, and from continuing him in his employ." It is to be hoped the decision applies to the original secrets as well as to those of the TAYLOR Company, for otherwise it would be unfair to one of the most important companies in this country.

THE risk of a peaty subsoil has been displayed in the Wolverhampton workhouse. On that part of the site where the boiler-house was placed there was a settlement through which one of the boilers was affected. A bed of concrete had been placed beneath the premises, but it also sank. After an excavation to a depth of 7 feet 6 inches the cause of the damage was ascertained. There was a peat stratum which originally was 2 feet 6 inches thick, but apparently it became ignited through the heat of the boilers, and in consequence the depth was diminished one-third. Additional concrete will have to be used, and the outlay on resetting the boilers is estimated at 600*l*. In similar cases where the peat is only a couple of feet thick it would be better to remove it before the concrete is put in. Some of the floors of the workhouse are attacked by dry-rot, which is supposed to arise from the obstruction of the openings for ventilation by rubbish.

ILLUSTRATIONS.

CRATHORNE HALL, YORKSHIRE: GARDEN FRONT DETAIL—
ENTRANCE FRONT DETAIL.

CATHEDRAL SERIES.—CARLISLE: THE SOUTH TRANSEPT DOOR.

WINCHESTER HOUSE, OLD BROAD STREET, E.C.

ETCHING AND ETCHERS.*

TOWARDS the end of the fifteenth century three great events occurred—the discovery of a new world, America, the discovery of printing, the taking of Constantinople by the Turks. The last event gave rise to that great movement in literature and the arts termed "The Renaissance," which, commencing in Italy, spread over the greater part of Europe by the end of the century. As a consequence of the taking of Constantinople, an immense number of refugees arrived in Italy, bringing with them Greek learning and art. The study of the Greek classics became the fashion, and many of the finest examples of Greek sculpture found a new home in the court and gardens of that munificent patron, Lorenzo de Medici. Here Michel Angelo and others received their earlier training.

In the term under review artists were accustomed to express their ideas as studies through the medium of silver-point, chalk, the reed pen and sepia washes. The thought of multiplying these examples had not yet presented itself. Early in the century, however, wood-engraving had been discovered, which later down was followed by that of pictorial engraving on metals, copper, &c. Both Italy and the Netherlands and Germany—as was the case with oil-painting—laid claim to priority in the practice of this art. In Italy it came about as follows.

Anyone familiar with Vasari's "Lives of the Italian Painters," or the art history of the time, must have been struck with the fact of so many artists being put to goldsmiths to receive their earliest training. It was a time of great activity in the chasing and enamelling of gold and silver in connection with armour, medals, vases, &c. One department was termed niellowork, where the goldsmith cut or graved out a design in the gold, the design standing out, the cut-away part being afterwards filled with enamelling. Those who practised this kind of work were called niellitores. They were accustomed to take an impression of their design by means of sulphur. By accident, or perhaps intentionally, a dark substance got used in the place of the sulphur, the result of the impression being the gold standing out from a black background. Finiguerra, a prominent Florentine goldsmith, receives the credit of the discovery (A.D. 1452). A step further led up to engraving proper, so that before the close of the sixteenth century two schools of engravers were in active work, chiefly in copper. An instrument was constructed, admirably adapted for the purpose of graving, called the burin, a sharp, lozenge-shaped point of steel, which was fixed into a wooden handle made to fit into the palm of the hand. The foremost Italian engravers were Mantegna and Marc Antonio, &c.; amongst the German were Albert Dürer, Schongauer, Lucas van Leyden, Altdorfer and Israel von Meckenlen. Although these two schools of engraving arose at about the same time, there was a distinct difference in their work.

The Germans had greater command over the burin, and their engravings show a decision often wanting in those of the Italian school. On the other hand, the works of the latter display greater refinement and grace. The engravings of both schools found their way to Venice, which was at that time the chief business emporium of Europe. Here Dürer, Schongauer, Mantegna, Marc Antonio and others met and interchanged ideas, so that one school reacted upon the other, the effect of which became very apparent as time went on.

It was during the prevalence of these schools of engraving that the method of etching was discovered, but it appears to have come in as an interloper and was not frequently practised. It was only when engraving began to decline about the middle of the sixteenth century that etching came to the front, and this was chiefly due, later on, to Rembrandt, Vandyke, Ostade, Van Uliet and others. It seems curious that etching had not elbowed out engraving at an earlier period, and that the greater freedom of the etching point had not commended itself to those practising engraving. With regard to the comparative merits of the burin and the etching point I shall quote Dr. Haden:—

"Let us compare etching and engraving, the etching line with the burin line. It is the comparison of the pen with the plough. In one case a finely-pointed style, obedient to every movement of the sentient hand—in the other a tool driven by the elbow against an object brought to meet it half-way; in one case suppleness, liberty, rapidity and directness of utterance, and the faculty of keeping pace with the ideas as they are formed. In the other, the com-

bined action of two hands, and the active opposition of two forces—that of the instrument against the plate and of the plate against the instrument. What wonder that the line described by one should be free, expressive and full of variety—by the other cold, constrained and uninteresting?"

"The properties of the etching line are, in point of fact, almost wholly mental; those of the engraved line wholly, or almost wholly, mechanical. The mental properties of the etching line are originality and personality, so that we actually recognise a line of Rembrandt or of Claude, out of which properties again come the qualities of expression, delicacy, colour, tenderness and whatever else the artist is capable of."

Let us turn for a short time to the technical methods of etching on metals and consider the materials required and their uses. These conveniently fall under the several heads of the plate, the ground, the dabber, the etching instrument, the drawing, the stopping-out varnish and lastly the printing.

The artist took a polished plate of copper and covered the surface upon which the etching was to be made with a ground composed of white wax, bitumen or asphaltum, and resin or amber, the plate being first heated, the ground melted, and in this fluid state a dabber, made of a round piece of cardboard, upon which was placed some horsehair, the whole bound round with a piece of taffeta silk, was gently pressed all over the ground in order to make it lie evenly. This being done, and while the ground was still in a fluid state the copper was placed, ground downwards, over some lighted wax tapers twisted together, and sufficiently far off to prevent the flame reaching the wax ground. The smoke from the taper incorporated itself with the ground and was then allowed to set, the result being a beautiful shining black surface. The plate was now ready for the drawing. The drawing was made with a needle or sharp piece of pointed steel fixed into a handle. The artist drew the picture through the wax ground in such a manner as to reach the copper without scratching it. The finer lines were drawn with a fine point, the stronger and broader lines with a thicker point. When finished the picture stood out in brilliant copper lines through the dark background.

The next process was the biting in, by means of the mordant or acid. For this purpose nitric acid was used, half acid to half water. The artist proceeded in what was considered, technically, the most important part of the process of etching. In this way he laid the plate, picture upwards, on a table, and then took some sticks of wax softened in warm water, and built a wall round the plate, after which he poured on the acid. The finer the lines the less time given to the biting. It was therefore necessary, after giving the very short time requisite for biting in the distant parts of the picture, to pour off the acid, and then to paint over the lines bitten enough with a kind of fluid varnish made from some of the etching ground previously mentioned. This was termed the stopping out. This varnish set very quickly and was of such a nature that the acid could no longer eat into the lines thus protected.

The varnish having set, the acid was again poured over the plate for biting into the copper the lines less fine, and so on until the whole of the picture was bitten in. By this process it will be seen that the thicker the lines the longer they were submitted to the action of the nitric acid. The process was a difficult one and much judgment was required, since light and dark lines would be mixed up together, beginning in the middle ground, right up through the foreground of the picture. The whole picture having been bitten in, the plate was again heated and freed from the wax ground remaining on it.

The next procedure was the printing. The ink was of a specially prepared kind, of the same nature as printer's ink but of a finer quality and colour. The ink was applied to the plate and pressed into the lines by means of the "rubber," consisting of close ground woollen cloth wrapped round and round itself in the form of a cylinder and then tightly tied with string. It was important that the ink should be pressed thoroughly into every line bitten into the copper.

This done the major part of the ink was wiped off the still heated plate with a muslin cloth. The artist (for the etchers almost always printed their own plates) then placed some of the ink on the ball of the thumb or the fleshy part of the palm of the hand, and covered over the ink with Spanish white chalk. He then very carefully passed his hand over the plate and detached the remaining ink under the pictures shown out in black on a copper background.

* From a paper by Mr. John Oldham, read before the Royal Victorian Institute of Architects.

Care was taken to procure a special kind of paper, known as Dutch paper. The paper being damped the plate was laid upon it and passed through the copperplate printing press, and a proof obtained.

The process was repeated until the required proofs were obtained, and this was only a limited number, as from the great pressure the lines gradually closed, so that, after thirty or forty had been obtained, the proofs became thin, faint and wiry, hence worthless. Modern science, however, has got over this difficulty. By steeling the plate in an electric bath it is so protected that 1,000 proofs can now be got. These proofs, however, will never give the rich effect obtained before the plate was steeled.

After Rembrandt and his followers the practice of etching by the old masters gradually died out. Speaking roughly, it covered the latter half of the sixteenth century and the earlier half of the seventeenth.

It was not till towards the middle of the nineteenth century that the old art was revived again. The revival took place in England and France and at about the same time. In France it was due chiefly to Legros, Meryon and others. In England to Whistler, Seymour Haden and Philip G. Hamerton. What Ruskin was to Turner and the pre-Raphaelites, such was Hamerton to the revival of etching. He acted as editor of the *Portfolio*, issued by Messrs. Seeley & Co., a periodical devoted to original etchings.

To Hamerton and Haden we are indebted for new methods of work, termed the positive or continuous processes, in contrast with the negative or interrupted processes of the old masters.

As I have already described the old method, I will proceed now to give you some idea of the newer methods, of which Haden has written so eloquently, and to whose writings and those of Hamerton I have been so much indebted in my lecture this evening.

The plate, ground and other requisites used in the older method remain, but are treated differently. The etchers take a burnished plate as before, but in this case protect both sides with the wax ground. The etching ground is made somewhat weaker, though of the same composition as that of the old masters. This is used on the face of the plate, in the manner already described, the back of the plate being covered with ordinary wax. The plate is then attached to the bottom of a bath—either let into the wood, which has been covered all over with several coats of Japan varnish to protect it from the acid, or to an ordinary photographer's glass bath—by means of four small balls of wax.

The Dutch mordant or acid is also of weaker strength than that used by the old masters, and composed as follows:—Hydrochloric acid, 100 grammes; chlorate of potash, 20 grammes; water, 880 grammes. In making it the water is warmed, and the chlorate of potash perfectly dissolved in it first; then the acid is added. The mordant having been prepared, and a little bit of copper added, which turns it a green colour, it is poured over the plate now resting in the bath, so as just to cover it, say, about one-eighth of an inch. The same etching instruments are used as before, but in this method you begin with the lines intended to be darkest, first using a blunt point and keeping the lines rather wide apart, after that gradually proceeding towards the paler work, where one uses a sharper point, and the lines are made closer together. If you calculate your time well and do your work properly your plate will be finished with a perfect gradation when you take it out of the bath, and by having dissolved a little copper in the mordant at starting, the lines will be bitten a dark colour on the copperplate, just as though you were drawing with lead pencil, so that you can see quite plainly your drawing as you go along. The drawing finished, the plate may be taken out of the bath, and you may print a proof at once.

We have said that the mordant is weaker than that used by the old masters, and by this method of work it will be seen that the darkest lines are continuously bitten all through the drawing, until you come to the finest lines, and the work will cover, say, from five to seven hours. If you wish to do it in a somewhat shorter time you may strengthen the mordant. This, however, is unnecessary, since, supposing you can only give a couple of hours to the plate, it may be taken out and put between blotting-paper; the mordant being returned to the bottle, and a record being taken of the time spent, you may resume again the work at your leisure, bearing in mind that the darkest lines require to be bitten for from five to seven hours, and the finest

about a quarter of an hour, the medium lines being graded between the time mentioned.

The advantages of this system are as follows:—
1. Perfect gradation in work. All other systems of biting proceed by stages, usually two or three. This system is one of unbroken gradation from the deepest biting to the palest.
2. It saves the necessity for stopping out, which was a cause of delay and a difficulty in all passages of any intricacy, such as skies seen between branches of trees, &c.
3. It enables an experienced etcher to complete a plate at one sitting, without being delayed by regrounding, proof-taking, &c.
4. Owing to the copper dissolved in the acid before commencing you are enabled to see the work as you go along, as with lead-pencil and pen and ink.

A few words with regard to dry point. The picture is drawn straight away on the copper, without either ground or mordant being used. To do this the etching instrument has to be sharpened at the point similar to that of a currier's knife. When used the instrument cuts into the copper, raising a kind of edge, to the line, which when printed from gives a kind of shadow to each line, and thus adds to the richness of the print. Legros in England and Hellieu in France are two of the greatest exponents of this method.

In concluding, I will add a short extract from Dr. Haden as to the qualifications of the etcher:—

"What, then, is the amount and kind of previous knowledge and skill required by the etcher? It is the sum of all we have been writing about. It is an innate artistic spirit, without which all the study in the world is useless. It is the cultivation of this spirit, not arduously, but lovingly. It is the knowledge that is acquired by a life of devotion to what is true and beautiful—by the daily and hourly habit of weighing and comparing what we see in nature, and thinking of how it should be represented in art. It is the taste which a celebrated painter once said, but not truly, is rarer than genius. The skill that grows out of these habits is the skill required by the etcher. It is the skill of the analyst and the synthesist; the skill to combine and the skill to separate, to detach plane from plane, to fuse detail into mass, to subordinate definition to space, distance, light and air. Finally, it is the acumen to perceive the near relationship that expression bears to form, and the skill to draw them—not separately, but together."

COHESIVE FIREPROOF TILE CONSTRUCTION.

THE elimination of the fire hazard in modern buildings is based upon the principle that all supporting iron or steel girders, columns and beams must be protected from fire by some material which is a poor conductor of heat and not easily disintegrated or injured by high temperatures. Burned clay materials, such as flat, hollow, porous and semi-porous terra-cotta blocks, and certain grades of burned bricks, are commonly employed for this purpose. Owing to the relative lightness of these materials and their high fire-resisting qualities, most steel frameworks of our large buildings are encased in hollow or flat terra-cotta tiles laid in cement mortar. Many of these clay tiles and blocks are burned in the making to 2,000 to 2,500 degs., so that in any fire they will not crumble or crack at a temperature below that to which they were originally subjected.

No great stress is imposed upon the hollow porous blocks used for fireproofing beams, girders and columns, and their crushing strength is not very great. Their function is performed in protecting the steelwork from an excessive interior temperature, while the metal carries the loads of the different floors. The use of hard, flat terra-cotta tiles for certain construction purposes, both to carry the load and to resist any interior fire, has in the last year or two, says the *Scientific American*, assumed an important development. Modern methods of burning and making the terra-cotta tiles have greatly improved their strength and durability, and the better grades of them have been used in a number of buildings in New York city and elsewhere, which fully illustrate the new method of cohesive fireproof tile construction.

In the new Custom House in New York city the large dome surmounting the great interior rotunda is constructed entirely of fireproof flat tiles, and the total absence of any metal for supporting this huge elliptical dome shows the great cohesive power of hard, flat tiles when properly laid up in cement mortar. The dome is 80 by 135 feet in size, and supports on its summit a huge skylight of glass and metal, whose total weight is 140 tons. The tiles used for this purpose are 12 inches in length, 6 inches in width

and about 1 inch in thickness. They are laid on edge and form a perfect curve.

The masonry walls of this rotunda are built of brick up to the lower part of the dome. A massive flat ring of steel is fitted on the top of this masonry and embedded in it, and from this the dome springs. The foundations of the dome are of solid, flat tiles cemented together on their edges, but after a few courses an outer and inner shell is formed. Nine layers of 1-inch flat tiles form the lower courses, but as the curvature of the dome is reached one course after another is omitted until near the middle there are only three layers of tiles for each shell, leaving an open space between them.

A central mid-rib composed of tiles laid flat runs around the dome to strengthen it, and similar ribs of tiles laid flat radiate from the apex of the dome to the foundations. These ribs are joined to the central mid-rib by cement, and all are enclosed by the two shells of the tiles laid on edge. The cohesive strength of tile construction is thus amply demonstrated. Engineers representing a number of structural steel manufacturers intimated before the work was undertaken that it was impossible to build the dome in this way without metal reinforcements of some kind; but the dome has been finished for some months and the heavy skylight placed in position. The lightness of the tiles makes the dome nearly half the weight of another of similar size constructed of metal, while the fireproof quality of the material insures the dome from interior destruction by fire. The tiles having been burned in the making do not warp or shrink after being placed in position, and elaborate decorations can be made directly to them without danger from cracking or warping.

A similar dome of less size and ambition has been built on the new Madison Square Presbyterian church, which recently has been completed. The same size flat tiles are used there, and the dome is built and surmounted by a small tower. The crushing strength of the tiles is upward of 2,000 pounds to the square inch, and their cohesive strength is dependent chiefly upon the quality of the Portland cement used in building the dome. The major axis of this new dome is only 52 feet, but its shape and artistic appearance from either the inside or outside make it remarkable quite as much as the decorations placed on it by the architect. The dome springs direct from the walls of brick, and it thus completes a remarkable building independent of any iron or steelwork.

Within the past few years a number of other similar domes of this same general character have been completed. In the new library building of the University of New York there is one with a major axis of 70 feet, and over the rotunda of the University of Virginia the Guastavino dome of flat fireproof tiles laid edgewise has a diameter of 69 feet. The Hall of Sciences, in Brooklyn, has a dome of flat tiles without any metal supporting work of 60 feet in diameter, and the new Minnesota State Capitol one of similar dimensions. The dome over the Bank of Montreal building is 72 feet in diameter, and is the largest, next to the new one over the rotunda of the New York Custom House, yet finished by this new method of cohesive construction.

The construction of such fireproof non-metal-supported domes represents a special branch of masonry designing which has slowly reached perfection in this country. It is based upon the principles of the early Roman architects, who used heavy bricks and stones for their work; but with superior tiles and cement mortar to work with the modern designers have secured strength and rigidity with materials much lighter and absolutely fireproof in character.

The high degree of skill and mathematical designing required to construct domes, arches and stairways of tiles by the cohesive system is probably even better illustrated in the two pairs of stairs built in the new Custom House facing Bowling Green in New York. These stairs spring from the basement of the building and terminate at the roof. No metal whatever is employed for supporting them. On the contrary, heavy balustrades of metal, and equally heavy marble treads, only add to the dead load carried by the tiles. Rather larger tiles are used for the stairs than for the dome construction, but they are all light and apparently frail for this work. From the basement to the main floor a circular wall of brick masonry is built, and the tiles are attached at one end to this wall; but each semicircular flight depends for its strength and rigidity upon the cohesive strength of the tiles and the scientific strength of a curve when the load is so distributed that the pressure to the arch is continuous. Above the main floor each flight springs to the floor above, without any support other than

that derived from the top and bottom. The stairs are formed by a number of thicknesses of flat tiles at the base, which gradually diminish toward the middle. the arch and then thicken again towards the top. of

The construction of spiral and semicircular stairways with hard flat tiles requires independent and careful study of each individual case. No definite rule or principles can be laid down to apply to all cases, but each problem has to be worked out by itself. The combination of the spring of the arch with the continuous curve under each platform to adjust the adjoining flight are questions of mechanical skill. Such stairways of hard, fireproof clay tiles are constructed to carry loads which will suffice for any kind of public buildings, and those recently constructed in the Custom House (or rather in the course of construction at this writing) are designed to carry heavy marble treads and ornamental iron and bronzework besides the weight of those who will constantly use them for ascending and descending. The fireproof quality of such stairs is of particular force in view of the modern effort being made to eliminate everything possible from public buildings which will crumble or disintegrate when attacked by a hot interior fire. The difficulty of protecting an iron-stairway by terra-cotta casing as commonly practised in protecting beams and girders is quite apparent. If left unprotected a sharp interior fire will cause a collapse of the stairs and greatly increase the damage to the building. A tile stairway, on the contrary, would not be affected by a fire unless the temperature reached 2,000 and more degrees, and a collapse would not follow.

The use of the cohesive tile construction for floors and ceilings is well illustrated in two other notable buildings recently built in New York. The dome ceiling of the new Tiffany building is constructed of hard, flat tiles laid on edge and sprung from rotunda columns and terminating in a large skylight. In these dome ceilings the curve is less than in the domes, and the effect is of a slightly arched ceiling of great beauty. The decorations are sometimes laid directly on the tiles and in other cases ornamental faced tiles are cemented to the hard supporting tiles for interior effect. In the new Gorham building all the different floors and ceilings are made of hard tiles. A series of arches spring from the steel columns and terminate in points in the ceiling. The compression on the tiles is uniform, so that the load is carried without any undue stress upon any part. The tiles are laid on edge, with several courses forming the arch, breaking joints at each course, and cemented together with the best Portland cement mortar. The decorations are either made directly on these fireproof tiles or ornamental tiles cemented to them. No metalwork is employed to support the dome ceilings other than the series of steel columns from which the arches spring. No steel reinforcements or tension rods whatever are employed in the construction. The remarkable lightness of the floors and ceilings built in this way is one of the chief virtues ascribed to the new method of fireproof building. The carrying capacity of a floor built of cohesive tile masonry is certainly sufficient to warrant their construction in some of the finest public and commercial buildings of the country. As an interesting development of the fireproof question, cohesive tile construction is without a peer, and its adaptation to new work and fields is a matter that should be of inestimable value to the building trades. In cases where lightness of structure is an important consideration hard flat tiles may prove far more desirable than iron skeletonwork, and also where it is desirable to use fireproof clay materials owing to the difficulty of covering the ironwork with terra-cotta.

SOCIETY OF 25 PAINTERS.

At a general meeting of the Society of 25 English Painters it was decided to alter the title of the Society to The Society of 25 Painters, so rendering all artists who are born British subjects eligible for election as members. The committee have made arrangements with Messrs. Marchant & Co. with reference to their exhibitions, which will henceforth be held at the Goupil Gallery, 5 Regent Street. Several new features will be introduced, such as a summer exhibition of sketches, &c., full details of which will be announced in due course.

All the members of the Society have been invited by the Mayor of Barcelona to exhibit at the forthcoming international exhibition in that city. The Society's exhibition at Berlin, which has just closed, has been very successful, and is being followed by exhibitions [at Düsseldorf, Munich, Hamburg and other German cities.]

OILS, VARNISHES AND MEDIUMS USED IN THE PAINTING OF PICTURES.*

WHILE in the past various mixtures were used by artists for painting, some of which are only obscurely understood, the necessary mediums for modern painting are comparatively few.

The old painting in beeswax, which has proved remarkably durable, is no longer practised, and tempera painting with an egg medium is only used now and then. There are in this connection certain unsolved problems, such as the real nature of the medium used by Van Eyck and his immediate successors, which are of historical interest, but which I do not propose to discuss here. The medium in which the pigments are mixed must be closely related to the technique adopted by the painters of the day, and it is not at all probable that the medium used by Van Eyck, while united to his technique, would be of the slightest practical use to the modern painter. An artist's medium, then, has to serve more than one purpose. It must attach the pigment to the paper or canvas on which the picture is painted; it must facilitate the use of the pigment by the artist, and it must bring out all the qualities of translucency, and so on, which the pigment possesses. It should also, as far as possible, protect the pigment from change and injury, either mechanical or chemical. The simplest example of such a medium is the mixture of gum arabic and water, used in water-colour paintings. The gum arabic serves to attach the pigment to the paper, while the water gives the necessary facility to the pigment under the brush, and the qualities of the pigment are developed by thicker or thinner washes on the white paper background. Such a medium, however, does nothing to protect the pigments used from change, and has a limited though beautiful range of expression.

Painting in oil is practically the only other method used by the present day artist, and it is to painting in oil that this discussion will be devoted.

In selecting an oil as suitable for artists' purposes it is necessary to choose what is known as a "drying oil." If, for instance, pigments are ground in olive oil the surface would never dry, and it is, therefore, useless for the purpose. There are certain vegetable oils which have this property of drying and which are, therefore, suitable for artists' purposes. I shall only refer to three here, linseed oil, poppy oil and walnut oil. There is no need to trouble you with the chemical composition of these drying oils, but it is important that the nature of this drying process should be clearly understood. These oils do not dry in the ordinary sense of the term at all. They undergo a process of oxidation when exposed to the air, which converts them from a liquid condition into a tough elastic solid, a solid which slowly undergoes further oxidation, becoming brittle, hard and resinous. It is then to this process of oxidation that their peculiar properties are due.

These oils are obtained from the seeds or nuts, and are present in those bodies as part of the reservoir of food supply for the young embryo of the future plant.

The oil from linseed is obtained by crushing, grinding and pressure, and in order to increase the yield the ground mass is heated as well as pressed, thus obtaining what is known as a hot pressed oil, which is subjected to various processes of refining and bleaching. Personally, while regarding such an oil as quite suitable for house painting, I doubt very much the wisdom of using it for artists' purposes. The hot pressing results in the presence of many impurities which are removed by the addition of sulphuric acid. The chemistry of the whole subject of painters' vehicles is so obscure that it is as well to cling to tradition where possible.

The linseed oil of the earlier centuries was cold-pressed linseed, and was refined and bleached by the simple process of exposure to air and sunlight over water. These methods yield a beautiful oil, and should be adhered to for artists' purposes.

Poppy oil is obtained from the seeds of the opium poppy (*Papaver somniferum*) by crushing and pressing, or by other means of extraction, and is easily bleached. It is often used for grinding with whites or delicate blues. It dries more slowly than linseed oil, but has the advantage of being almost colourless.

Walnut oil is obtained from the common walnut (*Juglans regia*) by allowing the nuts to decompose partially

and then pressing, and can be obtained almost colourless. It was largely used by the early Italian painters as a drying oil. There are other drying oils, but they are not of special interest to artists.

Having briefly discussed the three drying oils commonly used for artists' purpose, we now go on to consider some of the other vehicles and mediums. The pigment having been ground stiffly in oil is supplied to the artist, who may thus dilute or mix it further, and we shall proceed to consider the materials he may use.

In the first place, he may merely add a little more of one of the oils already referred to. In case, however, that he wishes his picture to dry faster, he may use as a medium instead of raw oil boiled or drying oil.

The property of the boiled oils depends upon the fact that if, for instance, linseed oil is heated for some time with certain compounds, more usually either compounds of lead, such as lead oxides or lead acetates, or compounds of manganese, such as manganese borate or resinate, it becomes partially oxidised, and if painted out on a surface will "dry" much more quickly.

Of the two methods of preparing drying oils described above, the use of manganese is, I think, preferable, and for this reason. A certain amount of the substances used dissolves in the oil, and consequently an oil prepared with lead dryers contains lead in solution, and is very easily darkened by impure air containing sulphur compounds such as sulphuretted hydrogen. It is, therefore, probably better to keep such oils out of modern pictures which are exposed to the impure air of cities.

Besides diluting with oil the artist may prefer to dilute with a medium which will evaporate and leave the layer of oil originally present behind. The mediums most commonly used for this purpose are either turpentine or petroleum. Turpentine, which is obtained by distilling the natural gums of the various pines, is a very suitable medium, as it not only evaporates easily, but also assists in the oxidation of the oil. It has been objected to turpentine that it does not evaporate clean, but always leaves a slight resinous residue behind. This is quite true, but the amount of this residue is very small, and, as far as my experience goes, it gets fairly hard in time, so that there is probably no objection to its use on this ground.

The petroleum oils have the advantage when properly rectified of evaporating quite clean and leaving no residue. I have said when properly rectified. It is important before using such a medium to moisten a piece of blotting-paper with it and expose it to the air for a short time. If properly rectified the petroleum evaporates completely, leaving no greasy stain behind.

Artists sometimes forget the real property of these mediums, and then complain afterwards that the pigment does not adhere properly to the surface of the picture. The amount of oil used for grinding different pigments varies very considerably. If the ground is slightly absorbent, and the pigment stiffly ground and diluted by the artist with petroleum, the oil in the pigment dissolves in the petroleum and passes freely into the absorbent ground, leaving the pigment when the petroleum has evaporated without sufficient oil to bind it to the canvas. This may happen with one pigment but not with another, if in the original grinding more oil has been necessary to get a good consistency.

Having now dealt with the more important diluting mediums, we will consider next the question of varnishes. A very large variety of gums or resins are now available for varnish making, but the number used for artists' purposes is not great.

Varnishes may be conveniently grouped into two divisions, the one called spirit varnishes and the other oil varnishes; the spirit varnishes are prepared from the softer and more soluble gums by dissolving them in some medium which will evaporate and leave a layer of pure resin behind, such as turpentine, alcohol, or petroleum. The varnish artists are most familiar with is prepared by dissolving gum mastic in turpentine. By evaporating, a layer of mastic is left behind. Shellac is usually dissolved in alcohol, and there are also petroleum varnishes in use.

Such spirit varnishes are brittle, weak and easily dissolved or removed. They should therefore form no part of the body of a picture, but may be used to varnish a completed picture when thoroughly hard, mostly as a protective transparent coating which can be easily removed without injuring the painting beneath. Mastic varnish, for instance, can be removed by lightly rubbing with the tips of the fingers, the powder of the resin largely assisting

* A paper read by A. P. Laurie, M.A., D.Sc. (Principal of the Heriot-Watt College, Edinburgh), before the Applied Art Section of the Society of Arts.

They are apt to bloom, in which case the bloom can be removed by a damp cloth, and some hold that they tend to crack the picture beneath; I have found no proof of this, however.

We next come to the oil varnishes. Oil varnishes are or should be made of the harder gums which will not dissolve freely in turpentine or alcohol. To make an oil varnish the gum is fused and the hot oil added, and the whole heated until a drop placed to cool in a glass plate cools clear. It is then diluted with turps. To prevent too slow drying a drying oil may be used, or driers added and heated with the varnish. While thus the fundamental process is simple, in practice great technical skill is required. But again, either manganese or lead driers can be used, and I advise for artists' use manganese driers, although the varnishes so prepared do not in my experience dry so quickly. The number of gums available, their means of supply, names and properties form a large and confusing subject, especially as no fixed and clear nomenclature has been arrived at.

For artists' purposes a hard gum should be utilised, such as Zanzibar or Sierra Leone copal, or the hard kauri gum from New Zealand. Carefully selected pieces, light in colour, should then be carefully fused and incorporated with pure linseed oil. Amber is a very hard gum of high melting-point. The main trouble in using it is the difficulty of preventing it from getting too dark on fusing. This can be overcome, but in so far as I have been able to test its properties, it has no advantage over the kauri resins or copals. These, then, are the principal mediums in everyday use for painting oil-pictures. I have excluded all special fancy mediums, as I do not know their composition. They may be quite harmless, but I object to them as a doctor objects to a patent medicine. An artist, if he is wise, will only use such mediums as are of known composition and have stood the test of time and experience.

We shall next, then, proceed to consider various problems which arise in connection with these mediums, and which, I may frankly say, are far from being solved.

In the first place, then, how far do pigments act chemically on each other when mixed in an oil vehicle? To take a typical example. Will a mixture of white lead, which is so sensitive to sulphur compounds, turn black when mixed with vermilion (sulphide of mercury) or with cadmium yellow (sulphide of cadmium)? It is sometimes stated in the text-books that these pigments must not be mixed together; but all practical experience is against this view, and when we examine a pigment ground in oil under the microscope, and notice how the particles are each protected by a layer of oil, it is difficult to see how, unless the pigment is soluble in the oil, any action can take place. There is one well-known case when such action does take place—the turning brown of a green made with emerald green and cadmium yellow; but this, I take it, is due to emerald green dissolving slightly in the linseed oil. I once made an experiment which, I think, is of interest in this connection. I rubbed out some cadmium yellow ground in oil on a glass plate, allowed it to dry, and then coated it with a layer of linseed oil, allowed this to dry, and then coated this with emerald green in oil. At the end of six months the combination had turned brown, and a section under the microscope revealed the fact that the top layer of cadmium yellow had turned black. This must have been due to the solution of the copper in the emerald green in the linseed oil and the slow diffusion of the copper salt molecules through the solid oil, with formation of black copper sulphide. It is evident then that pigments soluble in linseed oil will slowly diffuse through the solid oil and attack other pigments, but if they are insoluble no change seems to take place.

The next question is, How far does the oil protect pigments from external influences, air, moisture and injurious gases? I read many years ago a paper dealing with this subject at the Society of Arts.* Ignited sulphate of copper is a white opaque powder which is intensely hygroscopic, and in attracting moisture forms a transparent green hydrate. If, then, it is ground up with various media, which are allowed to dry in dry air and then exposed to moist air, the white opaque enamel will become green and transparent if moisture penetrates. One result was to show that while pure resins dissolved in "turps" formed moisture-tight surfaces, oils and oil varnishes were all quickly permeable.

The same is true of other gases. Sulphuretted hydrogen quickly blackens white lead in oil through even an oil varnish; but if the white is ground in

Canada balsam, and then varnished with Canada balsam, the white is protected. Verdigris forms a permanent green in such a medium. It does not, however, stop though it checks the fading of crimson lake, showing that there is probably some decomposition of this colour in sunlight apart from air and moisture.

It is evident, then, that while a freer range can be allowed to the oil-colour than to the water-colour palette, it is safer to select pigments which are permanent in themselves and not to trust to their protection by the oil from change.

The next question to be considered is the durability of the oil and varnish surfaces themselves. This has not received very much investigation as far as I am aware. I have been recently making experiments with a view to getting some comparative test for the combined toughness and hardness of a varnish. The method is to place the varnish painted out on a glass plate and dry under a blunt steel point, the pressure of which on the varnish can be increased by known amounts with a spiral spring.

The varnish is then drawn under the point, and the pressure is increased until the varnish shows a clear definite scratch. Under this test the brittle spirit varnishes break down at a pressure of 100 grammes on a steel point of 1 mm. radius, oil varnishes made from soft gums at from 300 to 500 grammes, and oil varnishes made from hard gums at from 900 to 1,200 grammes. Moreover, the character of the scratch is very different. Varnishes with an excess of resin in them, and therefore made from soft, easily dissolved gums, give a splintery scratch, while the tough oil varnishes, made from hard gums, give a tear. On exposure to weather during winter the varnishes are all soon reduced to a brittle surface which scratches at 100 grammes; in summer, however, they are improved by exposure. This clearly indicates that frost has probably much to do with this, and it is worthy of further investigation. It is easy by this machine to pick out a good varnish for the artist to use as a medium; and if this is done, no doubt the life of the picture, if kept under proper conditions, will be very much increased.

The next question to be considered is the occasional and capricious cracking of pictures. The explanation of this has, I confess, so far completely baffled me, but there are certain matters of interest in connection with it worth mentioning.

The great difficulty I have found in investigating this matter is due to the fact that I have been unable, under any condition, to produce cracking. The first experiment I tried was more than twelve years ago, when I painted out two, three and four coats following each other quickly as soon as the last coat was sufficiently dry on the surface, of flake white (1) ground stiff with oil; (2) diluted with more oil; (3) diluted with copal varnish and (4) diluted with petroleum.

The same set of experiments were repeated with lead sulphate and zinc oxide paint, and with pure zinc oxide, thus making in all forty-eight different panels representing the different conditions. They are all perfect and show no signs of disintegration to-day. I have also tried painting on ordinary primed canvas with yellow ochre, and then as soon as it was sufficiently dry laying over it strips of amber—a quick drying pigment. Result, no cracks.

I have also tried the following combinations:—Undermost oil paint + mastic or pure mastic; second coat oil paint; third coat oil paint + mastic, amber + mastic, then yellow ochre, then mastic varnish; oil paint + olive oil, amber in oil on top, mastic on top, shellac varnish on top, and other similar combinations. All were hurried, no proper time for drying was allowed, and after twelve months they were free from cracks.

In no instance did any crack, with the exception of the shellac varnish on the paint mixed with olive oil. I noticed, however, one curious result. The yellow ochre on the top of mastic varnish cracked while still wet, owing to surface tension effects, but changed no more after it was dry.

These experiments then were all negative in their results, and certainly eliminate many of the causes to which cracking is supposed to be due.

I had the good fortune to be presented with two pictures which had cracked badly within a few months of painting. In the first picture mastic had been used as a medium, and the cracking was confined to the parts where thin liquid painting had been done and mastic probably freely used, as the surface here was hard and brittle. The canvas was of very poor quality, hardly closer in mesh than coarse muslin. A section through a crack when placed under the micro-

* *Journal*, vol. xxxix. 1891, p. 392.

scope showed the crack to be merely through the upper painting, and to be a broad crack with straight edges perpendicular to the painting surface. The priming had not cracked, but seemed to be drawn out under the crack.

The second picture was painted on a closely-woven canvas which had been lightly sized and thinly primed by the artist with a mixture of pigments and linseed oil. The cracking was confined to the white masses of hard dry paint in the sky. A section showed that these cracks also formed broad cracks with perpendicular edges without injury to the undercoating of paint. The undercoating of paint did not, however, seem to be properly attached to the canvas, a layer of spongy disintegrated material apparently having formed in some way. This condition of things prevailed all over the canvas and suggested that, owing to some disintegration between the canvas and the lower coats of paint, the coats of paint had been stretched, resulting in cracking of the upper coat where it was not elastic enough to yield. In order to get some light on the possible causes of cracking, I determined to measure the actual movements taking place in the canvas itself under different conditions. For this purpose I attached a strip of sized canvas by one end to a glass cylinder, and weighted the other end so as to keep it taut over the cylinder. A platinum wire was firmly sewn to the canvas across and projecting out each side, and two little glass rods attached to the glass as indicators. The length of the canvas from the attached end to the platinum wire was 2 centimetres. By measuring the distance between the glass rod and the platinum wire it was possible to measure any expansions or contractions of the canvas itself.

By measuring at both ends and taking a mean any twisting of the canvas was eliminated. On first measuring, the average distance between the glass rod and the platinum wire was .45 of a millimetre. The cylinder was then enclosed for twenty hours over strong sulphuric acid so as to dry the canvas thoroughly. The distance had now increased to .55 mm., showing a contraction of the canvas on drying. It was now kept for twenty hours in an atmosphere saturated with water vapour.

At the end of this time the readings showed a distance of .28 mm., showing a total expansion from dry to moist air conditions of .27 mm. On again replacing over strong sulphuric acid the distance increased to .57 mm., showing a change in length of .29 mm., or, taking the mean, of .28 mm.

The canvas was now painted thickly with yellow ochre and put back in the sulphuric acid and allowed to dry. After one day the distance between the points was .54 mm., and after thirteen days when paint fairly dry it was .577 mm., showing very slight changes in length during the drying of the paint. After twenty days the distance between points was .57 mm. On now putting into saturated water vapour the distance between the points became .36 mm. instead of .28 mm., showing a distinct and definite contraction on the original canvas.

A coat of umber was now laid on the ochre and allowed to dry in saturated air. In three days the umber was dry and the distance between points was .34 mm. On now putting back in dry air a further slight contraction took place, the distance between the points becoming .66 mm.

A coat of yellow ochre was now put on and left over sulphuric acid; at the end of seven days the reading was .73 mm. and at the end of a fortnight .72.

These figures are a little difficult to follow, but leaving out small fluctuations they bring out the following facts very clearly.

In the first place, the total expansion from dry to moist air of the canvas tested was .28 mm. for 2 cent. length, or for 1 cent.—that is 10 mm.—it was 1.4 per cent. In the second place, the drying of the thin layers of paint produced a total contraction of the canvas amounting to about .16 mm. This contraction did not necessarily show itself while the paint was drying under fixed atmospheric conditions, but as soon as the canvas was set moving by change in atmospheric conditions it asserted itself.

It is of interest to compare the magnitude of these movements with those required to produce a badly cracked picture.

The cracks in the picture mentioned above varied in diameter from .12 mm. to .3 mm. roughly averaging .2 mm., and measurements in different directions showed an average of about twelve cracks to 10 centimetres, equal .24 mm. per centimetre, or about double the total expansion of the canvas, as tested.

After nine months the strip of canvas painted as above

described was alternately put over sulphuric acid and over water some two or three times, expanding and contracting freely but without cracking the paint. Another possible source of mischief had to be investigated, and that was the freezing of a damp canvas. Two pictures were taken, one a canvas which had been primed twelve months before with sulphate of lead and zinc oxide, the other a portion of canvas previously described which had twelve months before been coated with yellow ochre and then when only just dry on the surface coated with umber. After twenty-four hours in saturated air they were kept some four or five hours in a freezing mixture. No cracks developed and sections showed all coats firmly adhering.

While, then, the result of the experiments has failed to reveal the cause of cracking in the pictures examined, considerable negative evidence has been accumulated which should give us confidence in modern methods of painting. Cracking seems to be due to an expansion of the underlayers (possibly due to the action of moisture and frost) which shows in cracks when the top coat is hard either from excess of pigment or from the presence of a medium like mastic.

On the other hand, a sound canvas properly sized and primed and painted with pure oil and good oil varnishes, with the exclusion of fugitive pigments, seems to withstand very severe treatment without appreciable injury.

There is also very little evidence to confirm the usual statements about expanding surfaces when the paint is drying under normal conditions.

ROMAN MANCHESTER.

THE excavation committee of the Manchester and District Branch of the Classical Association have addressed the following statement to the *Manchester Guardian* :—

As the excavations in Duke Place are nearing their conclusion, your readers may be interested to learn the historical results that our work so far has rendered probable, and the outstanding questions for which we hope to find more complete answers during the remaining weeks. We wish also, as both the light and the weather are now favourable, to make arrangements by which the elder pupils of as many schools in the district as possible shall have an opportunity of being taken over the site under competent guidance before it is closed.

The most striking fact which has come to light since the discovery of the western wall is that some part at least of the camp was destroyed and subsequently rebuilt. The first set of buildings included some very solid work, as can be seen from the remains of sandstone walls and in places of a sandstone floor lying some 6 feet below the present surface. But these first buildings would seem to have had no very long life, so far, at least, as we may judge from the foundations which we have as yet recovered. The earth immediately above these first stone foundations contains very few remains indeed, and seems to have been spread deliberately over the ruined buildings; a great part of it consists of a layer of clayey earth at least a foot thick, which must have been laid down to provide a solid and level base for further operations. The quantity is remarkable; as Professor R. C. Bosanquet remarked, "It must have been brought here in great cartloads," and this seems to imply both a considerable force of men, perhaps with a troop of captives, and a definite intention of prolonged occupation.

Some curious features in the foundation of the western wall also point to a process of reconstruction, or possibly to the conversion of a clay rampart into a wall. What we should greatly like to ascertain about this stage in the history of Manchester is—(1) When were our first camp-buildings destroyed, and (2) How? The literary record, as everyone knows, is absolutely silent, but in the finds we have made in the stratum above the clay, which is fairly rich in small remains, we have the beginning of an answer to the first question, and before we abandon the work we shall be disappointed if we cannot at least find some suggestions towards answering the second.

The sandstone floors which we have uncovered at the higher level (some 3 feet below the present surface) have long been familiar objects to visitors at Duke Place, though we are still anxious to find more evidence of their extent and purpose. Here we need only mention the more important of the objects which have been found above and in this floor stratum. Besides several bronze fibulae or brooches of different designs, some more fine fragments of

Samian pottery, and various interesting stones—none, alas! inscribed—Mr. Phelps has recently secured four or five coins, none of which can have been struck before 117 A.D. nor after 176 A.D.; one, a rather rare bronze of Antoninus, was certainly struck in 145 A.D. Two of them are of the Emperor Hadrian (117-38 A.D.). All of them have been through fire, and we are greatly indebted to the skill with which Mr. J. R. Hardy and Mr. Phelps, by chemical and mechanical means, have recovered for us the types from beneath a mass of corrosion. If the *prima-facie* inferences suggested by these finds, combined with the common length of life of a Roman coin outside hoards—which the British Museum authorities estimate at fifteen years—are confirmed by further evidence, we shall have probable grounds for thinking that the reconstruction of the buildings took place either before or during (hardly later than) the reign of Hadrian, and that some part at least of the second series of buildings in the north-west corner of the camp, which is all that our Duke Place site covers, may have been destroyed by fire somewhere about the time of Marcus Aurelius (161-80 A.D.). It is unfortunate that the coins of 211 found just inside the west wall were not noticed until the rubble was being moved on the surface, so that we cannot be certain that they came, as they seemed to, from the sand below the clay; but whatever inference might be drawn from them would apply mainly to the wall. It is a tempting but at present unsafe conjecture to suppose that the wall was built instead of a clay rampart, at the end of the second century A.D., to protect the camp from such sudden raids from the Brigantes of the hills as had (if one is to guess again) caused the fire or fires from which our coins on the camp floors have suffered. The camp at Brough was probably visited by Antoninus (138-61 A.D.), and rebuilt under Severus (193-211 A.D.).

So far as we can judge at present it will be desirable to continue the work till about the end of April; Messrs. Beattie have very kindly extended our time till then. For the next fortnight the committee have happily secured the kind help of Mr. H. L. Jones, M.A., head-master of Willaston School and a member of our own branch of the Classical Association, who has been for some years Mr. T. Ashby's right-hand man in the well-known and remarkably successful excavations at Caerwent. The work, therefore, will now be continuous. Mr. J. J. Phelps, to whom the excavation is already deeply indebted, has kindly undertaken to be frequently present, and other members of the committee will attend from time to time, though the work on the different parts of the report (which will be edited by Mr. F. A. Bruton) and the pressure of ordinary duties have at length compelled one after another of us to relinquish an active share in the supervision.

One very welcome accessory of our work has been the number of private collections of Roman coins found in or near Manchester which have been placed at our disposal, many of which have never been published before. Some account of all these, and of any others that are submitted to us, will be given in the report. We may perhaps mention in particular an interesting coin found in Castlefield (belonging to Sir Lees Knowles), whose superscription mentions the five emperors of the year 337 A.D.; and the great hoard found in digging foundations for Knot Mill Station, now the property of Mr. T. Hodgson, of Buxton, containing no less than 320 pieces, one of them an Iberian coin, of Celsa, in Spain, of the last century B.C. The owners of any unpublished Roman coins found in Manchester are asked to communicate with Professor Conway, Draether, Didsbury, as soon as possible.

Head-masters or head-mistresses of secondary or primary schools in or near Manchester who would like their elder pupils, in parties of not more than twenty-five, to be taken over the excavations in the course of this month are asked to write to Mr. J. J. Phelps, 46 The Park, Eccles, who has very kindly consented to receive such applications and to arrange, so far as may prove possible, for a member of the committee to be present. Such parties will not be admitted without a previous arrangement, and must always be in control of a responsible teacher.

We are glad to be able to add that, unless the course of the excavation should take some unforeseen turn, the generous interest in the work already shown by the Lord Mayor and citizens of Manchester renders it unnecessary, at present at all events, to ask for further help. We should probably have been obliged to do so but for a second subscription of 5% from Sir Lees Knowles and one of 25% from Professor Schuster, for both of which we are cordially grateful. The total of the fund subscribed is about 438%.

Finally, we may take this opportunity of announcing that all the objects of interest found by us in the excavation will be handed over to the Old Manchester Committee, which has recently added four representatives of the Classical Association to its number.

FITZALAN SQUARE, SHEFFIELD.

THE City Council of Sheffield are about to spend, if supported, 11,618% on the improvement of Fitzalan Square, the architects of Sheffield having combined in preparing a plan. The present tramway offices and conveniences, says the *Sheffield Daily Telegraph*, are to be removed, and underground conveniences constructed. A cab-stand for six cabs is to be constructed on the east side of Market Street. In place of the present tramway lines in the Square tramway lines, to be used as sidings, will be substituted, in accordance with the scheme of the general manager of the Tramways Department, on the east side of the proposed central oval close to the proposed new footpath (outside the balustrade surrounding the oval), which will also serve as a platform for tramway passengers. The sidings will be so constructed as to be available for linking up with tramways to be laid in Flat Street if hereafter found desirable. The estimated cost of the proposed works is as follows:—Laying-out of centre, in accordance with the design submitted by the Sheffield Society of Architects and Surveyors, exclusive of fountains and statue, 2,000% ; conveniences (to be charged to health committee) 3,300% ; paving and sewerage Fitzalan Square, 2,021% ; paving and sewerage Baker's Hill, 872% ; tramways special junctions (to be charged to tramways committee), 1,950% ; sidings, cross-overs, spare line and paving of tramways (to be charged to tramways committee), 1,475% ; making a total of 11,618%.

The best thanks of the Council are tendered to the Sheffield Society of Architects and Surveyors for the trouble and care they have displayed in preparing the designs for laying out the centre of the Square.

A PATCHWORK CHURCH.

IT is easy to overlook Warburton Old Church altogether. If you come from the direction of Lymm and ask for the church, not knowing that there are two (says the *Manchester Guardian*), the people point out an obviously modern building consisting mainly, it would seem, of tower. The course to take is to cross the bridge over the Bollin by the eighteenth-century mill of weathered brick and follow a lane that turns sharp to the left from the high road. At the end of half a mile or so you are at the cross roads in Warburton village, with a pair of suspiciously new-looking stocks before you, at the foot of the steps and pedestal of a ruined cross. A finger-post marked "Old Church" points the way along a street with houses of ancient thatch, all sleepy with age and quiet. A little further and there is the church, with its homely tower of brick grown thick with ivy. It looks indescribably squat and barnlike at the first glance, but quite in keeping with the sedate old hamlet and queer in every stone.

The old place is a strong piece of patchwork, and is a prime curiosity among Cheshire village churches. It suggests the notion that it was built anyhow and with anything that came to hand. The tower is weathered brick, but the south wall of the nave and the west end are of stone. And when you turn the corner from the west door you come upon a north wall composed of fine timber and plasterwork. This last is certainly the oldest part of the structure, and is probably of the fourteenth century. The stonework dates from the middle of the seventeenth century, the brick early in the eighteenth. The outer effect of the whole is that of a jumble of architecture which is almost violently picturesque. The history of the church is vague enough, but the first building seems to have been the chapel of a priory of Premonstratensian canons, who were certainly settled at Warburton in early Norman times. Afterwards the Warburton priory was merged in the abbey of Cockersand in Lancashire, where the Premonstratensians became established late in the twelfth century. There are faint memorials of the monks. A field down by the river is still called the Abbey Croft, and the splendid stone coffins in the church date most probably from those days. The church has been patched and altered through the centuries, and its present state would puzzle an architectural expert to explain. What can be done with a building

so delightfully defiant of all rules, and which does not even keep to the straight, but lurches here and there at surprising angles?

The interior is even more quaint. It has a kind of beauty in disorder which is quite different from the impression of dignity given by stately column and aisle. Huge rough-hewn timbers form the rudest of arches at the entrance to the choir, and support the shingle roof that covers the church. It is all far more primitive than any other of Cheshire's timbered churches—Peover, for instance. The brown worm-eaten timbers that serve for columns seem to have been merely roughly-shaped by the axe, and have many holes and protuberances. Curious hat-pegs are fastened to them, formed of pieces of buck's horn, and old supports for lamps and candles stick out also here and there. The church was once perhaps cruciform, but it is hardly possible now to trace a definite shape. Lying on the worn floor by the side of the choir are the stone coffins already mentioned; in the biggest of them "a very large skeleton" was found. The pulpit has a Jacobean look; it is formally carved. The massive font is seventeenth century, its wooden cover Elizabethan. Through the little windows—some of them askew—one looks out into a pretty churchyard where the trees are well on the way to leaf. The general air of the interior is that of plain simplicity, which is not marred by the indifferent glass of the east window. The homely mixture of styles and periods is very captivating; one feels the church has become what it is through the constraint of use, and it has therefore the beauty of a thing that has been long worn. Services are still held in it.

NEW COUNTY HALL.

THE following supplemental notes for addition to the conditions are issued to competitors for designs for the new County Hall, London:—

(a) Any further information required by competitors must be applied for to the assessors and addressed to the County Hall, Spring Gardens, London, S.W., in the form of separate questions on or before Wednesday, May 1, 1907, after which date no further questions can be considered.

(b) Those questions which it is necessary to answer will be replied to, and the information supplied to all competitors; such replies will then form part of the conditions.

(c) For the immediate information of competitors the scale for the drawings for the preliminary competition has been definitely decided by the Council to be 16 feet to an inch, and in view of the possibility of most of the competitors having considerably advanced their designs no alteration in the scale can now be made.

GENERAL.

H.R.H. the Prince of Wales will on the 23rd inst. open the new buildings of the University of Glasgow, which are to be devoted to the departments of physiology, materia medica, forensic medicine and public health, and of natural philosophy. The buildings were designed by Mr. James Miller, A.R.S.A., and have cost between 70,000*l.* and 80,000*l.*

A Stained-Glass Window has been erected in Worcester Cathedral as a memorial of Sir Douglas Galton, K.C.B., who rendered service as a sanitarian in designing military hospitals and other works.

Professor Ray Lankester will retain his position as Director of the Natural History Museum at South Kensington, the rule governing the Civil Service which would have placed him on the retired list having been abrogated.

The Royal Scottish Academicians have decided to remove from the exhibition the large picture, "The Misses Wilson," by Mr. Sargent, R.A., which had been lent for a limited period. Its place will be filled by the equestrian portrait, "Olivarez," by Velasquez, lent by Lord Elgin.

A Floating Dock is to be constructed at Aberdeen in place of the graving dock, at an estimated cost of 64,700*l.*

The Bishop of Stepney has accepted the dedication of Mr. T. Francis Bumpus's forthcoming book, "London Churches: Ancient and Modern," which will be a history of London church architecture from the Conquest to the present day—from the solemn Romanesque chapel in the White Tower to Mr. Temple Moore's graceful church at Tooting. Mr. Bumpus's other book, "The Cathedrals and Churches of Northern Italy," is promised very shortly.

A Collection of paintings by the late Alfred Stevens forms part of the Salon exhibition of Brussels, which was opened on Tuesday.

Gallo-Roman remains have been discovered beneath a field at Varains, in the neighbourhood of Angers. Apparently they consist of a temple, arena and bath.

A Statue of Gustave Flaubert, the novelist, is to be erected in Rouen, of which city he was a native, and the Municipal Council have selected a site near the church of St. Laurent.

Remains of a Roman Villa, including a variety of tiles, have been unearthed in Enbourn Road, Newbury.

A Society has been formed, entitled "The Photographic Record and Survey of Sussex," for preserving records of antiquities, buildings of interest, passing events of local or historical importance, portraits of notable persons, old documents, rare books, prints, maps, scenery, &c., also subjects of interest connected with ethnography and anthropology, geology, Mediæval history, &c., which may tend to make the survey valuable and representative of the county of Sussex.

The Council of the Royal Institute of Architects of Ireland have agreed to write to the secretary of the unemployed committee of the Stonecutters' Union, with reference to communication received from the committee, regretting that any differences with regard to conditions of contract should interfere with the execution of building work, and to express a hope that any misunderstandings will be speedily removed.

A Bronze Urn about two feet high, which was found at Ovingdean, has been deposited in the Brighton Museum.

Papers will be read at the Institution of Civil Engineers on Tuesday on "The Pyrmont Bridge," and "The Swin Bridge over the River Avon at Bristol."

A Bill has been introduced in the New Jersey Legislature to make it unnecessary for architects to pay the annual fee, if required, under the License Act of 1902.

Arrangements are being made for the preservation of the castle at Canterbury, which is the third largest Norman keep in England, ranking next to those of Colchester and Norwich. In the reign of Edward II. it was converted into a prison, and for the last three-quarters of a century it has been used by the Canterbury Gas and Water Company as a place of storage for material and coals. The gas company is willing to sell the castle for 1,000*l.*, and the Mayor has accepted the offer on behalf of the city. The City Council has appointed a committee to act with the Mayor in the matter.

A Sub-Committee of the Lord Provost's committee of Edinburgh Town Council have agreed to recommend that a beginning should be made with the erection of the new buildings for the Municipal Art School in Lauriston. In view of the fact that the estimates are lower than was expected, the committee agreed, after conference with the architect, that some improvement should be made on the exterior of the building, and that additional fireproof flooring might be put in. The first section of the school will, it is understood, be completed by August of next year.

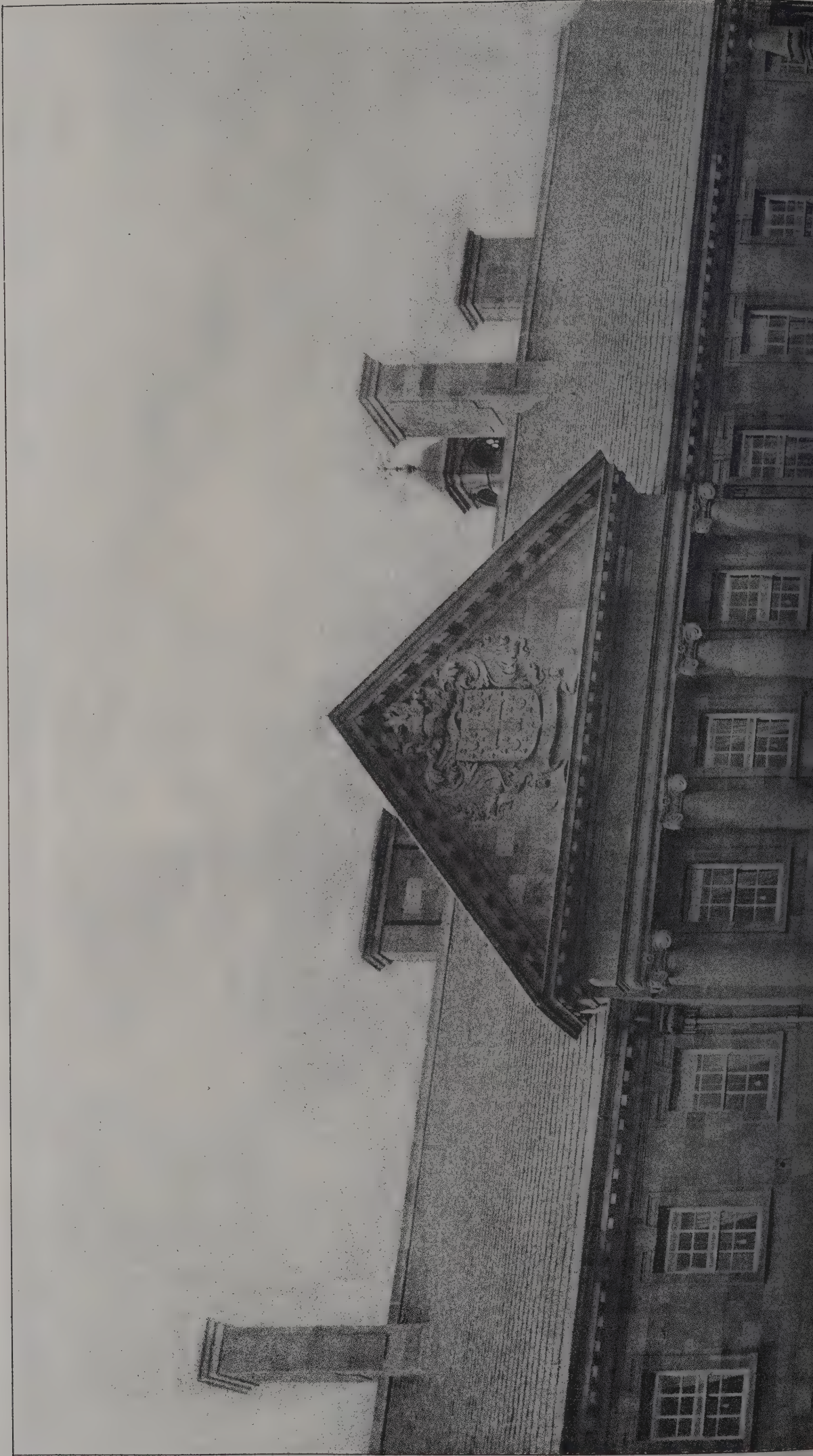
The Auld Brig Committee of Ayr Town Council on the 27th ult. agreed to proceed with the erection of a temporary bridge, to take the place of the Auld Brig while it is closed during the carrying out of the preservation works. The Auld Brig will not be closed for traffic till the temporary bridge has been constructed, but it is understood that it will be made a condition in the contract that the bridge is to be completed and ready for opening for traffic by the end of May. Till then, of course, operations cannot be begun by the engineers.

The Proposal to utilise Carnarvon Castle for the local Town Council meetings and for a museum has not received the approval of the Office of Works.

Sir A. Brumwell Thomas has issued a writ against the Belfast Corporation for the sum of 13,000*l.*, alleged to be due for fees in connection with the City Hall. The Corporation contend that not more than half that sum is due, and that it should not be paid until the building contract, about which there is a divergence of opinion with regard to extras, has been settled. A committee has been appointed to consider the subject.

The Fenton Education Committee have made the following arrangement with their architect:—"That Mr. Ashworth be paid a commission of 5 per cent. on new structural work and a commission of 3 per cent. on furniture and fittings; and that the commission of 2 per cent. previously charged by him to the builders for quantities be not charged in future, in accordance with the recommendation of the Local Government Board auditor."

The Architect, April 12th 1907.





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INK PHOTO 3/4" X 1" 4 & 5 EAST HARDING STREET FETTER LANE E.C.

CRATHORNE HALL, YORKSHIRE: GARDEN FRONT DETAIL.
Messrs. ERNEST GEORGE & YEATES, Architects.

The Architect, April 12th 1907





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CRATHORNE HALL, YORKSHIRE: ENTRANCE FRONT DETAIL.
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CATHEDRAL SERIES, No. 598.—CARLISLE: THE SOUTH TRANSEPT DOOR.

The Architect, April 12th 1907.





PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

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WINCHESTER HOUSE. OLD BROAD STREET, E.C.

JOHN BELCHER. A.R.A., Architect.

The Architect.

THE WEEK.

ES CLARKE HOOK, who died at his house at Churt Sunday in his eighty-eighth year, will be remembered one of the most characteristic of English painters. Twenty years ago he seemed destined to be one of the representatives of High Art as then interpreted. His wings from the Elgin Marbles were evidence. He won the gold medal of the Academy with a *Finding of the Body of Harold*, and a travelling studentship with *Isiah Watching the Dead Sons of Saul*. In the competition for the decoration of the Houses of Parliament he was represented by a *Satan in Paradise*. Venice he was captivated by colour, and to that city probably owe the English coast pieces on which his reputation will rest. It must not be supposed that his representations of scenes from Italian history and the Italian plays of SHAKESPEARE are commonplace. They deserve far more attention than they have received of late. But his second career gained RUSKIN'S favour, and in the fifties was sufficient. After 1854 historical and foreign subjects were abandoned with one or two exceptions, and his diploma work was *A Narrow Lane*. The last pictures he exhibited in 1902 were *Where the Green Sea Shingle* and *Home from the Marshes*. There is very little difference in the execution of them and earlier works of the same class. But there were changes in his style, and on that account Mr. Hook's recent paintings could not secure as much admiration as those which were discoveries, for, although he admired sailors and fishermen, he never made the principal elements of paintings. Mr. Hook's pictures are records of some varieties of English life, and are more historical in the true sense of the word than the scenes in which BAYARD, ISABELLA OF CASTILE, MOTHER OF MOSES, CHRISTIAN REFORMERS, BIANCA OF OTHO IV. and Lady JANE GREY appeared.

Johannesburg they have adopted an effectual measure to prevent the withdrawal of tenders, for such an act will involve a loss of 250*l.* The plans for the new University Buildings in Plein Square, by Mr. R. H. HEN, and the bills of quantities having been completed, tenders were invited for the 15th inst. A deposit of five guineas was necessary in order to obtain a tender, which was to be returned on receipt of a *bona fide* tender. It was also announced that a banked cheque for 250*l.* was to accompany each tender, and that it would not be recognised. The deposits were to be returned as soon as the contract and suretyship were signed. Sureties, to be approved by the Council, were also required to the extent of 10,000*l.* from the successful tenderer. Should any tenderer fail to sign the contract, including the necessary suretyship, when upon to do so, he will forfeit his deposit of 250*l.* and be liable to damages.

SCIENTIFIC congresses are an invention of the nineteenth century, and are derived from BREWSTER'S Association for the Advancement of Science. The institution owes its continuance in a large measure to the introduction of popular elements. But what is the value of a Mathematical Congress? The public are not having ability to comprehend symbols. First, they are daunted by them, for, as STUART MILL says, "they derive none of its certainty from its elements, but are as full of fictions as English law." Yet the International Congresses of Mathematics have been held, and a fourth is to meet in April 1908 in London. There will be four sections, viz.:—(1) Arithmetic, algebra, analysis; (2) geometry; (3) mechanics, mathematical physics, applied mathematics; (4) philo-

sophy, historical and didactic questions. The subscribers are to pay 25 francs, but families will be charged only 15 francs for each member. The secretary is Professor CASTELNOVO, 5 Piazza S. Pietro in Vincoli, Rome.

SECTION 102 of the London Building Act defines a "structure" as including "any building, wall, or other structure, and anything affixed to or projecting from any building, wall, or other structure." But that definition is found in Part IX., which relates to dangerous and neglected structures, and it remains doubtful whether it is generally applicable. Mr. DENMAN, the magistrate, recently considered that a sort of show or advertisement case, 13 feet high and projecting 3 feet, which was temporarily affixed to the Palace Theatre, was a building or structure within the meaning of the Act, and the owners were liable to be fined for going beyond the building line. They appealed, and the case was heard in the King's Bench Division. The appellants relied on the fact that the advertisement case was merely hung on the wall by means of bolts, and therefore was not a structure. The magistrate, in his affidavit, said no question of law was raised before him, and he decided on the facts. Their Lordships considered the question was one of fact, and the magistrate's decision was upheld. The result is disappointing, but it is unlikely a more definite solution will be discovered.

ALTHOUGH Sir WALTER SCOTT occupied a part of a lofty house in Edinburgh and was opposed to change, yet he was not indifferent to the evils of the flat system. According to him, "each inhabitable space was crowded like the underdeck of a ship. Sickness had no nook or quiet, affliction no retreat for solitary indulgence." Another result was that owing to the restriction of the flats the occupants were compelled to transact business in taverns. The lofty houses are still characteristic of Edinburgh and are not likely to be superseded for many years. But in suburban districts which are increasing yearly in popularity, the English rather than the Scottish type of house is now adopted. Some are laid out for a single family, others for two families, but unusual populousness is not contemplated. The statistics of the Edinburgh Dean of Guild Court are suggestive of the change which affects manners and health as well as construction. In 1900 the plans for self-contained houses which were approved numbered 121, in 1906 the number had increased to 399. Tenement houses declined from 82 to 65 for the same year. SCOTT feared that a "house within itself" made an owner indifferent to neighbours, while in a tenement neighbours were compelled to live in kindness and harmony, but that is a subject which builders cannot be expected to take into account.

THE directors of the Institut Pasteur in Paris, when they heard of the unanticipated good fortune by which they are the heirs of the late M. OSIRIS, lost no time in consulting their architect and adopting his recommendations. The buildings are quite modern, but many aids to hospital practice have been devised of late years, and it was considered that the Institut Pasteur, which represents a revolution, should be as near perfection as possible. Both the officials and the patients will have reason to bless M. OSIRIS, although he may have intended to apply the greater part of the fortune he possessed to other uses. If any development of the system which M. PASTEUR introduced is possible, it will no longer be necessary to delay the accepting of it through want of funds. The example of the directors is worthy of attention by hospital authorities in all lands. The influence of a building on the recovery of patients is not sufficiently accepted, for not even Pasteurism can succeed amidst defective surroundings.

VALUE FOR MONEY.

WE spoke last week of value for money as being one of the vital considerations that an architect has to take into account in making choice of material. An important department of building construction in which this consideration is perhaps not always sufficiently recognised is that of fireproof, or, as it is now more correctly the fashion to term it, fire-resisting construction.

It is too frequently the practice amongst architects who contemplate the introduction of fire-resisting construction into their buildings to put a number of firms in competition, giving them the barest outline of what is required and making the selection of the fortunate recipient of the contract purely on the basis of price. A fire-resisting floor we will suppose is required to cover a space of certain fixed dimensions. Each competitor is left free to propose the particular system in which he specialises, possibly even to determine the presumed safe load that his floor is supposed to be capable of carrying, though this particular requirement is not infrequently fixed by the architect when sending out his invitations for tenders. The offers of the various firms are received by the architect and the prices range, we will say, between 6s. 10d. and 7s. 6d. per yard. More often than not the tender at 6s. 10d. is accepted without any further examination or analysis, but has the architect by so doing made sure that he is obtaining for his client the best value for money?

First, as fire-resistance is presumably one of the main objects for the intended existence of the floor, are the one at 6s. 10d. and the one at 7s. 6d. equal in this respect? Have they both been subjected to test by some impartial and competent authority? If so comparison should be made not only of the results of the tests but of the conditions of each. The amount of resistance actually desired for the floor in its intended application, as well as the conditions under which it will possibly be called upon for that resistance, must be also compared with those of the tests. To make these comparisons fairly and justly the architect must know how varying conditions affect fire-resisting construction—such as the effect of load on a heated floor, differing according as the load is a greater or less proportion of the ultimate breaking stress; the effect of span, of the impact of flame, of the varying or equable distribution of heat. It is from disregard of these conditions that there results the utter futility of the testimony of actual experience in fires so much vaunted by some makers of "fireproof" floors, partitions and safes. Many a safe has "preserved uninjured its valuable contents, &c." in a conflagration simply because it has happened to experience scarcely enough heat to scorch the paint, whilst if it had been exposed to what the Germans call a *schicht-flamme*, "its valuable contents" would have been reduced to tinder.

Because a floor or partition has stood unharmed in a building damaged by fire, it does not follow that it will be equally fortunate on the next occasion. It is one of the characteristics of actual conflagrations, as distinguished from careful tests by competent experts, that in the former actualities and heat move in swirls, eddies and strata, alternated with comparatively cool currents of air, so that in the same burning building, and even in the same room, there may be a difference of 1,000 deg. Fahr. or more. Hence the inconclusive value of the evidence of actual experience in fires as proof of the ability of any special form of construction to furnish adequate fire-resistance. Failing tests by competent and impartial authorities, the architect must use his own judgment in estimating for himself the fire-resistance of the construction proposed, and in doing so must accept the responsibility of a right or wrong conclusion. Relative ability in fire-resistance does not

terminate the investigation of the architect who would obtain for his client the best value for money.

The next point, perhaps, is the probable condition of the 6s. 10d. and the 7s. 6d. floors after exposure to fire and water. There are in the present Building Trades Exhibition, for instance, some forms of fire-resisting floors which after a conflagration would need no more than a coat of plaster to render them still serviceable and sightly, whilst others, although capable of fire-resistance, would need entire reconstruction before the building could be regarded as once again reasonably safe and useable.

Then there must be taken into account the attitude of the insurance companies. A lower rate of premium which may be negotiable with a higher-priced floor may turn the scale of relative value. The respective weight-carrying potentialities of the floors under consideration should receive careful investigation. A low-priced floor whose safe load is $2\frac{1}{2}$ cwt. per foot may be a much dearer article than one for which the calculations have been based on a working load of 3 cwt. per foot.

As we have noted above, it is not an unusual practice for architects to specify the load which the floor that is the subject of tender must be capable of carrying. But if you do this you must, to use the hackneyed expression, "see that you get it." The sizes of joists and girders suggested by the contractor must be checked for their weight-carrying capacity. Not merely must the sections be of the right size, but the quality of the metal to be supplied must bear investigation and test. Our best English ironmasters, for instance, are in the habit of supplying mild steel joists with an ultimate fibre breaking stress of 30 tons per square inch, but stuff which comes from Belgium is usually very much below this figure. Some architects of a rather mechanical and mathematical turn of mind than others, their colleagues make a practice of sending drawings to engineers with the exact sizes and weights of joists, carefully determined and figured, but this may always result in obtaining for their client the best value for money. The sizes specified may not be those which the engineer in question has in stock or which he may be able to purchase at the lowest price, whilst if the settlement of the actual scantlings were left to him he might be able to supply something equally effective at a lower cost to the client, and possibly at the same time with a better profit to himself. It seems therefore advisable as a matter of business to allow the engineer who is to supply the goods to select the exact section which should afterwards be examined and criticised by the architect. When this method, however, is followed it is more than ever important to test the quality of the material, for it is obvious that the opportunities which will be grasped by an iron merchant for buying joists at low prices are often the result of the "dumping" of surplus products of continental manufacturers, and probably of low grade.

Another point that must be carefully examined by the architect is the effect of the various proposals by contractors tendering for fire-resisting floors on the elements of his building. A low-priced floor may be cheap if by its disposition of girders and their load it increases the support required from his walls, necessitating perhaps extra piers with expensive temporary or even stanchions. A thin floor at a higher price may be cheaper in the long run than one of greater thickness that results in an increased height of walls in order to maintain the internal cubical extent desired. Then again, the amount of attendance upon the engineer and contractor required from the builder, and the relative extent of cutting away, scaffolding and centring during the interference these occasion with the remainder of the buildingwork and other trades, are all matters that require investigation and are factors that influence the ultimate cost of the building and make all the difference between an economical and an expensive floor.

A point that is very often overlooked by architects is the great effect in lessening the necessary sizes

orders resulting from the introduction of intermediate supports. Our engineers of to-day can supply us with orders capable of bridging enormous spans, but it is questionable whether in many cases the use of such orders would give the best value for money.

It is very nice to be able to span, say, a hospital and 28 feet wide without any intermediate supports, but would the efficiency or the healthiness of such a span be sensibly diminished by a single column or anchion under a girder, and would not the saving of something like two-thirds of the weight of the girder result in better value for money? We thus see that even such a comparatively simple matter as the selection or acceptance of a tender for a fire-resisting floor is one that entails considerable thought and skill on the part of an architect who conscientiously endeavours to obtain for his client the best value for money.

PUBLIC WORKS IN EGYPT.

THE report on the finances, administration and condition of Egypt and the Soudan in 1906 has peculiar interest, for it is an explanation, if not a defence, of Lord CROMER's policy as the representative of Great Britain during a quarter of a century. So long a period of anxiety could not fail to be exhausting, and Lordship has to acknowledge he is "worn out," and in consequence has resigned the office of "His Majesty's Agent and Consul-General." The report is a remarkable document, and almost unique in character. Roman governors may have held positions as difficult, but they have left no record, for the renowned "Commentaries" of CÆSAR are devoted to battles and sieges.

There is a temptation in Egypt for an authority to set up costly memorials of its power. When BONAPARTE told his soldiers that forty centuries looked down on them from the Pyramids, he was shrewdly turning local conditions to his own account. As conquerors the troops would so be remembered. Egypt possesses colossal examples of architecture which were inspired by vanity, reverence or fear, but which are of little use to the modern inhabitants. Indeed, Egyptian structures, although they excite wonder, have made people imagine that the best architecture is without utility. If our French friends could attain their ambition and exercise control in Egypt there is no doubt they would make an effort to imitate the PHARAOHS and erect triumphal arches, columns and other works simply for the astonishment of posterity.

The memorials of Lord CROMER's rule are of a different class. They were not suggested by examples from the dynasties. The Assouan reservoir may not be so impressive as the pyramids or the temples, but so long as the physical conditions of Egypt remain as they are at present it will confer benefits on multitudes, unlike the earlier works, which could never serve at any time. Its importance has been demonstrated by experience. To increase the river supply the stored water had to be used after May 1906. The daily amount varied from 6,000,000 to 20,000,000 cubic metres. With such a variation it is no wonder "the regulation of the dam sluices is a most intricate piece of work," for the state of the river has to be studied to avoid excess or insufficiency of supply, but the resident engineers have reduced the regulation to a science. The belief in the stability of the dam is also confirmed. It suggests the character of the natives and the difficulty of providing for them, when we learn that they showed curious disregard of existing laws and regulations in using the water. The conversion or reclamation of lands in Middle Egypt are likely to cost between four and five millions sterling. The value of the land consequently is increased to an enormous extent, and the Government has had to purchase any areas required not at their present but at their prospective value. Another great dam is in course of construction at Esneh by Messrs. AIRD.

Railways have been constructed which carried last

year over twenty-two millions of passengers and nearly seven millions of tons of goods. There are also light railways, and Lord CROMER remarks that the number of school children using them is rapidly increasing. In 1906 the total expenditure on Cairo was 249,680E£, while in 1905 the amount was 158,585E£. All the inhabitants of Cairo have to pay towards the improvements of the city in direct taxation is only about 8 per cent. on their rental value. It is no wonder that wealth has greatly increased of late years under such economical conditions. An important work is the improvement of the port of Alexandria. The proportion of berthing is 1 metre to 604 tons of goods. It has been ascertained that the proportion of berthing to tonnage was, at Trieste, 1 metre to 281 tons; at Hamburg, 1 metre to 368 tons; at Marseilles, 1 metre to 380 tons; at Havre, 1 metre to 233 tons; at Liverpool, 1 metre to 274 tons; at Manchester, 1 metre to 402 tons; and at Glasgow, 1 metre to 581 tons. At Antwerp the proportion is 1 metre to 719 tons, and hence 45,000 metres of quay room must be added along the Scheldt to meet the necessities of commerce.

A large bridge is in course of construction at Rodah. Part of the work was executed by local labour, but some of the rivetting had to be done twice over owing to the demand for rivetters on other works in Egypt. Messrs. ARROL, the contractors, had to train not only their own men but also men for other works. It was a hardship for them but an advantage for Egypt. Here it may be mentioned that at Halfa, in the Soudan, natives were obtained who could rivet, but of their ability Captain MORANT writes:—"Under certain conditions five natives will knock in 500 half-inch rivets in the day, whereas in England the same amount of work would be done by two men and a boy. But, whilst the total pay of both gangs would be approximately the same, the rivetting here is much less efficiently done." It is, however, a sign of progress when we find that rivetting is possible in so remote a place at even double the expense of English work. Another sign of progress is to be found by the demand from many parts of Egypt for hospitals, schools, post offices, police barracks, &c.

The Public Works Department expended last year 2,422,000E£. It is considered a wise policy to employ as many natives as possible, and last year 540 Egyptians were employed to 99 Europeans, but it is difficult to obtain Egyptians who have sufficient technical knowledge for such posts. There has had to be a slight increase in the English staff, and the result was a proportionate increase in efficiency. In the Survey Department there is a staff of 28 Europeans and 42 Egyptians, but the temporary employés, numbering 600, are all Egyptians. Surveying was in demand among the ancient Egyptians, and their descendants ought to inherit some aptitude for it. Captain LYONS explains his position by saying:—"It should be remembered that I have been required to produce a survey up to European standards at a more rapid rate than any European survey, so it has been impossible to do more than teach each man his piece of work. Now that pressure is relaxed I am training on more general lines those that are promising, and these will go to fill higher posts." There is no question that natives who are careful can find many opportunities for advancement under English administration. Indeed, the success is often enough to fill Englishmen with envy. Lord CROMER in a feeling way alludes to the difference. While Egyptians are gaining wealth the modest incomes of English officials have remained stationary, and the cost of living has increased in every direction. His Lordship points out that it is their duty to resist the temptation to speculation, either in land or in other directions, as practised by native officials.

It cannot be said that his efforts to promote the prosperity of Egypt have made Lord CROMER forgetful of antiquity. The repairs to temples are continued. All the columns at Karnak which fell in 1899 have been

re-erected. The next work to be undertaken will be the restoration of the fallen pylon at the west end of the great hall. The repairs to the temple at Edfou have been completed. Excavations are in progress at Sak-kara. Fragments of a manuscript play of MENANDER and a collection of exquisite silverwork have been found. Of the twenty statuettes stolen from the Cairo Museum only six have been recovered. The Arab monuments are not neglected, and a sum of 11,000*£*. has been expended on the Sultan Hassan Mosque.

A problem of a different kind is offered in the Soudan, which in area is twice as big as France and Germany combined. Out of the 950,000 square miles only about 1,576 were cultivated. During 1905 and 1906 no less than 303,770 were brought under culture, owing mainly to the heavy rains. But even the most advanced part of the Soudan can scarcely be said to have emerged from barbarism. There are enemies within and without, but progress is extending, especially if, as elsewhere, the test of taxation is applied. In 1903 the gross revenue was 24,416*£*., in 1906 the amount was increased to 235,669*£*..

During the year 1,600 miles of road were cleared. They are of a simple kind, for there is no metalling, and the watercourses are rarely bridged. There are over 1,000 miles of railway in the Soudan. The post office and telegraphs are developing, and it is suggestive of the desire to aid the people that quinine is now kept on sale at all the post offices in those districts of the Soudan which are most liable to fever. The most expensive works at present in hand are at Port Soudan, where, in addition to the usual accessories of a harbour, barracks, post offices, quarters for officials, schools, &c., are in progress.

In the report much is said about the treatment of British manufacturers in respect of the Soudan works. Captain KENNEDY, who is in charge, says that all reasonable preference should be given to the British manufacturer, but he is not in touch with local requirements like his continental rivals. The British representatives are generally mere selling agents, while continental firms employ both business men and technical men. Captain KENNEDY said he lately applied for quotations for steel towers for the storage of water for a town supply. He received two British quotations. One showed an antiquated tower evidently taken from an old catalogue, and quite unsuited; the other was a design which was structurally faulty, and could not be accepted. Some Belgian firms having agents in Egypt sent designs which were up-to-date in all respects, and suited to the requirements.

On another occasion Captain KENNEDY wanted to arrange several contracts for structural steelwork, laying water mains, &c. One British firm was represented by an agent who was without authority to state prices or to furnish details. Another British firm was represented by an engineer whose knowledge was insufficient to enable him to tender. The representative of a German firm was a first-rate engineer, and without any consultation with headquarters in Germany he furnished a complete tender, specification and full technical details and calculations. A Belgian firm sent a business agent and their chief engineer. In a few days satisfactory plans, specifications and tenders were produced by them. Captain KENNEDY says he pointed out to a British agent that his price for carrying out certain work was inaccurate. Although he represented the engineering and business sides of the undertaking, the agent had to refer to the firm at home; a reply was received stating that the price given was correct, although it was based on home practice and not on the condition of the Soudan. Captain KENNEDY declares emphatically that the higher class of continental firms trading in Egypt are better represented than their English rivals, and it is no wonder if a great deal of trade is snapped up by continental competitors. He testifies that the machinery and plant from England have been excellent, and the British Portland cement is

of such a high standard that no further supplies natural or artificial cement are obtained from Belgium although their prices are considerably lower. He regrets to say that building stores generally sent from England are of an inferior character. Material which would not be used at home is supposed to be good enough for export. The result is that many "repeat orders" are not repeated owing to bad materials having been received in the first instance. A considerable quantity of structural steelwork has been received from Belgium, and was found to be satisfactory in quality and workmanship. "It is a pity to happen to know," says Captain KENNEDY, "that some of the orders placed by me in England were sub-contracted for in Belgium and shipped direct from Belgium to the Soudan." American plant, although excellent in design, has been found to be of inferior quality structurally. Well-boring plant and steam road-rollers were examples. It has been deemed advisable to obtain detailed designs from America, and have them carried out in England. It is also mentioned that the German firms are more disposed to give credit to native traders in the Soudan than the British. The Germans, from their more exact knowledge of the people, know the extent of the risk, and it is feared that in consequence those competitors will gain so tight a hold on the import trade that it will be difficult for British merchants to shake them off.

Archæology is not neglected in the Soudan although funds are limited. The temple at Wady Halfa is enclosed and roofed. The temple of Kumma is clear of occupants. The few columns remaining of the temple near Gebel Barkel are saved by timely repairs. Arrangements are made for the temporary protection of the church at Old Dongola, which is closely connected with the Mediæval history of Nubia. During the past year several Christian antiquities were discovered. It is also stated that a series of old Nubian papyri, partly in Meroitic and partly in other characters, are in the hands of Berlin savants. In archæology as well as in commercial affairs it appears to be necessary to invoke German aid. Their conclusions are expected to throw light on inscriptions in the Soudan which hitherto have been undecipherable.

It is doubtful whether any other official documents receive so much attention as Lord CROMER's reports. No less than 11,500 copies of the report for 1905 were printed. The desire for information is partly owing to the interest of the subject, but much is due to the way in which the details are treated. The reports are characteristically British. There is no attempt to conceal weak points by fine writing; facts are stated, and the methods proposed for dealing with them are described as definitely as is possible. The series of reports on Egypt must therefore be considered as State papers which are deserving of imitation by those who hold high office as representatives of Great Britain.

DANISH PICTURES.

"DENMARK'S a prison," and "one o' the worst," says HAMLET. The words are not inapplicable to the peculiar restraint which seems to be imposed on Danish painters, or is accepted by them. The impression which the collection of works now to be seen in the Art Gallery of the Corporation of London is likely to make on visitors who are accustomed to seeing pictures, is not unlike that which a French audience endures on seeing a performance of "Hamlet." There are a few scenes which have colour and action, but the tragedy seems to be entirely enveloped in "the trappings and the suits of woe." The Danish pictures are more suggestive of a country where fogs prevail and brilliant colour is unknown, than the majority of those which are produced in London, which is supposed to be notorious for its fogs. Black is a dominant colour in the Guildhall Gallery.

The painting called *The Asiatic Company in Copenhagen*, by WILHELM HAMMERSHØI, which is a view of a building in black, tempered with a little indigo, should have been given the first place in the gallery and the catalogue, for it would serve as a key to the collection. Architectural paintings are often doleful, but this example is a nightmare. The building is as good an example of Classic as the majority of those we have in London, and the details are honestly rendered, but the influence of local colour has made of it an embodiment of dreariness. We doubt if in reality the building was as black as it is painted. The picture that comes next is not quite as black, for it is an *Adam and Eve*, by JULIUS PAULSEN, but it is more oppressive. The first man is supposed to be awakening from slumber and gazing on the first woman, who is standing before him. The local fogs must in some way have mingled themselves with the flesh tints as well as with the green used for the grass. The shadowing of the figures is almost black. One cannot help wishing that a smart shower of rain descended to wash both the figures and the grass. EVE is moreover, rather weighty, for she has sunk to such an extent in the turf that we cannot see her toes. Probably the artist wished to suggest that she had ascended from the earth and was not quite free. We should like to know the opinion of the Smoke Abatement Society about M. NIELS LUND's *A View of London Looking from the West Tower of the Royal Exchange: Time, the Accession of the King Edward VII.* On such an occasion an ultra-realist would allow that a little sunshine and brilliancy of colour would not be out of place, and if we remember rightly the day was rather bright; but Mr. LUND, as a Dane, does not believe in brightness. He takes remarkable pains in representing the buildings, but we doubt if any Londoner would recognise such general gloom as a characteristic of the centre of the City.

Indeed, it is only when artificial light is introduced that the Danish artist is tempted to present colour and light as well as shade. ERIK HENNINGSEN's *Evening in Street, Petergade, Copenhagen*, is a welcome novelty, for we can see the colour of dresses and life abounds. The snow on the ground approaches white and we are gratified to learn that white is tolerated for pastry-cooks' aprons. Another work which is in the upper gallery, and which many consider to be the best picture in the collection, is *The Committee of French Artists for the Exhibition in Copenhagen in 1888*, by P. S. KRÖYER. The illumination is supposed to come from a lamp on a table, where a plan of the building is under discussion by M. BONNAT and the late PUVIS DE CHAVANNES, while MM. GERÔME, J. P. LAURENS and others are listening. On such an occasion an architect was likely to take principal part, but painters have a peculiar equity, and the late CHARLES GARNIER is placed at the most remote point and appears to be craning his head to get a glimpse of the plan. Like many another painting, its use as a record is of no account, but because of the lamp-light and the absence of atmosphere we must recognise that M. KRÖYER can paint heads in excellent style.

The more we know of waves the more difficult they are to paint. Danish artists should be able to show them under new aspects. Professor TUXEN's *Appassionata* is one of the modern attempts to depict a single wave. The crest in the centre is curled into countless whorls, and evidently is an exact representation of a curl. But the point of view is above the water, and it is only when lying on the shore that one can fully judge of the commotion, which is owing to several causes, some of them being unknown, which act along the line of the wave as well as behind it. *The Wake of the Ship, Mediterranean*, by THORWOLD NISS, recalls the late HENRY MOORE's seascapes. The painter has aside inherited notions and has painted the Mediterranean as it appears to most travellers. ANTON LILJE's *Sea Piece* is also worth notice, for we seem

to have the prelude of a storm in which water and sky combine for effect. *The Vikings*, by THOROLF PEDERSEN, has many of the qualities for popularity. The vessel might be described in MILTON's words as "built in the eclipse and rigged with curses dark," for the baleful form of the ship, its immense sail and the armed rowers express the general idea of the sea-rovers when they approached a coast where there was plunder. *The Winter Evening in a Danish Bay*, by WILHELM KYHN, is a more desolate scene than is ever presented in England or Scotland, and the absence of animation increases the effect, but the red light in the sky and the expanse of snow, of which the monotony is broken by an occasional black post, form a contrast with other pictures. *Cape North, Iceland*, by C. BLACHE, belongs to the Corporation of Nottingham. The grey land and the green waves are a pleasing contrast. LAURITZ HOLST's *White Gale* shows some great waves, but we wonder that CARL RASMUSSEN's *A Whaler Leaving Greenland in a Dispersing Sea Fog* was ever allowed to go from Denmark, for it has qualities which would be more appreciated by natives than by foreigners. Taken as a whole, the Danish painters do not appear to have taken advantage of their opportunities. There is not one work which suggests the tumultuousness of the sea, such as we see it in TURNER's pictures. It is only by liberal interpretation that we could imagine the Danish waves swallowing a large vessel as if it were a pebble. But this may arise from the absence of any fear of the ocean. The people have been so familiar with its moods during many generations, they may now look on all the phenomena as commonplace.

OTTO BACHÉ's *The Conspirators Riding from Finnerup after the Murder of King Eric Glipping* is the biggest picture in the collection, for it measures 99 inches by 148 inches. The group of equestrians are in the foreground, and as the event took place in the evening and they are disguised as monks they appear as a dark mass, in which individuality is confounded. In the background are the buildings which they have fired. The old legends do not appear to be much utilised by Danish painters. *The Death of Childe Olaf* is curious from its arrangement, for, like a scene on the stage, we see the interior of a cabin and a part of the deck with another boat outside. *Venus Triumphant*, by Professor L. TUXEN, resembles a copy of a French ceiling painting; works of the kind are outside the province of the northern artists. Far preferable is *A Sardinière, Finisterre*, by P. S. KRÖYER, in which apathetic women are seen engaged in dressing the myriads of silver fish as if it were the most joyless of tasks. *A Pierrot and His Family*, by W. ROSENSTRAND, is a favourite subject with painters of all countries. Here the man is seen rocking a cradle while studying a part, and his wife is engaged in dressing. It must have been painted outside Denmark, for otherwise there would be less colour. In *The Churchyard*, by HANS HANSEN, we see a lonely peasant woman contemplating graves. In *Summer Evening at the Skaw*, by P. S. KRÖYER, the artist has had the courage to represent a man and woman in light summer clothes admiring the moonlight on the water.

There are a few religious paintings in the collection. *Christ and the Pharisees*, by AXEL HELSTED, is suggestive of a scene in modern Jerusalem, while the *Ecce Agnus Dei*, by the Baron ARILD ROSENKRANTZ, differs from the ordinary paintings inspired by the words, for it depicts the Entombment, and it is reverential and pathetic. *The Christian Martyr in the Roman Arena* is merely a nude figure against a wall. It is by V. IRMINGER, whose *Wounded Lioness in the Roman Arena* might be a copy in oils of the Assyrian relief in the British Museum, which received so much attention from French artists after 1870, as if it were adapted to serve as a monument of the last war.

The two paintings by Professor TUXEN, *The Anointing of Queen Alexandra at the Coronation of*

King Edward VII. and The Coronation of His Majesty the Czar Nicholas II. of Russia, are remarkable as contrasts with the other paintings. They are most brilliant: the Russian scene is the more crowded, and the uniforms, stars, gilded railings seem to demand the immense diamond crown which the Czar wears as a necessity. Without that object the picture would seem to be imperfect and deprived of a central point. Apart from the colours the subjects are unlike those of the other pictures, which are mainly records of humble life. There is a ghastly scene, *The Death of Queen Sophia Amelia*, by CHRISTIAN ZAARTMANN, an old lady wearing all her finery. Another work by the same artist, *Charlotte Biehl, the Writer of Scandals*, represents a usual accompaniment of a court, who is seen peering behind a curtain with a quill pen in her mouth, as if in order to leave no time for reflection before writing.

There is a fine view of *The Interior of Ribe Cathedral*, by JORGEN ROED. The building dates from 1117, and the treatment resembles our Norman. There are views of some other Danish buildings, but the castle designed by INIGO JONES, which would have been especially interesting to Englishmen, is not to be seen among them. Foreign buildings appear more in favour with the artists. There is a view of *The Erechtheion at the Acropolis*, by JOAKIM SKOVGAARD, which, if pictures could speak, would have much to say about the influence of pure air, which can bring out all the details of a figure or a landscape, upon the artistic temperament. The Athenians believed that the air of the neighbouring Boeotia caused the people to differ from themselves, and it is to be feared that Denmark has an atmosphere which is an obstacle to the perfecting of art. Yet when we see such a work as *The Fallen Tree*, by THORWOLD NISS, which might have been inspired by one of MILLAIS'S late landscapes, owing to the elaboration of the foreground, one is disposed to doubt whether many of the peculiarities of Danish painting are not derived partly from a traditional method of treatment and partly from the influence of some French painters who had a fear of all but very dull colours.

London is the recognised capital of the world, and the Corporation are therefore bound to exercise their hospitality towards many schools. It is well to have contrasts, and, as a balance to the Danish system, the committee would be wise to exemplify next year a school in which colour is predominant. Hitherto the art of the Austrian, Hungarian and allied races has not been represented, and there could be no better time for the display than next year. It cannot be said that much is to be gained either by the ordinary sightseer or the student of art from the present exhibition beyond admiration for artists who seem to be struggling amidst difficulties imposed by nature. It is now generally admitted that colour is the first quality in painting, and if we see little of it this year in the Guildhall galleries, the law of compensation will compel us to expect an abundance of it at another time, and there is no richer source than among the artists who are officially described as belonging to the Austrian school, although to the best men among the painters that designation is not acceptable.

UNIVERSITY COLLEGE, LONDON.

THE accommodation provided at University of London, University College, for the schools of engineering and of architecture will be considerably extended before the beginning of the next session in October by the additional space which becomes available through the removal of University College school to Hampstead. Full courses for University of London degrees in engineering and in architecture are given at University College and occupy three years. Students intending to enter the college in October should pass the matriculation examination in June or in September. The Andrews scholarships are offered for competition in May next; one of these scholarships, value 30*l.*, in science and mathematics is tenable in the school of engineering. Full particulars of the courses and of the scholarships can be obtained on application to the secretary.

SHEFFIELD SOCIETY OF ARCHITECTS.

THE annual general meeting was held on the 11th. Mr. E. Holmes presided. Mr. T. H. Robinson elected an associate member.

The hon. treasurer's statement of accounts and report of the Council were read. These showed that financial position of the Society was satisfactory, and there had been a slight increase in the membership. report drew attention to numerous matters of interest to members of the profession, amongst which may be mentioned the Model Cottage Exhibition to be held this year at High Wincobank, and the laying out of Fitzalan Square scheme for the architectural treatment of which was proposed by the Council of the Society and for which the Council had expressed its thanks.

Mr. J. R. Truelove was awarded the prize of 5*l.* 5*s.* for the best measured drawings, subject to the usual conditions.

The ballot for officers resulted as follows:—President, Mr. W. C. Fenton; vice-president, Mr. W. J. H. Fowler; hon. treasurer, Mr. F. Fowler; hon. secretary, Mr. J. W. Wigfull; Council, Messrs. C. B. Flockton, C. Gibson, Mitchell-Withers, H. L. Paterson, A. E. Turnell, A. Watson, W. G. Buck, C. F. Innocent and H. J. Potter.

At the conclusion of the business meeting Mr. A. W. S. Cross and G. Hubbard, of London, read papers dealing with "The Revision of the Charter of the Royal Institute of British Architects." Their address threw much light upon the proposals of the Institute, which may have far-reaching effects on the profession in the future. The papers were followed by a discussion in which the feeling was expressed that these proposals, the result of compromise, left the main subject—i.e. compulsory registration of architects—much in the same position before, and that the supporters of this measure should relax their efforts until their object was attained.

MR. H. GOODYEAR.

THE Royal Academy of Fine Arts of Milan have recently elected Mr. William H. Goodyear, of the Brooklyn Museum, to honorary membership. The reason for this distinction is found in contributions to Mediaeval architectural research in Italy which have been made by the Brooklyn Museum through Mr. Goodyear's activity. There are many Brooklynites appreciative of the admirable manner in which Mr. Goodyear has arranged for exhibiting the art treasures of the Museum and fulfilled the duties of his office, who will be much interested in a specific relation of the value and extent of his research.

Mr. Goodyear is now sixty-one years of age, having been born in New Haven, Conn., in 1846. He was the youngest son of Charles Goodyear, who discovered the process for vulcanising india-rubber. Six years of his boyhood were passed in England and France, whither his father had taken his family to introduce his invention into the india-rubber industry. Subsequently the boy was prepared for college at Dr. Russell's school in New Haven and was graduated from Yale College in 1867. In that year he went to Germany to study Roman law in the universities of Berlin and Heidelberg, but soon transferred his interest and his German university studies to general history, as illustrated and related to the monuments of historic art. The study of the history of art as a part of the general history of civilisation was first developed in Germany, and in 1870 this study was scarcely known at all in England or the United States.

Thus, on his return in 1870, Mr. Goodyear became one of the earliest pioneers in introducing the study of the history of art into the United States, and was thus prepared to fill the position of curator of fine arts, which he originally held in the Metropolitan Museum of New York between 1881 and 1888, and which he has held in Brooklyn since 1899.

One of his books on the history of art was published in 1888, especially as a text-book for schools and colleges, and is now in its seventeenth edition. Two other popular books of similar character were prepared for the Chautauque Reading Circle, and were subsequently purchased by the American branch of the Macmillan Publishing Company. Mr. Goodyear is also the author of a work of research on the origin and subsequent diffusion of Greek architectural pattern ornament.

This work, published in 1891, is entitled "Grammar of the Lotus." It is a royal quarto of 400 pages, and more than 1,100 illustrations. It was published in London by English support and assistance which was provided by the efforts

the Egyptologist, Miss Amelia B. Edwards, who made Mr. Goodyear's acquaintance during her lecture tour in this country, and became a staunch supporter of his researches. The thesis of the "Grammar of the Lotus" is that the Greek pattern ornament is almost wholly derived from Egyptian lotus ornaments. This thesis was developed from demonstration, based upon Cypriote pottery lotuses in the Metropolitan Museum, that the apparently schematic volutes of the Greek Ionic capital are derived from curling lotus petals.

In recent years, aside from his constant activity in the everyday routine of a museum curator, Mr. Goodyear has come widely known for his researches in Mediaeval architecture, which have been made in the interest of the Brooklyn Museum, where the results of those researches are to be seen in the shape of numerous large and splendid original photographs. For these researches not only has he received honorary distinction from the Royal Academy of Fine Arts in Milan, but he had previously received a similar distinction from the Society of Architects of Rome and of Edinburgh.

It is of peculiar interest to mention that the Roman Society has only six honorary members, and that Mr. Goodyear is the only English-speaking member. Among the remaining five members may be mentioned the Marquis de Vogué, the famous explorer of Northern Syria, Rohault Fleury (recently deceased), a celebrated French Mediaevalist, and Paul Wallot, architect of the Parliament House in Berlin.

ITALIAN GARDENS.

A PAPER on "The Art of Garden Design in Italy" was read by Mr. H. Inigo Triggs at a meeting of the Manchester Society of Architects. Mr. Isaac Taylor presided. Mr. Triggs pointed out that for centuries the architect was the designer of the big gardens, and not the gardener. It is only, he said, within the last three-quarters of a century so that the gardeners had taken to garden designing and ousted the architect. This, in the lecturer's opinion, is rather to be regretted, for the garden should be in harmony with the design of the house to which it was attached. Italian gardens were designed by men of eminence in the architect's profession. These men knew the value of an enchanting prospect. The Italians meant by gardens something quite different from what English people meant by them. The cultivation of flowers and trees was the primary object with us; with them the garden was an open-air continuation of the house itself, quite independent of floriculture. All the same, as all foreigners admitted, English gardens were the finest gardens in the world. For the thing the Italians could not produce a grassy lawn. Mr. Triggs deprecated any attempt to combine the Italian and the English styles of gardens. He had also a word to say in praise of the Italian habit of keeping to one kind of effect or shade, and in dispraise of the Englishman's desire for "a variety of foliage" obtained by planting all sorts of trees near to one another.

PRIZES FOR ART STUDENTS.

THE Council of the Society of Arts are prepared to offer, under the terms of the Mulready Trust, a gold medal or a prize of 20*l.* for competition amongst students of the schools of art of the United Kingdom at the annual competition to be held in 1908.

The prize is offered to the student who obtains the highest awards in the following subjects:—(a) A finished drawing of imperial size from the nude living model; (b) a set of time studies on a small scale from the nude living model, executed in a short time, of varied shortly sustained poses (mounted on not more than two imperial size mounts); (c) a set of studies of hands and feet from the living model (mounted on not more than two imperial size mounts); (d) drawing from the life, including memory drawing done at the exhibition in May 1908.

No student will be eligible for the award who does not pass in the examination (d) in drawing from the life, and who does not obtain an award for (a) the finished drawing of imperial size from the nude living model. The other subjects are optional. The works must have been executed between April 1, 1907, and March 31, 1908.

The recipient of a prize awarded under this trust in 1892, 1893, 1896 or 1903 cannot compete again.

The drawings, &c., are to be submitted, with other school works, in the usual manner to the Board of Education, South

Kensington, in April 1908. Each competing drawing must be marked "In competition for the Mulready Prize," in addition to being labelled according to the regulations of the Board of Education.

The Council of the Society of Arts are also prepared to offer, under the terms of the Stock Trust, a gold medal or a prize of 20*l.* for competition amongst the students of the schools of art of the United Kingdom, at the annual competition to be held in 1908.

The prize is offered for the best original designs for an architectural decoration, to be carried out in painting, stucco, carving, mosaic or any other process.

This architectural decoration is to be for the side of a room or a hall, a ceiling, the apse or side of the chancel of a church or any suitable part of the interior of a building.

The designs must be on imperial sheets. Each set must consist at least of a coloured drawing to scale of the whole design of decoration, and two coloured drawings of details on separate imperial sheets. Mere patterns or sketches of details, without the mouldings or borders necessary to make up a complete decorative scheme, will not be taken into consideration. The designs must have been made between April 1, 1907, and March 31, 1908.

The recipient of a prize awarded under this trust in 1893 or 1897 cannot compete again.

The designs are to be submitted, with other schoolwork, in the usual manner to the Board of Education, South Kensington, in April 1908. Each of the imperial sheets, forming a set of competing designs, must be marked "In competition for the Stock Prize," in addition to being labelled or staged according to the regulations of the Board of Education.

BUILDINGS AND FRESCOES.

A LECTURE was delivered on Friday at the Royal Institution by Professor A. H. Church on the "Conservation of Historic Buildings and Frescoes." One of the agents which brought about the destruction of stonework in towns was sulphuric acid, though water, which acted as a carrier for the sulphuric acid and as a solvent for the sulphates formed, and also did damage by condensing on frescoes, could not be neglected. It had been calculated that the amount of sulphuric acid poured out into the air of London amounted to between half a million and one million tons annually. Most of the sulphur in coal escaped as the coal was burnt in the form of sulphuric and sulphurous acids. Illuminating gas was a minor source of sulphur, but the amount it contained had trebled since October 1905, when the regulations restricting the amount of sulphur allowable in London gas had been relaxed. There was also sulphur in paraffin oil. The effect of the sulphuric acid in the atmosphere was that the carbonate of lime of the stone was converted into sulphate, the carbonic acid escaping. To treat stone which had decayed through action of this kind with limewash, as was sometimes done, was unsound in theory and ineffective in practice. It was preferable to employ repeated coats of a 3 per cent. solution of baryta, applied as a fine spray, in cases where the surface of the stone was very tender, and with a rose syringe or a brush as it got stronger. The baryta water was absorbed by the stone and converted the sulphate of lime formed by the action of the sulphuric acid into calcium hydrate; this by absorbing carbonic acid from the atmosphere gradually became carbonate, and thus the stone was hardened and reconsolidated. The baryta permeated through the stone, and its effect was not to form merely an outside scab on the surface, as had been suggested. This treatment was not suited to stone which had been simply weathered by water and carbonic acid, but the presence of sulphate of lime in the decayed stone to the extent of 2 per cent. was sufficient to render it applicable. There were advantages in associating with the baryta a treatment with ceresin wax, which had also been used alone, with apparent success so far, in the case of some modern buildings. Ceresin wax was also useful for mural paintings; besides waterproofing the surface, it had the property of reconstituting the ground and thus of enabling repairing touches of colour to be put on.

Mr. Wade, the sculptor, has been commissioned to execute the first statue of the Princess of Wales as a pendant to his statue of the Prince of Wales, already unveiled at Hong Kong. The same sculptor is completing two statues of the Queen, one of which is for the London Hospital, and another statue of the Prince of Wales for Bombay.

NOTES AND COMMENTS.

THE new music hall in the Rue de Clichy, Paris, of which M. AUBURTIN is architect, is entitled "The Apollo," and presents at least one novelty in its arrangements. After the spectacles the floor used for stalls and pit will be utilised for dancing, a mode of enjoyment which finds favour with the inhabitants of the Clichy quartier. The change will be accomplished without the delay which at one time was necessary when the ring of an English circus was transformed in order to accommodate spectators of a theatrical performance. By the aid of an electric motor the floor of the Apollo will descend about 40 feet into a basement, the chairs will be quickly removed, and a waxed horizontal floor will be introduced instead of the inclined floor. The floor will then be elevated. For a time the movable floor will be an attraction, and it may suggest changes in other places of amusement, for apparently it is now impossible to have an excess of variety.

THERE will be a visit to-morrow by members of the Edinburgh Architectural Association to Bangour village asylum. In arrangement it differs from existing asylums on the "pavilion or block and corridor system." The suggestions offered by that of Altscherbitz, in Saxony, which is composed of a series of detached buildings distributed without formality or attempt at regularity, have been adopted. A chief feature in the "villa or segregate system" is the avoidance of everything suggestive of restraint, such as enclosing yards. The buildings are of comparatively small accommodation, and with their surroundings are treated with such variety of form and environment as to destroy all appearance of official residence. The main divisions of the group are the "medical section," on the east side of the estate, and the "industrial section," on the west. Between the two sections are (in separate buildings) the washing-house, laundry, kitchen and stores and bakery, and near to these are a series of workshops for the male patients, with boiler-house, coal stores, engine, dynamo and accumulator-rooms. At the approach of the eastern side of the estate are the administration house and, connected with it, admission wards for male and female patients respectively. Around the administration house are villas for the accommodation and observation of recent and acute cases. A large hospital is on the northern slope of the ground, and near by a nurses' home. On the western side of the estate are the industrial homes, those for male patients being grouped on the northern slope and those for female patients on the southern slope, the latter being near the washing-houses and laundry, where they may be employed. An extensive and completely equipped farmstead, with piggeries, byres, &c., situated at the north-west corner, has been modernised out of existing buildings and slightly added to. A recreation hall is in course of erection, and is conveniently placed near the middle of the grounds. The village is self-contained, having its own reservoir and water supply, a complete and independent system of drainage in duplicate with terminal septic tanks, an electric-light installation with generating plant, telephonic connection between the buildings and a system of electric clocks. Of roads constructed there are about 6,850 yards, or nearly four miles, and the aggregate length of drains, water mains, cables, telephone wires, &c., reaches 28,180 yards, or over sixteen miles.

ILLUSTRATIONS.

NEW PREMISES, CORNER OF LOTHBURY AND PRINCE'S STREET, BANK, E.C.

NEW POST OFFICE, ABERDEEN.

THIS important public building is now completed, and was opened for public use on April 6. The building, which rises three storeys high above the

street level, covers an area of 2,582 superficial yards and has a frontage to both Crown and Dee Street. The public entrance porch is placed in the centre of the Crown Street front and gives access to the public office which has a floor area of 2,000 superficial feet and ceiling 20 feet high. This apartment is the architectural feature of the interior; the walls are lined with marble to a height of 9 feet, the floor is of mosaic, the woodwork of wainscot and the ceiling panelled. The public counting-room forms three sides of a square, and has a total length of 84 feet. An inside posting-box is provided in the public office, and public telephone call-boxes are also conveniently placed. The public outside posting-boxes face down Crown Street towards Union Street. Other two entrances in Crown Street conduct respectively to the Public Inquiry Office on the street floor and the surveyor's and postmaster's rooms on the first floor. The top floor of the Crown Street block contains a telegraph school, telephone-room, mechanics' room, &c. The whole area of the street floor between the Crown Street and Dee Street blocks is taken up by the letter and parcel sorting office, with a floor area of over 11,400 superficial feet. The mail-loading platforms are on its south side, with gateways to both streets, while on the north side additional loading accommodation for Christmas and other exceptional traffic is provided under a covered annexe. The Sunday letter-callers will enter this annexe through a door in Crown Street, receive their letters and pass out on to Dee Street. Upon the first floor of the centre connecting block the medical officers, pay officers, telegraph engineers, &c., are accommodated, whilst the top floor is entirely occupied by the telegraph instrument room, which has a floor area of 4,520 superficial feet and an open ceiling averaging 20 feet high. The street floor of the Dee Street block contains the telegraph delivery-room and bicycle-room, also a retiring-room for postmen. Two staircases, with entrance from Dee Street, give access to the first and second floors, on the former of which are placed the station dining and serving-rooms and large sorters' retiring room, whilst the latter is almost exclusively given over to the Great Northern Telegraph Company. A well lighted and ventilated basement extends under the whole area of buildings, providing ample accommodation for basket storage, heating chambers, battery-room, &c. The whole structure is of modern fire-resisting and hygienic principles, and both street fronts are faced with Kemnay granite. The buildings, though only three storeys high, attain a general height to the top of the parapet of 58 feet above the street level, while gables and turrets rise still higher and show a well-broken sky-line. Architecturally, the design is in the spirit of the Scottish Baronial, but necessarily adapted to meet the requirements of a public building. The curved line of Crown Street lent itself admirably to this treatment, and permitted the introduction of some characteristic features of the style. The Dee Street elevation, having a straight frontage, is naturally treated in a much simpler manner. The granite carvings, although notable in their way, are kept secondary to the architectural lines, and the effect depends chiefly on the grouping and the light and shade of the masses, the variety of the sky-line and the treatment of detail. The building was designed by H.M. Office of Works, Edinburgh, under the direction of Mr. W. W. ROBERTSON, late H.M. principal architect for Scotland, but was carried out by Mr. W. OLDRIEVE, F.R.I.B.A., H.M. principal architect for Scotland, the cost being over 50,000*l.* The clerk of works is Mr. J. REID, and the general contractors Messrs. PETER BISSET & SONS, of Aberdeen.

MANOR HOUSE SCHOOL, CLAPHAM COMMON, S.W.—THE ENTRANCE

LEGAL HINDRANCES TO MODERN METHODS OF BUILDING CONSTRUCTION.

EGISLATION with reference to the construction of buildings in this country has been mainly directed to questions of stability, sanitation and fire risks. The present paper is intended to direct attention to some points upon which the law has hindered progress and unnecessarily restricted freedom of design and economical construction.

It may be assumed that the intention of existing Acts is the benefit of those who occupy buildings and their neighbours, but the difficulty of carrying out good intentions without doing unintentional harm is perhaps greater in the case of legal enactments than in the case of individual operations.

The reduction of general principles to specifications of materials and dimensions is no easy matter if the results are to be sufficiently precise to be generally understood, and it is not surprising that there is too much in existing building regulations about old-fashioned methods of construction, and not enough latitude for the introduction of new methods.

The main idea of stability from the official point of view is conveyed by specifying the thicknesses of outside brick walls and party walls.

The inside is left to be dealt with by the architect practically as he pleases, but the cross walls and floors, and the methods by which they may be bonded or tied into the outside walls, are not properly taken into consideration as regards their influence on the stability of the outer walls. A cross wall may or may not be a real stiffener to an outer wall, according to the nature of the bond, position of doorways and other matters. A floor also may be of very little value as a stiffener to an outer wall, as, for instance, when the joists run parallel to the outer wall, and also when the joists rest on a wall-plate and carry little or no load. Frictional resistance (*i.e.* statical friction) plays an important part in the stability of ordinary brick or masonry buildings, the "tie" obtained by girders, joists and roof trusses being mainly or solely dependent upon their own weights and their loads. Recognising this fact, it may be admitted broadly that the existing regulations as to thicknesses of brick walls represent reasonable "average" requirements for safe work, but the averaging is done over a wide range of conditions that it does not represent the same margin of safety always. In some cases the margin, as interpreted by surveyors, shows a very small margin of safety, whilst in others the margin is extravalently large.

Thickness of Walls.

Brick buildings, if well designed to get the best stiffening from cross walls, chimneys, girders, &c., might often be made with thinner outside walls than the regulations require, and yet be stronger than others which comply with the present rules.

The matter becomes much more obvious in the case of modern structures where steel frames and ferro-concrete are adopted. In such cases the existing London rules as to thickness of walls are simply absurd, and yet they are forced and large extra expense is incurred. Sometimes the design is modified in the direction of confining the steel to interior work and using it in conjunction with heavy outside walls, but this does not secure the full advantage of steel-frame construction, either in economy or safety.

The thickness of outside construction now recognised as efficient protection from the weather consists of slates or tiles laid on laths and a single lath-and-plaster ceiling or partition. It cannot be denied that this is practically satisfactory, although in high-class buildings roof boarding and felt sheeting are added.

Slates and plaster do not form so good a non-conductor of heat as a 9-inch brick wall with plaster inside, which is the minimum allowed for outside walls, and it must therefore be admitted that the 9-inch brick wall was not adopted as a minimum by reason of its warmth, but only on the question of stability.

Roofs and Top Storeys.

The official mind seems to have had a difficulty in drawing the line between a roof and a top-storey wall, and it is at the ludicrous rule that a slope of 3 inches in 12 constituted the difference. The Act of 1894 altered this to a slope of 75 degs., but the absurdity remains. The result was that Mansard roofs constructed of wood and

including two storeys might be built in place of brick walls. How the official mind reconciled this with the old rule prohibiting the wood frames of windows from being flush with the outside of the walls, for fear of spreading fire to other buildings, will probably never be known, but the result has been a large crop of unsightly attics in London buildings, which might have been built stronger and made more convenient and valuable without any extra expense if a light steel frame structure with vertical walls less than 9 inches thick had been adopted, and perhaps finished with a flat roof.

The two-roof storeys must now be built in fire-resisting materials throughout if the top floor is over 60 feet above the street. This rule is met by ferro-concrete construction 4 inches thick on a slope of 75 degs., but the buildings would be superior in strength if the concretework were to be built vertical.

Instead of insisting in all cases upon fire-resisting materials for roofs of these tall buildings, a more effectual provision for safety in case of fire would be that two staircases should be constructed from the top storey down to the second or third floor, where fire-escapes could be used. In hotels and large blocks of flats and offices this method would involve little or no inconvenience in planning.

The London Building Acts.

The London Building Acts (Amendment) Act, 1905, has added weight to the arguments for amending the law as to thicknesses of walls in steel-frame structures, without bringing any relief. The Act was promoted by the late County Council after the scare produced by some serious fires. The main object is to enforce the provision of easy access to the roofs of buildings, or other means of escape for use in case of fire. The promoters' benevolence does not extend to single families or even to two families who happen to be wealthy enough to occupy houses of four or more storeys—such people may still be allowed to roast; but if twenty persons who are not related to one another are to occupy a building they must have a dormer window opening on to the roof, and something to prevent them slipping off the roof when they get out of the window, or else a "Jack-in-the-box" trap door opening on to the top of the roof.

A little consideration will show that this law is very much in favour of flat roofs or roofs with parapets, and very much against the Mansard type with a slope of 75 degs., which has enabled architects to economise considerably in the construction of many buildings. The effect of the operation of this Act will probably be to materially increase the cost of buildings of the class affected, unless some alteration is made in the law as to thickness of walls, and the extra burden of this cost will come upon the occupiers to some extent.

The top floors of business buildings are naturally the least remunerative, and it is a serious matter if their cost is to be increased. The cost of an extra storey has at present to be reckoned practically as the cost of a new lowest storey with walls thick enough to carry the remainder of the building, and not as the cost of a 9-inch wall storey.

With steel-frame construction the difference between a top storey and a lowest storey is practically the cost of a few extra square inches of metal in the stanchions. The difference between ordinary and steel-frame construction is from two-thirds of a penny per cubic foot of building in favour of the steel frame in four-storey buildings, and may be considerably more than a penny per cubic foot according to the nature of the building. These figures do not take into account any allowance for the value of extra floor space obtained in the steel-frame structure, or for the saving in ground rent during the time saved in erection.

Dwellings for the Poor.

One of the most difficult problems of the day is that of providing dwellings for the poorer classes, and yet when any alteration of the Building Acts is discussed the idea of making building operations cheaper by scientific attention to details is usually overlooked, and the whole trend of proposed alterations is towards increase of cost, following on more stringent, or rather more dictatorial regulations.

The attempts of the London County Council to provide dwellings for the poor upon a self-supporting basis have been a conspicuous failure on the whole. Their tenements are either let to a class of tenants superior to those for whom they were intended or they are not let at all, and the financial return is perhaps too delicate a question to touch upon. Why are these things so?

Every architect knows that it is much more difficult to

plan, convenient dwellings, fitted with modern conveniences and sanitary arrangements, upon a very small scale, than upon one where the size of the rooms is not severely limited, but is it generally recognised that these pinched plans applied to large blocks of buildings under existing laws result in structures which have an excessively large factor of stability, an excessively large waste of space by thick walls, and consequently are unnecessarily costly?

Building Laws and Private Enterprise.

It is the building laws that constitute one of the chief hindrances to the investment of private capital in dwellings for the poor. The building trades' unions might do much to solve the problem by using their own funds and their own unemployed labour to create house property of the kind needed, a portion of which they might perhaps hold permanently.

It is not improbable that financial help could be found from outside if these unions would consent to work on a profit-sharing basis when general business is slack, and, bearing this in mind, it would be worth their while to lend their influence towards amendments of the law to render more economical construction possible. The type of buildings to which these observations chiefly apply are those having two or more tenants and two or more storeys.

One of the most promising efforts to solve the question has been made by the Camberwell Council, who have bought up old houses and rearranged them for letting in tenements.

There are thousands of privately owned small houses in London, originally built for single tenants, which are similarly treated, but it is only a makeshift, and there is not very much room for economy in construction in double tenement houses, but there is plenty of evidence of a demand for specially constructed double tenement houses in several London districts.

In the author's opinion there is room for a very large economy in construction of three-storey houses containing from four to six tenements with perfectly sound building construction, under new regulations, and that these might be designed either as detached blocks or in terraces. Such buildings should be arranged to utilise every cubic foot of available space in the roofs as bedrooms, cupboards, &c.

At present the waste of roof space in suburban buildings is simply absurd, and having regard to the importance of providing at least three bedrooms in a tenement occupied by a workman's family, it is preposterous that any petty obstacle in the way of unnecessary building regulations should prevent this being done, at the trifling expense involved in adapting the roofs as attic bedrooms.

Under Part I. of the first schedule to the London Act of 1894 it is laid down that $8\frac{1}{2}$ -inch walls are limited to 25 feet in height and 30 feet in length to serve not more than two storeys. It is also stipulated that no storey shall be more than 10 feet high with walls of this thickness. Presumably, therefore, it is recognised that upper floors do or may add to the stability of the wall, but there is no obligation to tie these walls to the floors when they run parallel to the joists, and as a matter of fact, they are usually quite independent, and consequently there is abundant evidence in existence of $8\frac{1}{2}$ -inch walls standing safely without horizontal staying for a height of two storeys, or 18 feet to 20 feet, but they would have a larger margin of safety if they were stayed by a floor, and a still larger margin if stayed by two floors. The definition of a cross wall in clause 11 practically excludes all the internal walls from recognition as having any influence upon the stability of the outside walls, and no notice is taken of the buttress effect of chimney-breasts, or as to whether the area of openings is half the area of the wall or only one-fourth of the area, and whether these openings cut into more or less than half the length of the wall. This is all very loose and unscientific treatment of a serious question.

Suburban Buildings.

A large number of buildings are erected in the suburbs in which the 30 feet depth is adopted to keep within the single brick wall limit, but the back main wall is cut through by a door to give access to "back addition," and also for a wide bay window to the chief back room, the two openings together extending over two-thirds of the length of the wall. Bay windows alone are permitted to cut out three-fifths of the length of a wall. A much better plan could often be designed with a depth of more than 30 feet, dispensing with the back addition and bay window, and cutting away a smaller proportion of the length of the main back wall.

Now, as to limiting the number of storeys of a single brick wall house to two, it will be clear that when the openings are limited to half the length of the wall it will be stronger than with openings of two-thirds of its length. Also that if it is properly tied to the floors it will have greater stability than if not tied. With regard to the ability of $8\frac{1}{2}$ -inch walls to support two upper floors, it may be noted that in interior work they are frequently used to support three or four floors, and $4\frac{1}{2}$ -inch walls are used to support two or three floors. The chief difference between these and outside walls is the possible thrust of roof members and wind pressure, both of which concern the lateral stability of the external walls.

It is not possible within the limits of this paper to enter into detailed calculations on these points, but it will be obvious that the horizontal thrusts of rafters can be completely taken up by proper ties, for instance, by using a wall-plate to serve the attic floor joists and as pole-plate for the roof rafters, and by inserting special ties on the sides where the joists are parallel to the wall.

Ferro-Concrete Construction.

No special effort is made in ordinary practice to tie floors to walls, but much improvement is possible in this respect, and also in the adoption of suitable lintels in place of arches over openings.

The author suggests the use of ferro-concrete lintels faced with stucco or artificial stone, and ferro-concrete bars for wall-plates and bonding purposes in a manner which has not (so far as he is aware) been hitherto adopted. Old-fashioned bond timbers were intended to serve a good purpose, but their liability to rot and to be damaged by fire has put them out of use. Their purposes, however, can be far better served by ferro-concrete bars, moulded in rectangular boxes and allowed to set for a month before erection. These bars could be conveniently handled in straight lengths of 10 feet or more. They can be made in L shape for use at corners of buildings and T shape for bonding outside and cross walls together. The bonds must extend to the full thickness of the wall and be finished with artificial stone string-courses on the outside. In cases where the floor joists run parallel to the wall the ferro-concrete bond can be bolted to one or two joists at the middle of their span and enable the stiffening power of the floor boarding to be adequately communicated to the wall. Where fire-resisting floors are used the bond will form a good abutment on the wall, and can be properly bolted to the two nearest parallel steel joists or ferro-concrete beams.

Prior to 1894 a floor up to 25 feet span between external walls was admitted as a stay, and the restriction as to length of wall of a given thickness was inoperative. This provision would rarely have effect because buildings usually have some internal partition wall between. The concession is now withdrawn, although it would have been wiser to extend its scope to include cases where floors are well tied together right through the building either in one span or more.

Arches a Source of Trouble.

A fruitful source of trouble in brick buildings is the use of arches over windows and doors. It is equivalent to the insertion of a number of wedges into a material which is not remarkable for its cohesive strength.

Arches are built frequently with totally inadequate abutments, and there is nothing in the Building Act to indicate the proper proportions of abutments. The insufficient provision to take up the thrust of arches and of rafters leads to the development of cracks in thousands of instances, and if these disintegrating forces were to be effectually eliminated, as they can be, the strength of the average suburban house would be very largely increased, and thinner walls would suffice for buildings of more than two storeys. The solution as regards arches is to use lintels of wood, stone or concrete in short lengths, or ferro-concrete or steel in longer lengths.

Hip roofs are peculiarly liable to weaken a building, because the attic floor or ceiling joists cannot act as ties in two directions. Text books explain how to put in angle braces and dragon ties, but they are rarely adopted, and indeed they are not sufficient to deal with the strains which occur at the corners of buildings with a proper factor of safety. Ties of a more extended nature are required, but the internal arrangement of buildings varies too much to lay down a simple rule for general adoption. The factor of safety at the corners of hip roofs is often so small that cracks are certain to occur sooner or later in 9-inch walls.

as the strained materials grow "fatigued." Scientific planning of ties will effectually prevent such troubles.

If high-pitched roofs are adopted and utilised to the fullest extent for attic rooms the use of hip roofs will be more rare and gable ends will be more generally adopted for semi-detached houses and blocks of tenements.

No building in London over 50 feet high is allowed to have 8½-inch walls enclosing the top storey, and in view of the risks of ordinary brick walls falling in case of serious fire it is no doubt wise to insist on some extra stability at great heights to compensate for the flexibility of the lower 50 feet of wall.

In a steel-frame structure the frame will do all that is necessary in this direction, but in other cases the judicious use of ferro-concrete bond courses and lintels will make an 8½-inch wall safer than a 13-inch wall without them.

Steel-Frame Construction.

The principle of the brick-wall rules has been given way in favour of steel frames or cast-iron columns to suit the requirements of shop fronts, and this loophole completely disposes of any possible sound or plausible argument against the extended use of steel-frame construction and thinner outer walls for buildings for other purposes than shops. The margin of stability of some shop buildings, particularly at corners, is remarkably small in many cases, and it gains nothing by the insistence upon thick walls over and over again. A continuance of the steel-frame structure upwards with thinner walls would secure greater stability.

A really scientific Building Act would not contain much detail about dimensions of brickwork, but would lay down limits of loads upon unit areas of materials which must not be exceeded, loads upon unit areas of floors that must be provided for, and minimum factors of safety which must be adhered to in all parts of the structure not particularly specified.

Suggested Amendments to the London Building Acts.

About three years ago the Royal Institute of British Architects prepared a set of suggested amendments to the London Building Acts, dealing with steel-frame structures, and they were drawn up upon a more scientific basis than the bulk of the existing Acts, but they proposed that the closing walls of the top 20 feet of the building should not be less than 8½ inches thick, and the remainder 13 inches thick 8½ inches for the window backs, and that where stone masonry is adopted these thicknesses should be increased by 2 inches. It is not easy to see why any distinction should be made between the top 20 feet and the remainder of the building as regards thickness of walls, as the increase below adds to the weight and the cost without improving the stability. If people liked to adopt 13 inches for the sake of warmth they could do so, but it should not be made compulsory. The Institute did not appear to contemplate any new departure in brickwork except using cement throughout, and they wisely refrained from advocating American skyscrapers.

There is much commendable matter in the existing Acts to guard against excessive heights and to secure adequate light and air, but it is too rigid and not all sound principle. For example: what advantage is it to anyone to insist on the back of a building being cut off by a diagonal line on a slope of 67½ degrees when the building happens to face north, and there is no other building within 50 feet of its back wall? The slope does not bring any sunshine to a neighbour or help him to breathe.

Clinker Concrete Buildings.

A description has been published recently of some blocks of workmen's dwellings erected in Liverpool to the designs of the city engineer, Mr. J. A. Brodie, M.Inst.C.E. These buildings are three storeys high, and are built entirely of clinker concrete slabs, made in sizes up to 16 feet by 11 feet. The outer walls and party walls are 6 inches thick throughout, with steel reinforcement strips in both directions so that no areas equal to a square yard are left without reinforcement. Mr. Brodie wished originally to make these slabs only 7 inches thick, but the authorities failed to support him, and consequently the buildings were far more costly than they need have been. The interior walls were made of similar slabs 6 inches thick and up to 16 feet by 11 feet. Mr. Brodie informs the author that the cost of making these large slabs, 6 inches thick, is under 3s. per square yard, exclusive of subsequent handling. This is under 15s. 6d. per cubic yard. The reinforcement is put in chiefly to facilitate handling without damage, and is not relied upon to support loads, though it does, no doubt, stiffen the structure.

The economy of using these large blocks of concrete (weighing from 4 to 10 tons) depends upon the total amount of work to be done being sufficient to justify the provision of powerful plant to erect them. In large blocks of buildings or long rows of small ones there would be a great saving over brickwork, but for a few small cottages it would not pay, and in such cases 9-inch brickwork with ferro-concrete bond courses will be hard to beat. In tall steel-frame buildings big slabs of concrete could be used without any serious difficulty, and the rapidity of erection would astonish most people.

Time and Labour Saved.

City building operations in the future will probably be conspicuous by the smaller proportion of manual labour upon the scaffolding as compared with present methods. A further saving of time will be secured by the more rapid drying of thin walls ready for plastering and decorating. In some provincial towns in England and Scotland large blocks of shops and offices have been built with ferro-concrete walls only 4 inches and 6 inches thick, and the cost of such walls is found to be equivalent to 13-inch brickwork, and therefore the economy only comes in where they replace brick walls 18 inches thick or more. London is at present prevented from realising any such economy.

In advocating the use of concrete for outside walls to a body of architects, the author is well aware that the question of its appearance will be prominent in their minds. Plain concrete either in slabs or cast *in situ* will never give general satisfaction. A finish of reasonably uniform texture is necessary. Plain stucco has been accepted very largely in the past, and may be adopted again more largely than at present. Rough-cast stucco is a very suitable finish for concrete walls, and is cheap and pleasing in appearance when not used over too large an area. A face of terra-cotta, glazed tiles or artificial stone can be adopted for thin concrete walls without any difficulty by making the facings with dovetailed projections to tie into the concrete.

This kind of construction need not be entirely put together on the building. It is quite feasible to construct large slabs of concrete with ornamental facings properly set in the builders' yard, and to bring them to the building as required with the faces protected by wooden shutters. For rapid building this course seems very desirable. The size of the slabs will be determined by the facilities for handling by cranes. All these methods of treatment are suitable for walls 6 inches thick and upwards. Steel-rod reinforcement will be usually desirable, but not always necessary.

The Use of Masonry.

For the highest class of buildings the architect will never be persuaded to entirely abandon masonry, and there is no reason why he should, but its use will naturally involve walls more than 6 inches thick. A wall 9 inches thick can obviously be built in solid ashlar, but it is not actually necessary to have more than a facing of ashlar with stretchers 3 inches and headers 4½ inches thick, grooved to form a slight dovetail key to a cement concrete backing with steel bar reinforcements. This can be carried out on the slab system, and will be less liable to the penetration of damp through the wall than plain ashlar.

It is not a new thing to make concrete blocks with stone facings. The system has been adopted for important engineering works, notably at Dover harbour, where small granite facings have been put on large concrete blocks and kept to set hard before depositing in the work. The same thing has been done in other places where the severest battering by waves occurs, and that fact should be remembered, if the use in architectural work is criticised as a weak "vener" of masonry.

Hollow walls should be permitted under conditions such as are recognised in America and Germany, to secure greater stability and warmth with a reduced weight of material if it is properly designed.

Party Walls.

The rights of adjoining owners as to party walls might with advantage be made to include provisions that when a building owner gives notice to an adjoining owner of his intention to pull down a party wall, either owner should be entitled to require that the wall shall be rebuilt as two thin external walls in steel frames or ferro-concrete, and thus dispose of the possibility of a repetition of the trouble, and also enable the adjoining owner's building to be restored to its normal habitable condition far more rapidly than is possible under present methods. In this connection the use of rolled steel joist grills in the foundations is desirable as

a base to carry either wall, with joists projecting under the other, and is preferable to the lop-sided brick footings which are now permitted.

One way of providing for the approval of new methods of construction would be by authorising the Local Government Board to accept new designs upon the written advice of architects and engineers, to the effect that such designs are equivalent in quality of materials and stability to designs made in accordance with existing regulations. The Local Government Board could refer any case to a Tribunal of Appeal. When the new designs or specifications of new materials have been accepted copies should be deposited in an office, accessible to the public, under registered numbers. Applications to any local authority for the approval of plans of new buildings which contain features based upon registered designs should be accompanied by a certificate from an architect or engineer, stating the numbers of those registered designs and the nature of the features adopted. The district surveyors could be authorised to pass plans coming to them with such certificates, or to require them to go before the Tribunal of Appeal and be registered if approved. The gradual accumulation of registered designs would afford valuable records of matters which have been thoroughly discussed by competent persons, and save a large amount of time which might be wasted in the preparation of unpassable plans. It would also afford the best possible data for the periodical revision of the standard regulations, which ought to take place every five years.

The editors of technical journals and others could be relied upon to publish copies of important registered plans and digests or reference indexes to these plans, and thus render valuable services to professional men by keeping them posted up in "Registered Building Precedents." Procedure on these lines should act in favour of steady, sound progress, and keep in check the jerry-builder.

A good deal is heard nowadays about standardisation in industrial matters, but standardisation may lead to stagnation and act as a hindrance to scientific progress, and it certainly has done so in the building trade, both by preventing the adoption of new methods and by preventing persons from deriving the full advantage of scientific attention to details.

General Recommendations.

To summarise the foregoing remarks in the shape of general recommendations the author advocates:—

- (1) The adoption of the suggestions of the Institute as to steel-frame structures, subject to thinner walls being permitted as stated and some minor modifications.
- (2) The admission of complete ferro-concrete thin wall structures of equal strength to approved brick wall rules.
- (3) The admission of an extra 10 feet storey in 8½-inch brickwork on top of walls of the dimensions stated in the present Acts for walls of restricted length, but applied to unlimited lengths, provided that due regard is paid to ties in floors, cross walls and roofs, and the use of ferro-concrete bond courses, wall-plates and lintels.
- (4) Facilities for abolishing party walls and substituting two thinner walls in steel frames or ferro-concrete construction.
- (5) Facilities for getting new designs and methods of construction approved from time to time by a competent tribunal and placed on record for public information.

This summary does not complete the whole subject, but the author hopes it will serve as a satisfactory basis for discussion.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at the premises in Tufton Street, Westminster, Mr. Walter Cave, vice-president, in the chair.

On the motion of the Chairman, votes of thanks were passed to Mr. Andrew Oliver, who had completed the rearrangement of the large collection of seals belonging to the Association, and to Mr. Maurice B. Adams for the presentation of a collection of foreign architectural publications.

The CHAIRMAN announced that the annual dinner would be held on Friday, May 3, at the Georgian Hall, Gaiety Restaurant.

The following gentlemen were elected as members:—Messrs. P. J. Adams, P. M. Andrews, H. M. Archibald, F. E. Cannon, W. G. L. Cheriton, D. H. Fish, W. S. Grice, F. B. Last, H. T. Lubbock, A. H. Moberly, H. E. Moss, E. W. Mountford, H. R. Peerless, A. T. Phillips, R. Phillips, C. B. Reid, A. W. Robertson, A. L. N. Russell, R. Walker, H. Skyrme, D. Colville, T. Swales.

Mr. JOHN A. MARSHALL read a paper on

Westminster Cathedral.

He said:—Twenty-eight years ago, in a house once occupied by Edmund Burke, who wrote an essay on "The Sublime and the Beautiful," a number of assistants were engaged in working out the designs of a well-known architect. These designs were for important buildings in all styles, ranging from the Romanesque to the Renaissance, and they showed a power and a knowledge of detail unsurpassed, we believe, at that time. Before entering on his duties the assistant was told that he would not be expected to design, but merely to exercise care and judgment and to take an interest in his work. From the time when he entered this realm of art in the morning until his departure in the evening he was virtually a prisoner, and the annual holiday was a reprehensible undertaking rather than a recognised institution. Smoking, whistling and gossiping were strictly prohibited, and to take off one's coat for greater freedom or coolness was pre-eminently disrespectful, not to say vulgar. But undue restraint—if such it was—engenders reaction, so whenever a suitable opportunity occurred—it may seem strange to you—conventional was cast aside for uncontrollable outbursts of boyhood; the sublime and the beautiful were then forgotten, and no thought was given to the occupant of the room below until we received this charming admonition from our respected master:—

13 John Street, Adelphi, W.C.: April 3, 1879.

Gentlemen,—Mr. G. writes complaining of the unnecessary disturbance you indulge in, and requests me to ask you to refrain from making more noise than is essential to the performance of your duties. I feel sure, after this, neither of you will give cause for further complaint, inasmuch as it is unbecoming to engage in acts that affect the dignity of an office and the peace of a neighbour.—Yours faithfully, JOHN F. BENTLEY.

And now, gentlemen, in the face of this somewhat humiliating confession, you will understand that we scarcely dared to presume to accept the invitation of your Council to read a paper on the Westminster Cathedral, and in view of what has already been written on this great work of Mr. Bentley's by men of "light and leading," we have also confessed to a feeling of surprise that the subject should be considered to possess some latent interest that has not yet been revealed. Perhaps it was hoped we might be able to explain the apparent incongruity or contradiction in the last phase of Mr. Bentley's artistic development, how—the Athenæ from the brain of Zeus—this strange design, of noble proportions, could be produced in so sudden and complete a manner, by one of the latest exponents of the Gothic Revival. Or was it expected that some light could be thrown on Mr. Bentley's intentions respecting the completion of a building that may be said to rank with those of national importance?

As the effacement of man's work—by the hand of time—increases our curiosity to look into the past, so does the unfinished production impel us, with equal and perhaps pardonable curiosity, to look into the future; not merely to speculate as to what might have been had the master lived to finish his work, but to wonder what may happen in the absence of his guiding influence. You remember the touching incident related by Vasari, how the pupils of the immortal Raphael placed at the head of the bed on which their dead master lay his unfinished picture of the *Transfiguration*, while they stood around like helpless orphans. You will, I am sure, agree that that picture should have been allowed to remain just as it left the master's hand, without the profaning touch of any pupil. The simile need not detain us, yet we cannot forget that an unfinished building in occupation is not quite the same thing as an unfinished picture or piece of sculpture. Existing contracts have to be carried out, and the varied requirements of the occupants have in some way to be met; yet we all fully realise that the peculiar impress of the work carried out under the personal supervision of the original architect can never be revived, nor can it in this instance be emulated.

Reverting for a moment to the supposed inconsistency of style, it is not necessary to remind the members of the Association that the training of an architect is now very different from what it was ages ago, when the builders of each country worked in only one traditional style, but could easily be adapted to the simple requirements of the community. Then, the young architect, we are told, learned the principles of his art, profession or craft in the building, in the workshop and at the guild. His style

environment was redolent of lime, timber, stone; he was not afraid of soiling his gloves, nor of crushing his silk hat against the scaffolding; paper and rubber were not part of his outfit, and drawing, as we understand it, not one of his qualifications.

If one of these obscure cathedral builders could enter his room to-night we would ask him to tell us more about his life, and in return initiate him into the mysteries of modern architecture; he would then realise that the times had indeed changed, that vast storehouses of knowledge are open to him that were quite unknown to him, that the demands on the skill of our architects are so bewilderingly varied and complex as to prevent the universal application of any particular style, old or new, and that the lifework of a modern architect has not infrequently presented an epitome of the styles of all ages. He would learn that we spend most of our time in the "office," and some of it on the building. And, lastly, the perspicuity of our building regulations and the simplicity of our sanitary requirements would equally astonish him were it at all possible for us to explain them. If our visitor happened to be an English or French architect of the Mediæval period, he would, of course, not quite understand the style of the Westminster Cathedral. He might possibly detect in the plan the Christian symbol of the Cross, and he would recognise as his friends the gaunt Norman-looking transepts and the ill-buttressed choir; the sheer unbroken height of the campanile might win his admiration, but the inconsistent treatment of the roofing and the peculiarities of the west front would certainly puzzle him, and provoke the question as to whether these were the outcome of necessity or of design. If the exterior betrayed, to his mind, some slight acquaintance with the work of his own period, the interior would bear no such trace; for a moment the unconcealed sterility of its structure might remind him of some early Saxon or conventual church, but he would soon find that the resemblance was more visionary than real, and that for all it was not a Gothic building that had served as the prototype. He would rightly infer that it was not intended to show the brickwork into clustered shafts and mouldings, but until he detected the proposed scheme of marble and mosaic decoration his only conclusion would be that it was intended to plaster the whole surface with a view to painted decoration—or, possibly, whitewash.

Development of the Plan.

But let us assume that our visitor is one of those Greek architects who, we are told, crossed the Adriatic to build St. Mark's, Venice. On approaching the western façade he would be disappointed not to find a spacious and well-lighted outer narthex, forming an ambulatory or vestibule, comprising all the main entrances, but this feeling of disappointment would soon give way to one of satisfaction when he entered the nave and realised the striking influence of his own work after ten centuries of time. The main structural ideas, necessitated by the statical requirements, would be familiar, and so would the proposed method or scheme of applied decoration. He would note, however, with regret that the cruciform symbol on the plan appeared to be tolerated rather than emphasised, and we should hasten to explain that though the architect's starting-point was the basilica, his ultimate idea was an unbroken nave or hall some feet wider than St. Mark's, and that the transepts should be regarded as part of this space, but rather as extensions of the eastern chapels. "I see that is so," he would respond, "but in our basilica at Venice we made the transepts as important as the nave, and covered them with vaults in the same way, and I cannot help feeling that this arrangement—apart from any religious sentiment—is a perfect ideal, and gives additional charm or variety to the interior." "Possibly," we should cautiously observe. "And it may interest you, sir, to know that your church at Venice has been so much admired, since your retirement, that its predominant idea has been copied elsewhere almost line for line. And it may still further surprise you to learn that the architect's first conception for the Westminster Cathedral was a bold attempt to realise these very qualities which appeal to you so strongly."

regarded as the tentative scheme of a great architect for an important work, the first sketch plan made twelve years ago is interesting, though it doubtless lacks the homogeneity and the statical completeness of the final plan. And our friend being curious to know why this first conception was abandoned, we should have to explain that the architect considered the matter, the less satisfied with the transeptal arrangements and the "crossing" the abutment for these parts in the east was insuffi-

cient, and the complications connected with the exterior were not encouraging; then it was decided that the eastern termination of the church should not be used as a sanctuary but as a choir; it was also decided to limit the sacristies to one side of the building, and to rely on the aspiration of a single campanile, rather than on the conflicting efforts of two. In the revised plan the sanctuary and the choir have changed places; aisles have been introduced between the sanctuary and the eastern chapels, thus improving the abutment, but necessitating the abandonment of the apsidal terminations of the transepts in order to provide suitable approaches to the eastern chapels. The transepts having now lost their peculiar form, we find the architect resorting for internal effect to another ideal, which in the course of his practice had become so indelibly stamped on his artistic temperament that it invariably appeared in the churches designed by him. We refer to the unbroken continuity of the nave arcades and vaulting across the transept openings, without entirely sacrificing the cruciform plan. This unbroken rhythm or repetition of parts produces an impression of length and height—a vista, if you will—that was most attractive to the English architect. And we should ask our visitor whether a similar effect was not produced by filling in the side arches of the great prototype at Constantinople. "Quite so," he would reply, "but in that case the artistic effect of the expedient was not the primary object, and the buoyancy of the culminating dome has scarcely been impaired. Permit me, further, to say that I think I now realise what I may term the vital difference between your cathedral and our great churches of the East. At Constantinople and at Venice the supports are concentrated or limited to a few positions, whereas at Westminster, in addition to the main supports, auxiliary piers and arches are introduced that give a distinctive character to the design, suggestive, if I may say so, of a commingling of our Eastern with your Western methods; it is only in the sanctuary of your cathedral that I can detect the structural lines of the Greek type reproduced in their integrity."

Again, it would be still more interesting to some of us to know the views of yet another architect, of a period still more remote, one of those builders of Imperial Rome whose colossal works are still the wonder and admiration of the world. We should prefer to conduct this gentleman, blindfold, into the cathedral, and suddenly reveal to him the vast expanse of its interior; then, if he did not think that he was in the tepidarium of a large bathing establishment, we should say that he had never seen one. The length of the nave agrees with that of the central hall of the Thermæ of Diocletian, but the width, instead of being merely 60 feet, as it is, should be increased to 80 feet; then, if the secondary piers and arches are obliterated—thus reducing the supports to eight in number—and the pendentive system of vaulting changed into the groin vaulting of the Romans, the illusion will be well-nigh complete. On leaving the building our Roman visitor would be startled, not only by the determined aspiration of the campanile, but by the ornate qualities of the exterior generally; he would miss the sturdy vigour of his own work, and his limited acquaintance with architectural styles would not enable him to detect the strong influence that Byzantine, Romanesque and Renaissance detail have had on the design.

Having now, by retrogression, drifted to the source of the Renaissance, there is an obvious temptation to overleap the intervening ages at a bound, and so reach that "harbour of refuge," that "sheet anchor," of the modern practitioner. We do not, however, propose to invoke the shade of any past, nor the person of any living votary, of that accommodating and fashionable style; and cordially as we should welcome the apparition of the greatest architect of the English Renaissance, we appreciate the delicacy of the situation and proceed without further delay to take a closer view of our subject.

Support and Abutment.

You will have gathered that the dominating factor of the problem worked out by the architect has been a spacious and uninterrupted nave, covered with domical vaulting, and it will be obvious to you that the exceptional width of the space to be covered called for exceptional height if due proportion of the interior was to be maintained. Thus the difficulties of support and abutment were soon realised, and in selecting the pendentive dome of shallow concavity for the roofing the architect believed that the weight and the pressure would be reduced to a minimum. By showing the domes outside not only was an extraneous roof dispensed with, but full advantage of the height was gained for the interior. In the disposition of the piers and abutments,

with a view not only to the sustentation of the pressure but to reserving as much space as possible for the aisles, chapels and galleries, a system has been adopted not unlike that to be seen in most Gothic cathedrals, where huge yet narrow counterforts are projected at intervals and stiffened by transverse walls, arcading and vaulting; but while in a Gothic cathedral these counterforts are generally most conspicuous features outside the building, at the Westminster Cathedral they are practically limited to the interior, the spaces between being entirely utilised. It may be noted in passing that in the latest instance of cathedral design in this country both these methods have been rejected in favour of one in which all buttresses as such are avoided by deeply recessing the alternate bays as transepts, and should this arrangement involve a sacrifice of that uninterrupted succession of parts that Mr. Bentley so much admired, it will be admitted that this is not the only quality that can be legitimately aimed at, and it is probable that the result at Liverpool may disclose quite opposite qualities that will fully compensate for the loss referred to. At present we can only wish every success to the young architect who is now engaged on this important work.

Confining our attention for a time to the nave of the cathedral, let us more carefully examine the counterforts and the vaulting they sustain. A reference to the plans will show you that only in one instance is a main counterfort permitted to retain what may be termed its simple, unaffected character, all the others being more or less influenced or modified by the exigencies of the plan; thus two of them form the flank walls of the transepts, where, on the east, they are further strengthened by the walls and vaulting of the sanctuary, so as to resist the cumulative pressure of the nave vaulting. At the west end of the nave the corresponding abutment has been very considerably affected—not to say weakened—in the upper part, by the retiring disposition of the western façade, a concession to light and air claimants. Of the secondary counterforts, those dividing the transepts have also a distinct and complicated character, while the others retain their simple form—excepting that next the campanile, but this of course affects only one side of the building. The proportions of each compartment of the nave are those of a cube, up to the springing of the main arches—60 feet from the floor. Another 30 feet 4 inches and we are at the springing of the domes; the total internal height being 111 feet, or about 10 feet higher than the choir of Westminster Abbey. The extreme projection of the counterforts is 48 feet, but just above the chapel vaulting this projection is suddenly reduced to 24 feet, at which it is maintained to a height of nearly 90 feet. The lower projections—forming the divisions between the chapels—are but little more than “flying buttresses,” filled in with thin walls, so as to form recesses for the altars. The enclosing walls, with the brick vaulting over the galleries and transepts, serve, of course, to stiffen the counterforts and to increase the abutment, but the lower concrete vaulting of the aisles and chapels is not so important in this respect, and its construction was deferred until the main parts of the building were finished and the full pressure of the superstructure had been realised. And here the suggestion can scarcely be evaded that this part of the design does not so exactly express the construction as do some of the other parts; for the massive walls of the triforium are not, as might be supposed, supported on the arcades that divide the chapels from the aisles, but on segmental relieving arches, turned over these arcades between the counterforts and concealed in the pockets of the vaulting. The span of each relieving arch is 25 feet, and the skewbacks are not cut into the piers, but are formed on granite springers that project beyond.

This expedient to reduce the span and maintain the piers intact was most essential next the transepts where the triforium wall suddenly stops, and the abutment has been weakened by the formation of a passage in the wall of the transept. In view of this and the complicated section of the relieving arches—due to the difficulty of clearing the vaulting of the chapels—you may perhaps wonder why so favourable an opportunity for the use of steel girders that involve no thrust and occupy but little space should have been neglected, but the architect resolved not to introduce into the cathedral any ironwork as a support, though, as we shall see, he did not feel justified in objecting to its use as a tie. The projections or buttresses between the lower windows of the triforium or gallery have an artistic value, though they serve no structural purpose. They are apparently supported on the flat roofing of the chapels, but they are really dependent on stone corbels that rest on the

relieving arches and bluish unseen. You will now see that the chapel arcades and vaulting are relieved of all extraneous weight, and it has been possible to make the arcades very slender, thus gaining extra space for the chapels, and imparting to these minor parts of the building a suitable relative proportion or scale. You will also now realise the importance of the galleries in disguising or masking the apparent weakness of the construction behind, just as a balcony is often projected along a façade as an antidote against the weak appearance of a ground-floor storey. The archways formed in the lower part of the counterforts, to preserve the continuity of the aisles, galleries and passages, have been kept as small as possible, but in the upper parts hollow spaces have been left to economise material. These spaces were not enclosed until the brickwork had been exposed some time to dry, and small openings for ventilation were left in the upper and lower parts of the cavities to facilitate the drying after the enclosing walls were built. It was also desirable to keep these walls down until the cavities were arched or corbelled over, as the case might be, to prevent the accumulation of rubbish that would have blocked up the ventilators at the bottom. The main counterforts are 10 feet 6 inches wide, and from these, at a height of 60 feet from the floor, spring the large transverse arches, 6 feet 9 inches wide, that support the pendentives and the dome. As the thrust exerted by these arches and the pendentives is at a level much below the springing of the domes, it was not considered necessary to raise the main counterforts higher than the lean-to roof of the passage over the triforium vaulting; but the secondary counterforts, placed opposite the centres of the domes, are raised well above these roofs and weighted with turrets, the supporting arch and wall at this level being comparatively thin.

We have already referred to the exceptional character of the counterforts dividing the transepts. These, you will notice, consist on the ground plan of two piers, one next the nave, the other next the outer wall, the space between being arched over, just above the level of the gangways and galleries that cross the transepts. To dispel the weak appearance of the pier next the nave, and to insure a uniformity of scale on the ground floor, the openings between the piers are filled in with arcades that agree in height with those of the galleries; but these arcades do nothing towards counteracting the thrust of the arches over, and indeed they were not inserted until long after the main parts of the structure were built. In building the pier next the nave the precaution had been taken to make it 9 inches wider than the corresponding piers of the nave, but this was not considered sufficient, so a rolled steel tie was inserted just below the springing of the arches, where it would eventually be concealed by the arcades; and at a higher level, just above the crown of the arches, another similar tie was built in. When it is considered that the turrets of the transept counterforts are directly over the arches, and that the arches sustain nearly half the weight of the vaulting and the roofing, and that one of the domes is partly dependent on the pier, it will be admitted that these precautions are not altogether uncalled for. At the west end of the nave the bewildering ramifications on the ground floor promise well for the abutment at higher stages of the work; but as we ascend, the gradual recession of the western façade soon dispels the illusion, until on the top stage, where the pendentives exert most pressure, we find that counter resistance has been reduced to a minimum. Another effect due to these legal restrictions appears inside the building, where the perimeter of the western dome seems to be too rare for the large west window; a deep barrel vault over the window, as originally intended by the architect, would have afforded better resistance and greatly improved the interior.

Having now considered the main features of the relieving arches regarding support and abutment, we will go back in our imagination to that stage of the work when the main supporting arches had been turned, and the centring or triforium was still in position, there to remain until the full weight had been imposed. On the north and south sides these main arches were not turned until the lower secondary arches and the brick filling over were finished, so that the brickwork served as centring for that portion of the triforium arch that passes through the wall; but for the projecting portion on which the pendentives rest it was, of course, necessary to provide thin centring of wood. At the springing level of all the arches and brick-barrel vaulting, rough stone corbels were built in to support the centring, the projections being afterwards worked off. The spandrels of the main arches are filled in up to the crown level with brickwork set back 13½ inches from the faces of the arches.

reserve a seating for the concrete of the pendentives. The visible junction of the brick arch and the concrete forms merely an angle or line, and if we follow these lines down to the springing where the supporting arches separate we shall find them meet, so that the surface of the pendentive expands or develops from a mere point; but this apparent weakness in the construction is obviated by the very common method of building the lower portion of the arches and the pendentives of brick in horizontal courses; thus a continuous joint is avoided by cutting the brickwork to the required angle, and the top of the brick corbelling forms a seating of considerable area for the solid concrete backing.

The lower portion of the pendentive, just described, rises to a height of 13 feet above the springing; fixed centring for this part was not necessary—the accuracy of the hemispherical curves being insured by the application of movable templets. But for the upper part of the pendentive closely boarded centring was necessary, and to support this at the bottom a projecting stone landing was built in on the top of the brick corbelling, the projection being afterwards worked off. To secure bond for the concrete backing of this upper part, and to distribute the bearing, 6-inch stone landings are built in at intervals in the height, across the angles formed by the enclosing spandrel walls. Projecting courses of brick are also formed on these walls to serve as a key for the concrete. To limit the weight the top part of the pendentive has no solid backing; it is, in fact, built as part of a dome, having a shell 2 feet 6 inches in thickness, but on this shell radiating counterforts or ribs are formed that incline up to the base of the dome, and on these counterforts there are light sleeper walls that support the flat roofing around. To ventilate the cavities $4\frac{1}{2}$ -inch drain-pipes were inserted in the shell and counterforts, communicating with the interior of the building. Constructionally, the pendentives may be regarded as corbels, by which the weight of the domes is not merely sustained, but directed to the piers.

Nave Domes.

The circle developed by the pendentives is 60 feet in diameter; the base of the dome is corbelled over from this, so that the springing is clearly defined, and a salient angle at the junction of the two surfaces is thus avoided, for the convenience of the mosaic workers of a future generation. The thickness of the domes at the springing is 3 feet, which is gradually reduced to 13 inches at the crown; the curve of equilibrium is, therefore, well within the material. The domes were turned on closely boarded centring, in a series of superimposed rings of concrete averaging 4 feet in width. The concrete was not reinforced in any way. The centring consisted of radiating trusses supported from the ground, on uprights 90 feet in height, made of stout planking, bolted together so as to break joint, and cross-braced at intervals. It was, of course, important to have the centring perfectly rigid, to preserve the true curvature of the concrete until it had finally set. Full responsibility for the centring rested with the builder who had contracted to carry out the work; and if his method lacked the daring and skill of a Brunelleschi or a Fontana, he certainly incurred no risk and did not stint the timbering. The eastern dome of the nave was turned first, then the dome of the sanctuary, next the middle dome of the nave, and, lastly, the western dome. Their construction occupied about fourteen months. The independent external covering of the domes is formed in 3-inch artificial stone slabs, cast to the curve. They rest on radiating ribs 5 inches deep, of similar material, fixed on the concrete and rebated to receive the slabs, thus leaving an air-space of 2 inches between the inner shell and the outer covering, the object being to render the temperature of the interior more uniform. The top and bottom joints of the slabs are rebated. At the springing and at the crown the spaces between the ribs are left open for ventilation, and to prevent the wet being driven into the cavities at the top, a circular raised curb is formed, on the top edge of the upper slabs, over which is placed a domical capping that allows the air to circulate freely. To form the outer covering more than 600 slabs were required for each dome; the exposed surface is, therefore, an elaborate network of jointing, and we cannot but feel that an outer coating of homogeneous asphalt would have been more impervious. You will note that by rebating the ribs for the slabs, each radiating section of the covering is kept in position independently of the rest. The concrete flat roofing around the domes is covered with asphalt that rises up the lower portion of the dome, to a height of about 4 feet 6 inches, under the outer covering, where it is keyed into the concrete.

The Sanctuary, &c.

The eastern portion of the cathedral, comprising the sanctuary, the lateral chapels and the choir, presents a system of construction essentially Byzantine, the luminous corona of the sanctuary dome being raised aloft on vaulting that seems to be independent of direct support. This buoyancy is due to the extensions that open out on all sides, equal in span to the dome itself. The enclosing walls of the sanctuary, on the north and south, have very materially affected the design of the eastern chapels. Originally, these chapels were to have been enclosed by slender arcades, on marble columns, corresponding with those of the organ galleries adjoining; but—as in the case of the chapels of the nave—it was soon found that these arcades would not be sufficient to sustain the weight of the walls over, which are the highest in the building; so the columns were changed into brick piers, and the two end bays of the arcades were filled in, leaving only two bays open in the middle and a couple of narrow doorways at each end, for access to the aisles. Over the filled-in bays are built the solid portions of the outer wall, against which the organs may probably be placed, while over the two open bays is built the lighter portion of the wall containing the windows. The weight of this central part does not, however, entirely depend on the arcade below, for above the two lower windows a relieving arch is turned that transmits the weight of the upper part of the wall to the solid portions at the sides, and to still further reduce the weight that portion of the brickwork under the relieving arch and between the windows is built hollow.

The Galleries.

The organ galleries are independent factors of the construction and, like the galleries of the nave, were left down until the main parts were built. The concrete vaulting of these galleries and the western gallery of the nave is not let into the walls at the back, but supported on brick and stone corbelling, so that the walls are not weakened; the concrete was, however, keyed to the wall by projecting courses of brick, and, as an extra precaution, the columns supporting the vaulting of the organ galleries are tied to the back wall by gun-metal ties, while for the west gallery of the nave ties were inserted at the floor level of the gallery, where the wall of the narthex has most resistance. The side galleries of the nave have no supporting wall at the back excepting that next the campanile, but the arcades that carry the vaulting are comparatively short and resistance to any forward tendency is provided by the main piers. It may here be mentioned that the vaulting of the crypt was also delayed until the superstructure was finished.

You now see that in no part of the cathedral does the main structure depend on marble columns, and this arrangement will be appreciated by those who have experienced the uncertainty of getting large marble monoliths delivered by a stipulated time. The Byzantine builders had the advantage in this respect; their quarries were often the dismantled basilicas and temples of the Romans, where they found columns ready to hand. But the primary objects in delaying the subsidiary parts of a building are, as you know, to give the main parts time to find their permanent settlement, and to avoid interference with the scaffolding and exposure to the weather. The accumulation of rain-water in the pockets of the upper vaulting of the cathedral was sometimes a great nuisance, and holes had to be left in the brickwork for temporary shoots or spouting. During the very hot weather, when the domes were being turned, they were sprinkled with water to prevent the concrete setting too quickly.

(To be concluded.)

WEST RIDING SECONDARY SCHOOLS.

IN view of the extraordinary interest which has been aroused in the proposal of the West Riding County Council to levy a rate of 3d. in the pound for higher education, it is interesting to know, says the *Yorkshire Post*, that the authorities are now committed to an expenditure of over a quarter of a million on secondary schools alone. The precise figure is 276,630*l.* Of this huge sum 30,321*l.* is to go in sites, 227,959*l.* in buildings and 18,350*l.* in equipment. To the cost of sites and buildings the County Council make grants of one-third and pay half the cost of equipping the schools, but of course most of the money has to come out of the local rates. Eighteen entirely new

schools are being erected in the West Riding, nine of them being for girls and the remainder for both boys and girls. All told they will provide accommodation for nearly 4,000 children. The largest is the proposed new high school for girls at Barnsley, to accommodate 400. The site is to cost 2,373*l.*, the buildings 14,000*l.* and the equipment 2,000*l.*, or a total of 18,373*l.*

Other new schools, either built or proposed, and their cost may be set out in tabular form:—

Name.	Accommodation.	Site.	Estimated Cost.		
			Buildings.	Equipment.	Total.
		£	£	£	£
Barnsley High (Girls)	400	2,373	14,000	2,000	18,373
Brighouse Secondary (Girls)	150	3,022	6,750	1,200	10,972
Castleford Secondary (Dual)	300	3,033	12,000	1,500	16,533
Doncaster Secondary (Girls)	300	—	12,000	—	12,000
Goole Secondary (Dual)	300	3,350	13,150	1,000	17,500
Guiseley Secondary (Dual)	200	3,900	8,000	1,000	12,900
Hebden Bridge Secondary (Mixed)	150	3,000	6,750	1,200	10,950
Mexborough Secondary (Dual)	300	2,265	10,000	1,500	13,765
Morley Secondary (Dual)	200	2,400	11,160	1,000	14,560
Normanton Secondary (Girls)	100	—	5,000	—	5,000
Pontefract Secondary (Girls)	200	2,000	8,000	1,000	11,000
Pudsey Secondary (Dual)	300	—	12,000	—	12,000
Ripon Secondary (Girls)	80	—	4,000	800	4,800
Selby Secondary (Girls)	80	1,220	5,000	650	6,870
Settle Secondary (Girls)	100	—	5,000	—	5,000
Sheffield District Secondary (Girls)	250	—	10,000	—	10,000
Sowerby Bridge Secondary (Dual)	250	2,750	10,000	1,250	14,000
Handsworth Secondary (Dual)	160	702	7,200	1,200	9,102

Four schools are to be rebuilt—the Barnsley Grammar, the Elland Secondary (dual), the Thorne Secondary (dual) and the Todmorden Secondary schools. The Barnsley school is to cost 8,000*l.*, Elland 6,750*l.*, Thorne 6,000*l.* and Todmorden 8,500*l.*, while for purposes of better equipment grants are being made of 750*l.* to Thorne and 1,000*l.* to Todmorden. Ten other schools, mostly of the grammar school type, are to be extended, and one—the Keighley Trade and Grammar school—acquired. The cost of these alterations may be thus set out:—

Name,	Estimated Cost.		
	Buildings.	Equipment.	Total.
	£	£	£
Batley Grammar	1,000	—	1,000
Bingley Grammar	3,960	—	3,960
Drax Grammar	5,289	—	5,289
Harrogate Secondary (Mixed)	7,000	—	7,000
Hippcrholme Grammar (Dual)	2,000	—	2,000
Holmfirth Secondary (Dual)	650	500	1,150
Mirfield Grammar (Dual)	3,600	—	3,600
Penistone Grammar (Dual)	1,200	—	1,200
Tadcaster Grammar Secondary (Dual)	3,000	—	3,000
Ossett Grammar (Dual)	4,600	800	5,400
Keighley Trade and Grammar	6,400	—	6,400

The above figures, which may be regarded as official, will serve a useful purpose in indicating to the districts concerned the money that is being spent, or is proposed to be spent, on their behalf. At the Local Government Board inquiry, held at Wakefield on Friday, complaint was made by numerous gentlemen, who were opposed to the increased rate, of a complete lack of information on this subject. The details given will no doubt afford them the opportunity of asking some pertinent questions when the inquiry is resumed next week. It may be mentioned that during the past year new secondary schools were opened at Castleford, Morley, Settle and Sheffield, making over twenty with those now in hand. The number of West Riding pupils in attendance at secondary schools upon which County Council grants are payable is said to be approximately 6,600, equivalent to 4½ per thousand of the population.

MELBOURNE TOWN HALL.

THE City Council of Melbourne recently invited competitive designs for the extension of the town hall buildings. Nineteen sets of drawings were received, and a board consisting of professional advisers and members of the Council was appointed to report upon the same. At a meeting of the Council on March 4 the memorandum of the board was received. It was therein stated that after very careful consideration the board had arrived at the unanimous decision to recommend that the first prize of 300*l.* be awarded to the author of design No. 13. The report was unanimously adopted, and the envelopes containing the

competitors' names were then opened. It was announced that the first prize had been awarded to Messrs. Grainger, Kennedy & Little, National Trustee Buildings, 123 Queen Street, Melbourne. It is anticipated that the cost of the work will amount to 60,000*l.*, and that operations will be commenced at an early date. Of the winners of the first prize, Mr. John H. Grainger, well known as the designer of Prince's Bridge, Melbourne, has successfully carried out many large structures in Victoria, and after nearly a ten years' tenure has resigned the position of chief Government architect, West Australia, returning to Victoria to resume his practice. Mr. Grainger is corresponding member of the Société Centrale des Architectes Français of Paris. Messrs. Kennedy and Little are both Fellows of the R.V.I.A. Mr. Philip A. Kennedy is the author of many important buildings in Bendigo, whilst he has just completed St. Vincent's Hospital in Melbourne. Mr. John Little has practised in Melbourne for twenty years. Apart from his reputation as an architect he has been for many years the hon. secretary of the Royal Victorian Institute of Architects, and is lecturer in building construction at the Working Men's College, Melbourne, and editor of the R.V.I.A. "Journal of Proceedings."

GENERAL.

Sir Thomas Drew, P.R.H.A., who has for the past three months had charge of the fine art section of the Irish National Exhibition, has, in consequence of pressure of private engagements, forwarded his resignation as president of the section to the executive committee.

A Party of Members of the Northern Architectural Association visited Sunderland on Saturday and were conducted over the offices of the Wear Commissioners, the police buildings and fire station, &c.

Lord Aldenham proposes to reconstruct the organ in St. Albans Cathedral. At present the organ occupies a position above the St. Cuthbert's screen separating the nave from the choir, and impedes the view from east to west. The instrument is to be enlarged, divided into two parts and inserted in the arches on the north and south about the screen. The work is estimated to cost nearly 3,000*l.*

Messrs. Davidson & Crakney, of Newcastle and Sunderland, have obtained the first and second prizes in the competition for two branch libraries in Sunderland.

The Jury of the Salon consists of the following members:—M. Pascal, president; MM. Daumet and Bernier vice-presidents; MM. Marcel and Louvet, secretaries MM. Blavette, Boeswillwald, Bonnier, Deglane, Nénot Normand, Sortais and Vaudremer.

An Exhibition of Paintings by Adolphe Monticelli was opened on Saturday in Paris. It will be closed on May 4. There are seventy-six examples showing all his different manners of execution.

A Special Committee of the Salford Town Council recommended the erection of a town hall at a cost of 100,000*l.* but there were only twenty-one votes in favour of the project while there were twenty-four opponents.

The Contract for the decoration of the British Museum reading-room has been placed in the hands of the firm of Waring & Gillow, Ltd., and it is hoped that the work will be completed well within the six months contemplated by the authorities of the Museum. The decoration will take 200,000 leaves of beaten gold, the painting 25 tons of white lead and will keep 200 men busy for several months.

The Local Government Board has sanctioned the application of the Ilford Urban Council for permission to erect a public hall at Seven Kings.

Mr. Daniel F. F. Barton, who was known as an amateur at whose cost a grand concert hall was erected in Geneva and presented to the city, has died at his villa on the shore of Lake Lemán.

The Architects in Dundee who signed the agreement not to submit plans for the new technical institute, "in view of the inadequate remuneration offered and other unsatisfactory conditions affecting the competition," are, says the *Dundee Advertiser*:—J. Donald Mills, president of the Institute; John T. Maclaren, vice-president; Thos. M. Capper, W. Fleming Wilkie, David L. Allan, Charles Mann, William Gaudie, Chas. G. Soutar—members of Council; Mil & Shepherd, James Maclaren & Sons, Thoms & Wilkie Blackadder & Allan, Leslie Ower, James Findlay, Johnstone & Baxter, James Foggie & Son, Jas. Sibbald, Richard Murray, McCulloch & Jamieson, R. Hunter, Henry Thomson, Alex. Lickely, Edward Tough, J. & F. Salmond, John Bruce & Sons, Wm. Forrest, James Lowe.



PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

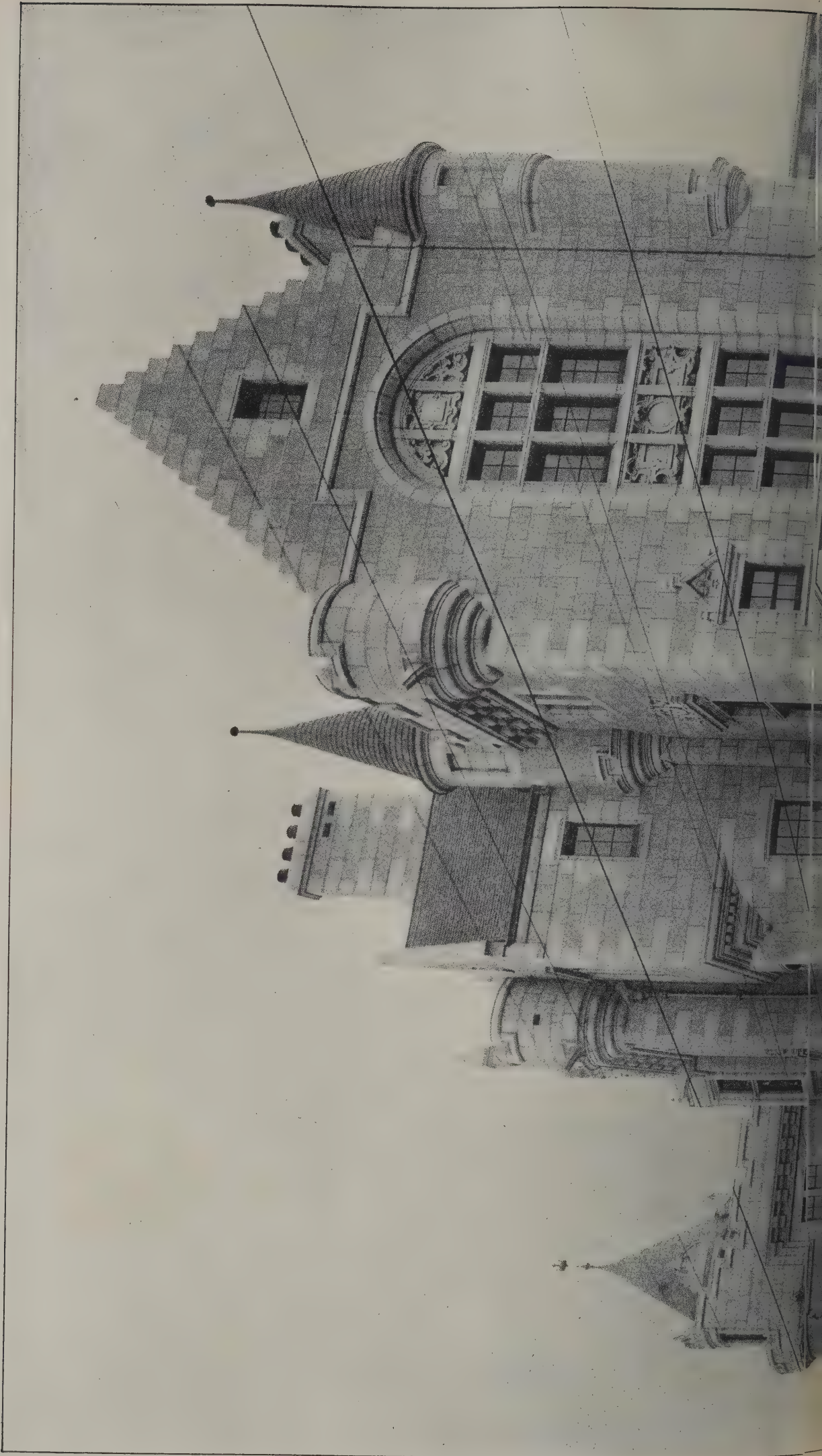
NEW PREMISES: CORNER OF LOT
SIR ARTHUR BLO

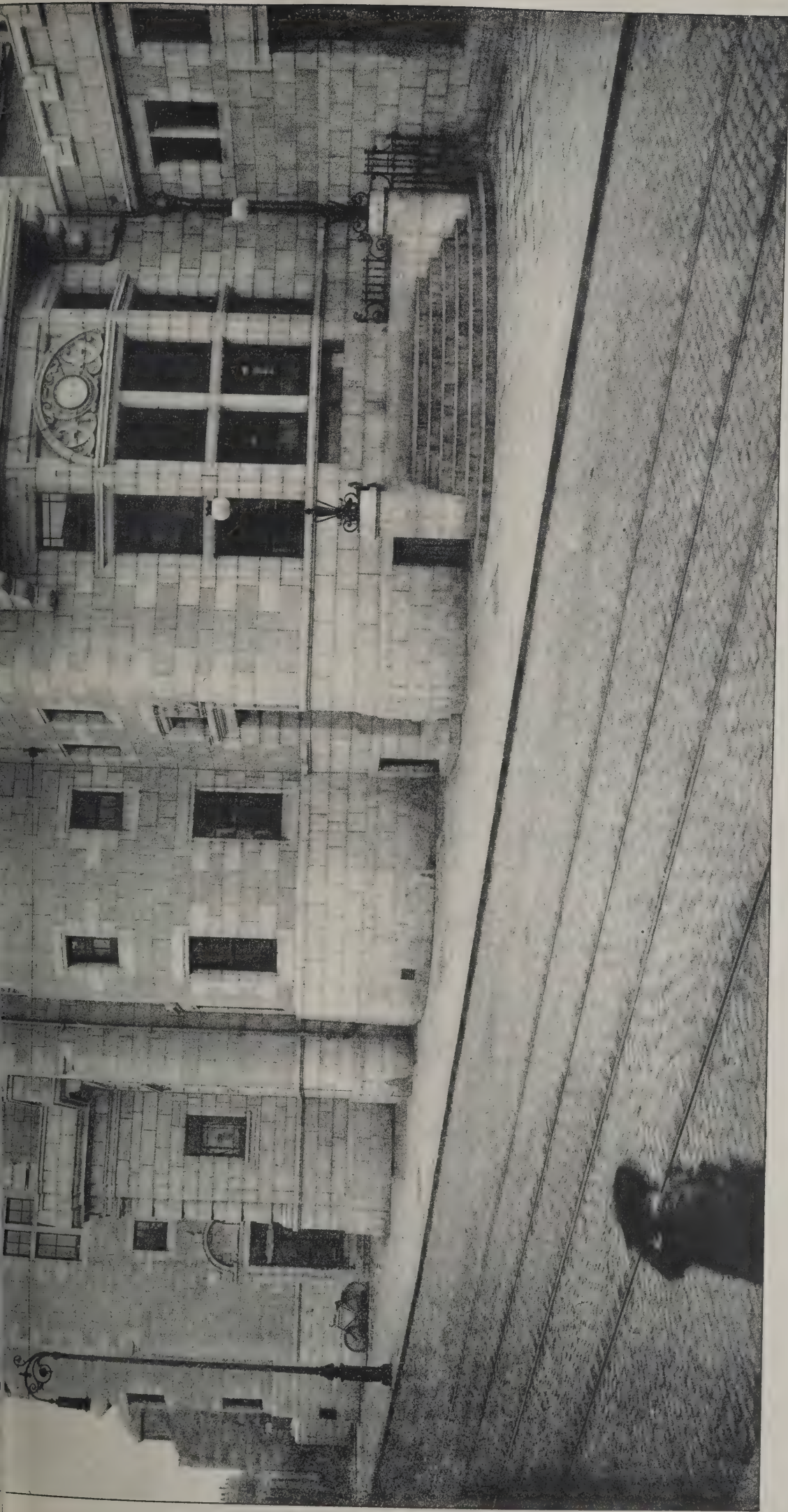


INK-Photo SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

19 PRINCE'S STREET, BANK, E.C.
Architects.

The Architet, April 19th 1907.





INK PHOTO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

NEW POST OFFICE, ABERDEEN.

Designed by W. W. ROBERTSON, and carried out by W. T. OLDRIEVE, F.R.I.B.A.





"18K PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

E. ABERDEEN.

ed it by W. T. OLDRIEVE, F.R.I.B.A.

The Architect, April 19th 1907.





INK PHOTO SPRAGUE & CO. LONDON 4 & 5 EAST HARDING STREET PETER LANE E.C.

MANOR HOUSE SCHOOL, CLAPHAM COMMON, S.W.: THE ENTRANCE.

T. E. LIDIARD JAMES, F.R.I.B.A., Architect.

The Architect.

THE WEEK.

THE Council of the Royal Society of Antiquaries of Ireland have had a great number of applications from the Estates Commissioners for information respecting ancient monuments situate on estates about to be sold to the tenants, to which replies have been given. In nearly every case reported on the structure was considered by the Council to be worthy of preservation. They have had no information as to what further action was taken beyond what is to be gained from the Parliamentary report of the Estates Commissioners, from which the following extract is taken:—"Inspectors and surveyors are required to furnish in their reports particulars of any ancient or Mediæval structures or monuments, or the remains thereof, which may be on the holdings inspected, in order that the Commissioners may be in a position to consider the advisability of restoring them, pursuant to section 14, either in the Commissioners of Public Works or in the County Council. During the period from November 1, 1903, to March 31, 1906, the Commissioners were so informed of the existence of sixty-seven monuments or structures. Of these, the Commissioners of Public Works have consented to allow two to be vested in them; the County Council of Kildare, one; the County Council of Westmeath, one; and the County Council of Down, one. In twenty cases investigations as to whether the monuments or structures were worthy of preservation by the Commissioners of Public Works, or by the County Council, were not completed; and in the remaining cases the monuments or structures proved not to be sufficiently important to be reserved under section 14 of the Act." It would appear from the foregoing that a large number of these monuments have not been vested in either the County Council or Board of Public Works, and consequently they have become the property of the tenants. It is to be regretted that there is no provision made for the preservation of such objects, many of them being of the highest local and antiquarian interest, and it is to be feared the tenants will not have the means or inclination to preserve or protect them from injury.

RAILWAY companies having private Acts are supposed to be outside the operation of the London Building Acts. But cases will arise in which the immunity of the companies appears to be doubtful. One is now under consideration. At the Crystal Palace the South-Eastern and other railways possess land of which a portion was last year let for the erection of a local office. The London County Council had notice served for the demolition of the building on the ground that it contravened the general building line. The railway companies asked the Tribunal of Appeal to set aside the notice, claiming that the building was erected for purposes connected with railways. The contention is upheld by the Tribunal. The County Council then went to the High Court, where it was decided that the question was one for the Court and not for the Tribunal, and the case was remitted for rehearing. On Friday last the County Council applied before the Tribunal that the appeal should be dismissed, with costs, although the case is still pending. That course was agreed to and the costs were fixed at 25 guineas. On an application of the Borough Council of Camberwell for their costs was rejected. At first sight it might be supposed that the Council have gained a victory. But the question has yet to be determined, for only at the stage in the operations has been accomplished. Eventually, it need hardly be said, the costs will amount much more than 25 guineas. At the same time, it is remarkable that the High Court should reserve for itself a question on a matter which, from the surveyor's point of view, is entirely technical.

AN inquiry was made in the last session concerning the remuneration of consulting engineers to the Crown Colonies and Protectorates for services in connection with the construction of railways during the last ten years. The object of the inquiry has not been clear to the Colonial Office, for railways may be intended not only for the commercial development of the territory, but also sometimes for a military or political purpose. The consulting engineers do not initiate the construction, and the money expended appears to be mainly out-of-pocket expenses. The colony of Sierra Leone has paid Messrs. BAKER & SHELFORD, in addition to their salary, sums of 2,363*l.* 11*s.* 4*d.*, 865*l.* 19*s.* 9*d.*, 3,194*l.* 19*s.* 11*d.*, 2,913*l.* 10*s.* 11*d.*, 116*l.* 2*s.* 5*d.* and 1,080*l.* 18*s.* 4*d.* From the Gold Coast Colony the expenses paid were 4,835*l.* 19*s.* 5*d.*, 6,135*l.* 16*s.* 2*d.* and 249*l.* 13*s.* 8*d.* From Southern Nigeria sums of 4,952*l.*, 3,265*l.* and 2,514*l.* 15*s.* were paid, and from Cyprus 2,645*l.* 13*s.* 2*d.* Messrs. GREGORY, EYLES & WARING received for office expenses from Ceylon 4,456*l.* 15*s.* 9*d.*, and from the Malay States 4,242*l.*, in addition to salary. The Straits Settlements paid 1,974*l.* 4*s.* 6*d.*, Trinidad 586*l.* 5*s.*, and British Central Africa 5,187*l.* 7*s.* 9*d.* It is stated that the latter sum includes, in addition to office and other expenses in this country, the cost of the consulting engineers' representative in the Protectorate and of his staff and office, travelling and other expenses, including passages, camp equipage, &c. In addition to a salary of 1,000*l.* the firm of Sir JOHN WOLFE BARRY & PARTNERS received last year 623*l.* 2*s.* 9*d.* for office expenses. Messrs. RENDEL & ROBERTSON were paid 3,695*l.* 18*s.* 11*d.* for office expenses by the Protectorate of Uganda. It is not improbable that the subject of consulting engineers will come under discussion at the Colonial Conference which is now sitting.

THE exhibition of the works of the German artists known as the Berlin Secession, which corresponds with one of the French salons, is now open to visitors. It has been decided to close it on August 1, which is earlier than is usual. It is believed that in July people think of the country and there is always a decline in the number of visitors to exhibitions. Berlin, moreover, is not exactly the place on a hot day to attract visitors from a distance. The experiment may not be successful, for the Germans are fond of adhering to old ways, and if they do not care to visit galleries they like to know they are open to receive them. Apparently the exhibition this year is above the average in quality, for among the secessionists are most of the representatives of new theories of art.

GRASSE is famous for its perfumes, and who knows whether the supplies of varied flowers which were necessary to produce them were not without their effect on the mind of the young JEAN FRAGONARD, who was born in the town in 1732? His paintings are at least suggestive of beauty which does not endure, as preferably he painted youth and its weaknesses in many forms. For an artist of his disposition the monumental works he had to study in Rome as a holder of the Prix were hindrances rather than aids. He knew his strength as well as shortcomings when he declined to become an Academician, although he went through the formalities which would be sufficient to qualify any other painter. For several years he suited French taste, but when the Revolution was impending the amateurs professed to believe in severity, and the joyous FRAGONARD was supplanted by DAVID and his mock-heroics. He died in Paris poor and neglected in 1806. Recently a memorial of the artist was unveiled in the Place du Jeu-de-Ballon in Grasse. It is the work of M. AUGUSTE MAILLARD, the sculptor. At the banquet there were orations about the painter who so well interpreted the French spirit in its last joyous days, and who was the rival of WATTEAU, CHARDIN and GREUZE.

UNITY AND VARIETY.

THERE must be a weakness in human nature for formulæ. They may be only a development of proverbs. Just as the essence of prudence is supposed to be expressed in two or three words, it may have been concluded that the results of experience and experiment could be presented by algebraic symbols. Formulæ are now esteemed as if they were charms by some men who consider themselves to be practical. A little multiplication and division and something is ascertained which otherwise could not be discovered without several hours' labour, if at all. The acceptance of "unity and variety" as the principle which underlies all beauty, and therefore all art, could not have gained such universal respect if men were not prone to believe that the briefest expression of wisdom was likely to be the truest in aesthetics.

It is impossible to say where it originated. We believe that at first it was intended to apply only to literary compositions and discourses. In such exercises there is a temptation to be discursive, and the counsel is often repeated of old orators who recommend enthusiastic tyros to omit everything that seems to be particularly grand. The phrase "thread of a discourse" could not have originated if writers and speakers were not apt to forsake the highway for the more pleasant byways. But as it is supposed that the rules which are applicable to rhetoric will also serve for the fine arts, it could not be long before architects and painters, if not sculptors, were induced to believe it was only necessary to combine variety with unity in order to produce satisfactory work.

It is always well when dealing with words to consider their origin. It is possible that the originator of the phrase signified by unity and variety certain ideas which were outside the province of art. The great St. AUGUSTINE is believed to have written a masterpiece on the subject. But it no longer exists, and the only references to it which have survived appear to relate to unity as a characteristic of spiritual beauty, "Omnis porro pulchritudinis forma unitas est." It would, however, be difficult to apply advice concerning mysticism to the creation of forms for giving pleasure to the eyes, which is the aim of most arts.

We all know that the same material things can be arranged in different categories. We can consider stones according to their colour or general appearance, or according to their strength, the difficulty of obtaining them and so on. It would, for example, be possible to erect a wall in courses which differed in colour and in texture. Variety would then be presented before us and there would be unity, for all the stones served one purpose in common. But it would not follow that the variety and unity had produced a beautiful object, for the stones might not be adapted for neighbourhood. Probably a wall more pleasing to the sight would be obtained by a combination of stones of the same formation, and which could not be supposed to display any variety. A similar result would, of course, be attained by using bricks of different colours.

A variety of forms can also be combined in a structure, and the result will not be necessarily either beautiful or a work of art. It must not be supposed that the failure is to be attributed entirely to prejudices on the part of the observer. Freakish combinations have been condemned at least from the time of HORACE. But it sometimes happens that through the power of association over us excuses will be found for those who perpetrated them. As a rule critics would condemn, for example, the employment of Gothic with Classic or Renaissance forms in a building. But we know that at the present time restorers who separated one from the other in churches are condemned as wanting in good taste, reverence and recognition of historic effects. In spite of this there is little doubt that the introduction of many forms for the sake of variety is generally allowed to produce an incongruous result.

It must be admitted that the temptation to introduce variety both in pictures and buildings is difficult to resist. It is only necessary to observe the conduct of children in an exhibition or with illustrated books before them in order to realise their eagerness for novelties. Men in respect of art resemble children. Originally they had to be satisfied with the simple forms. An important place probably for worship was at Carnac in Brittany or Stonehenge, consisting of so many similar avenues, we must suppose that strangers who attended were puzzled unless they were followed by official guides. There may have been decorations with flowers or the remains of victims which served as clues instead of enamelled tablets or sign-posts, looking at the rows of stones we are forced to conclude that unity and monotony are akin. The early temples were simple and the primitive statues of the Greeks were little more than blocks of stone and wood. Variety, in fact, became compulsory, if it were only to help men in distinguishing between objects. A line on a menhir placed at the beginning of a row of stones at Carnac would distinguish one avenue from another. In Greek sculpture a few folds to indicate a robe, or it may be a girdle, helped to suggest a god or goddess. In that way the variety which is essential to a work of art would originate in practical needs.

After a time variety would be adopted simply for the purpose of giving pleasure. A Doric column was not strengthened by fluting; rather by the diminution of material it might be supposed to increase the likelihood of failure. The sculpture of the metopes and pediments were novel varieties, and to the eye and mind of the Greeks imparted greater unity to a building than we can imagine. Variety in another form was obtained when Caryatides were substituted for columns. Colouring in masonry was likewise an innovation. It would have been possible to have effected changes which could still be called varieties, but which would not have increased the beauty of the buildings. The attempts of ambitious men to surpass the Greeks is proof of this. The progress of architecture did not arise from mere alteration or mere accretions, but from all the changes increasing the beauty of the building. To assert that beauty in architecture consists of unity with variety is to disregard the most important factor, which was beauty, and which would satisfy departure from established forms. We may in fact say that the formula under consideration, if taken literally, means that beauty consists in the combination of things which are not beautiful so long as they differ from each other. It is only a metaphysician who could suppose that such a conclusion was of any advantage to the world.

There is no doubt the formula has done harm. It has made some men believe that variety was in itself the most desirable quality in a work of art. During many centuries the difference between architecture as practised by the Greeks and that created by the Romans arose mainly from the importance attached to variety. Where marble was available there was a superabundance of columns. Could men be quickly trained as sculptors, then statues and reliefs were employed in profusion. Mosaics seemed to be indispensable to all those who traded with towns where they were produced. The buildings in which there was such a display of wealth are supposed to represent the triumph of craftsmanship if not of art. But the great fact remains that with all these excesses they could be accepted as showing the power of variety in unity.

We may interpret unity as a severe standard, such as was exemplified by the Greek mind when at its best, with a scorn of the superfluous such as was manifested in the Parthenon. But unity can become wonderfully elastic in order to comprise varieties of good and bad, suitable and unsuitable. If richness is tolerated in one part of a building there is no reason to prevent it appearing in other parts, and by that means the whole will be in keeping. MILTON did not hesitate to adopt

Doric type for the Parliament-house of the Fallen angels. According to him it was—

Built like a temple, where pilasters round
Were set, and Doric pillars overlaid
With golden architrave; nor did there want
Cornice or frieze with bossy sculptures graven;
The roof was fretted gold.

In this case we have varieties on a gorgeous scale, and many a Roman consul and emperor would consider that similar additions were improvements on the classic Doric. Indeed, it may be remarked in passing that MILTON considered there was a connection between the fabric he described and the Greek temples, for he tells us that MULCIBER, the architect of it, was adored in ancient Greece. Indeed, when men seek after variety they will paint the lily and gild refined gold for the sake of it; they are likely to be led into much that is extravagant and foolish.

It is not by formulæ the true artist works, whether painter or architect, and his productions are of a nature which cannot be defined with brevity or by algebra. There is a law to himself, and he is just as likely to make his mistakes as any metaphysician when he attempts the impossible. MICHEL ANGELO was not happy in expressing himself when he said that beauty was no more than the purgation of superfluities. What is more essential than the discovery of the figure which has to be emancipated by removing the marble which enshrouds it. His definition would be more worthy of a sculptor's journeyman, who in a mechanical way wrought the marble block into more or less resemblance to the model. It is the business of the architect as well as the sculptor first to shadow forth in his own mind the entity which is to rule his building as a whole. That being determined, he can adopt varieties to the extent which will be in keeping with it. He has to establish a series of relations between all the parts. But if he were to depend for character on the number of varieties which his building would present it might be considered as complying with the formula of which we have been speaking. But it would hardly be accepted as a work of art.

NEW BOOKS.

THE latest volume of the London Topographical Record (London Topographical Society) contains a description of Vanbrugh House and Vanbrugh Castle, Blackheath, by Mr. G. H. LOVEGROVE. The former has been removed, the latter is undergoing extensive alterations. The gateway to the castle must have made people imagine that the building was of large size. But neither the house nor the castle could be considered as imposing. The house, after undergoing alterations, was used for a ladies' school. The castle is described as the best of VANBRUGH'S small brick houses. But his massive style was better adapted to the design of large mansions. Mr. PHILIP NORMAN'S address is mainly devoted to the remains of the Roman wall of London. Another instalment is given of Mr. HILTON PRICE'S record of the "Signs of Old London," and reproductions are shown of old bills, trade cards and advertisements. The information is often very strange. For instance, in connection with the Crown in Cheapside it is said:—"In the reign of EDWARD IV. WALTER WALKER, dwelling at the sign of the Crown, in Cheapside, told his little child, if he would be quiet, he would make him heir to the Crown. For this innocent speech the unfortunate man appears to have suffered the extreme penalty of the law for high treason." The Mermaid tavern stood between Bread Street and Friday Street and the first mention of it is in 1462. According to tradition Sir CHRISTOPHER WREN lived in a house built on the site of the Saracen's Head, Cheapside, during the erection of St. Paul's Cathedral. In 1707 WILLIAM SQUIRE, at the Three Tents and Lamb, in Theoultry, announced that he sold great variety of paper hangings of his own manufacture at most reasonable

rates. JOHN MILTON, scrivener, the father of the poet, lived at the Spread Eagle, in Bread Street, in 1602. The catalogue of the maps, views and plans of London, exhibited at Drapers' Hall, will also be useful to archaeologists. The Society has already done valuable work, although there are only about two hundred subscribers. With an increase of funds there is little doubt that a record would be prepared of whatever has survived concerning Old Time London.

The use of squared paper has increased to a surprising extent of late. The result is that a quire can now be obtained for about the same price which a sheet cost several years ago. It has been popularised by the newspapers when indicating the rise and fall of temperature, imports and exports, prices of materials, &c. In such cases the lines are zigzag. But when dealing with such a subject as the strength of materials it is possible not only to demonstrate the regularity of physical laws, but to use the records as guides to the dimensions of the beams which will serve our purpose. Sticklers for scientific investigations may consider that such a use is of the empiric kind. But if time and trouble are economised and the risk of errors avoided then the squared paper method merits to be recommended. In the "Graphical Handbook of Reinforced Concrete Design" (CROSBY LOCKWOOD & SON), by Mr. JOHN HAWKESWORTH, an American engineer, fifteen plates are made to serve instead of calculations for finding the sections of beams and columns. They are adapted no doubt to American conditions, and more especially to the building code of New York City. But they will also serve in other places. The plates are copied from those employed by the author, and he believes they would be useful to architects who have only occasionally to design work in reinforced concrete and who may not have the organisation necessary to arrive at results by calculation. As a general rule, before using such aids it is well to test them by comparing them with approved results. For a stress may not in all cases be exactly represented by a straight line which always is at the same angle with the horizontal base. Occasionally curved lines come nearer the truth, and they are recognised in the plates. The requirements of the New York building code are given, and the author shows applications to a variety of instances.

A volume of reasonable size, entitled "Concrete-Steel: a Treatise on the Theory and Practice of Reinforced Concrete Construction," by Mr. W. NOBLE TWELVETREES (London: WHITTAKER & Co.), is well adapted to explain the latest form of construction. It describes several of the systems, and explains different theories which have been presented mainly by foreign experimenters. Owing to a number of obstacles, it is hardly possible at the present time to write a treatise on the subject which would be confined solely to English experience. The pages are adapted to inform students and others about what has been accomplished, and may serve as an incentive to English architects, engineers and contractors to devise improvements. Reinforced concrete serves expedition more perfectly than is possible with other materials, and if it were not for the conservatism of local authorities it would be largely used throughout the country.

Mr. H. C. STANDAGE, of Birmingham, is a chemist who has done much towards initiating people into the applications of chemistry to business purposes. His "Agglutinants of all Kinds for all Purposes" (A. CONSTABLE & Co.) is another effort. According to Dr. JOHNSON, the verb agglutinate was appropriated solely by medicine in his time. But it is shown in the book that men in various businesses, from architects to zinc-workers, possess an interest in cements, mortars, glues, and other aids for making one substance adhere to another. Mr. STANDAGE gives over 500 recipes, and his book contains much advice in other forms. Gesso, we find, corresponds with what is

commonly called gypsum in England and stucco in Scotland. Terra-alba is another name for a material that is largely employed in the arts as plaster of Paris and for adulterating other materials. Hints like the following meet us on almost every page:—"Colour alone cannot determine the quality of plaster, as the quality of the gypsum regulates the quality of the plaster. The whitest and hardest generally yields the best plaster, but as the exception proves the rule, it may be mentioned that Cumberland plasters are of a delicate pink and of a very pale grain and exceedingly slimy when gauged." The recipes are so widely applicable, Mr. STANDAGE'S volume should be at hand in any place of business where joints have to be made by means of chemistry rather than by mechanics.

Messrs. CONSTABLE also have published an American book on a similar subject, viz. "Glues and Gelatine: a Practical Treatise on the Methods of Testing and Use," by Mr. R. LIVINGSTONE FERNBACH, chemical expert. It is not so comprehensive as the companion volume, but glue is, however, taken in a wide sense, and those who use that material will be repaid by reading the pages. No builder will be surprised to learn that, "while Germany produces glues in far greater variety than other European countries, her product is, as a rule, inferior in quality." The extra superior is frequently inferior to the superior. Cologne glue can no longer be trusted. French glues, on the other hand, uphold their old character for purity and strength. The following will suggest the manner in which information is conveyed by the author:—

1. Glue exerts a far greater hold on surfaces of wood that have been cut across the grain than on those that have been split or cut with the grain.
2. When two surfaces of split wood are laid together the hold of the glue is the same, whether the fibres are laid parallel or crosswise to one another.
3. The value of a wood joint is dependent upon the union of the glue with the fibre of the wood. For glue to be properly effective it must penetrate the pores of the wood, and the greater this penetration the more substantial the joint.
4. All other factors being equal, glues that dry slowly are invariably stronger in the joint than those that dry rapidly.
5. Except in the case of veneering, both surfaces of the wood should be properly glued before junction.
6. Do not use thick solutions of glue for jointwork. They congeal too quickly, and hence fail to penetrate the pores of the wood, yielding, as a result, a weak joint. In every case the glue must be worked well into the wood with a brush, much in the same manner as a coat of paint is applied.
7. If glue is applied to hot wood all the water of the glue-solution will be absorbed by the wood, leaving a thin adhesive coating of glue at the surface of the joint, which, if made in this fashion, will hold only a limited time.

Mr. FERNBACH'S volume is an excellent example of the American treatise. Any circumstance that is likely to be useful is recognised, and it is assumed that the reader is a novice. An effort is made to have principles recognised, and although the author does not profess to enter into details of manufacture, he describes as much of the process as is needful for a consumer to understand.

The majority of people in this country who know anything about Madagascar are likely to be indebted for their information to some of the writings of the Rev. JAMES SIBREE, a missionary of the L.M.S. His "Madagascar before the Conquest" (T. FISHER UNWIN) represents over thirty years acquaintance with the island. Henceforth a different condition of affairs will have to be chronicled. It is well, therefore, to put on record as many facts as are possible relating to the island in which so many ancient practices were observed. New theories about life in a remote age depend for their support on evidence which is to be collected in places which have not advanced in the same ratio as Europe. The people of Madagascar have had peculiarities in their folklore, superstitions, manners and customs, and beliefs. Although they could

not be considered as exemplifying so much art ability as the cave-dwellers of Europe in a remote yet they made some attempts to produce symbols to adorn their houses and graves and some of their utensils. After seeing the examples of primitive art in the Rivers collection at Oxford, Mr. SIBREE says "the something very surprising in the almost total absence of ornamental art amongst the Hovas and some of the peoples inhabiting Madagascar. A tribe occupying the southern central highlands, known as the Betsileo, are to be an exception. For they have a decided and special style of ornament which they use for household utensils and tattooing is very common. But the author saw examples while travelling through the district in 1876, and it does not appear that any European has described the ornament. The French will probably be long before they reveal it to the world. Although art may not be remarkable, there is much else which will be found interesting by the anthropologist. Mr. SIBREE, having the true missionary spirit, has affection for the people, or at least the Christians among them. During the period of persecution between 1810 and 1861 they were punished by having to work on Sundays, as well as week days, in erecting mense workshops which an able Frenchman, M. LABORDE, had designed. One of those had walls 6 feet thick, and the native Christians had to quarry stone as well as to lay it. The capital, Antananarivo, in 1863, when the author first visited it, consisted of houses in which wood and rush or bamboo were alone used; stone and clay were prohibited. At that instance of two representatives of the L.M.S. sun-dried brick and tiles were substituted, and the many memorial churches designed by Mr. SIBREE demonstrated to the natives what was possible in building without importing foreign materials. Now brick is almost generally used. The book is written in excellent style, and it is free from the goody-goody representations which restrict books by missionaries to a limited class of readers.

A third edition of "Architectural Hygiene," Messrs. B. F. FLETCHER & H. P. FLETCHER, has appeared (WHITTAKER & Co.). It has been brought up to date, and as it contains over 300 diagrams, applications of all kinds are represented. Attention is given to planning, and the book merits the success it has gained in the course of a very few years.

GERMAN IRONWORK.

IT was fortunate that South Kensington was enriched with so many examples of wrought-ironwork, for of late years specimens are becoming more rare and therefore more costly. Examples of craftsmanship in the precious metals were preserved on account of the material. But a long period old iron was a sort of byword, and pieces which would now be highly prized were cast aside as worthless.

Ironwork is interesting, for it reveals that the smiths had pride in their tasks, and could produce work which may now be considered as artistic. The substitution of cast-iron for hammered and pierced work brought about what was almost scepticism concerning the beauty of ancient productions. The Gothic Revival was not without its influence against the more modern system, and although cast-iron work could not be superseded, it lost much of its importance by comparison with work that was entirely produced by the hand. In the best period the smith, like other craftsmen, could not fail to draw inspiration from architecture. We sometimes see not only trefoils and quatrefoils, but miniature pointed arches. We might suppose in looking at some examples of wrought-iron that, like the goldsmiths of later time in Spain, the smiths were not without some influence on the architects and carvers. Many of the flamboyant curves which seem unsuited for stone appear to be derived from the flexible forms to which iron lent itself in the hands of artificers.

An excellent collection of Germanic ironwork belongs to Herr F. Geiger, a Bavarian, is now on view at the gallery of the Fine Art Society in New Bond Street. It is mainly of a domestic kind; door furniture evidently is



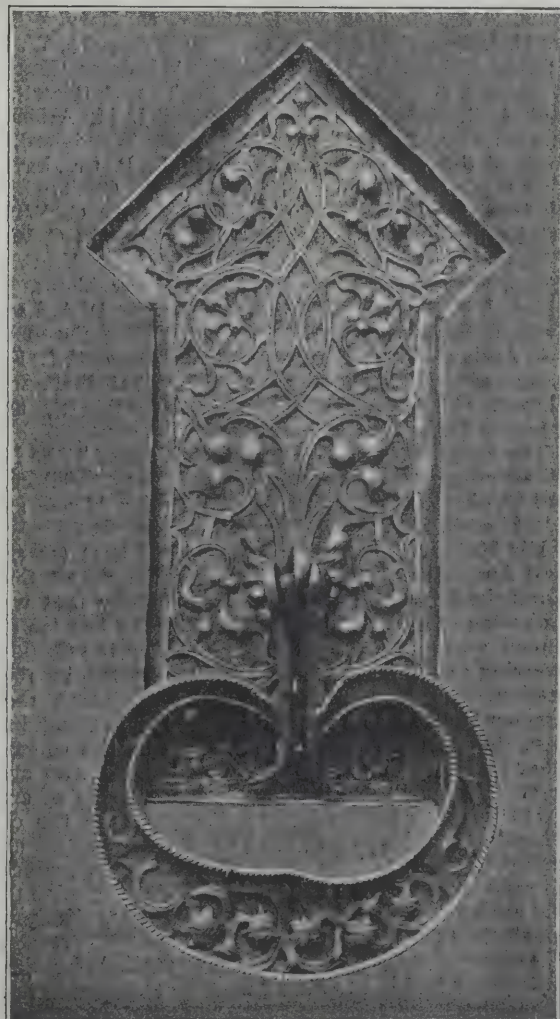
IRONWORK FOR DOORS AND CHESTS (EIGHTEENTH CENTURY).



ESCUTCHEON.



GRATING OR DOOR (SIXTEENTH CENTURY).



DOOR HANDLE (FIFTEENTH CENTURY).

favourite with the collector. We give illustrations of a few examples which are suggestive of work in gold and silver rather than in wrought-iron. Some, it will be seen, are platework, but others are hammerwork and *repoussé* work. It would be an advantage if some or all of the examples could be procured for the industrial museums in this country, and they are therefore well deserving of attention from committees and others desirous to see an advance in metalwork.

SOCIETY OF ARCHITECTS.

THE twenty-third annual dinner of the Society of Architects was held on Thursday evening, the 18th inst., at De Keyser's Royal Hotel, Mr. Albert E. Pridmore, president, in the chair. The Lord Mayor and Sheriffs Crosby and Dunn attended in semi-state, and among the guests were Lord Monkswell, Sir Benjamin Stone, M.P., His Honour Judge Rentoul, Mr. T. B. Silcock, M.P., Captain the Hon. Fitzroy Hemphill, Mr. H. G. Montgomery, M.P., Mr. Atherley-Jones, K.C., M.P., Mr. A. C. Scovell, J.P. (chairman Metropolitan Asylums Board), Mr. Wm. Robertson (master of the Carpenters' Company), Mr. Matthew Wallace, J.P., Mr. C. F. Parslow (master of the Painters' Company), Mr. J. S. Fletcher, M.P., Mr. A. C. Morton, M.P., Mr. Brook, Mr. T. Kitchin, Mr. Donald Maclean, M.P., Prof. R. Elsey-Smith, Mr. Alfred R. Smith (master of the Tylers and Bricklayers' Company), Sir H. Trueman Wood, Mr. E. Holmes, Mr. A. A. Hudson, Mr. G. L. Gomme, the mayors of Bath, Stoke Newington, Holborn, Chatham, Chelsea, Islington and Mansfield; Messrs. W. E. Riley, James Bell, Harry Bird, T. A. Bullock, J. Patten Barber, E. C. Thrupp, F. L. Dove, Alfred J. Gate, E. O. Sachs, F. Wallen, E. W. Harvey Piper, W. A. Scott, Reuben Sheppard, J. B. Wild, George Langridge, E. R. Woodward, G. A. Birkenhead, H. C. W. Blyth, J. Llewellyn Smith, C. S. Thomas, P. H. Ashby Bailey, W. Scott-Deakin, John Harrop White, R. Frank Vallance (vice-president), J. B. Corby, Edgar M. Leest, J.P., E. Basset Willis, W. B. Willmott, G. H. Leavey, Charles Day, Councillor Whyman, Alderman Driver, G. E. Bond, Anthony Scott, Colman Scott, T. J. Byrne, R. G. Bafe, Alderman Viney, Alderman Skinner, Alderman Featherby, Geo. H. Paine, J. G. C. Adams, T. T. Blyth, Frank Havern, F. W. Fenning, R. Leighton, J. R. Ross, H. Weber Brown, W. Atkinson, Percy B. Tubbs, Leonard Tubbs, M.A., Herbert W. Matthews, R. Harvey Barton, Geo. H. Bailey, C. Goldfinch, Geo. W. Pridmore, W. Bates, R. Banks-Martin, A. H. Campbell, C. Palmer, Charles H. Champness, B. R. Tucker, Ernest Beal, H. P. Barrett, C. H. Mead, A. R. Robertson, E. H. Adams, J. H. Arber, M. J. Zimmermann, Sidney Marsland, Wm. Woodward, Ellis Marsland (hon. secretary), Montague L. P. Crozier, T. E. Lidiard James, Col. F. S. Leslie, R.E., Cholton James, Nai Tom, David Morgan, G. Foord, Walter C. Williams, E. C. Beaumont, Wilfred H. Robinson, Oswald C. Wylson, Charles E. Jackson, Chas. E. Denny, Chas. Watkins, B. Wilson, Walter W. Thomas, J.P. (past president), J. Geo. Robins, J. F. B. Cockrell, S. Everard Davies, D. A. Langdon, Edwin J. Sadgrove, J. A. King, P. A. Coad, Owen Owen, A. A. Atkins, W. E. Wanmer, E. P. Atkins, F. L. Fitness, R. Emerson, H. V. Milnes-Emerison, E. H. Wilkins, E. J. Naldrett, G. A. T. Middleton (vice-president), and C. McArthur Butler (secretary).

The loyal toasts were followed by that of "The Houses of Parliament," proposed by Mr. Deputy Wallace, C.C. Lord Monkswell responded for the Upper House and Mr. T. B. Silcock, M.P., for the Commons.

His Honour Judge RENTOUL gave the next toast, "The Local Authorities," and said he must first and foremost submit the Corporation of London as a body that was the admiration of all, and his best advice to the London County Council was that it should model itself on the Corporation. Referring to the most recent building erected by the Corporation, His Honour complained that though the new Sessions House was a beautiful edifice and splendid to look upon, the acoustic properties in some of the courts were rather embarrassing to the Judge and those who attended there. He hoped that it was within the range of architecture to improve such a defect. He was sure the citizens of London could well be proud of the Corporation and the County Council, and, in spite of many things which they had read in papers, he believed all were of opinion that the local authorities in this country did their work very well, though they got little credit for it.

Alderman and Sheriff CROSBY replied for the Lord Mayor, who had left to attend another engagement. In the

course of his speech he alluded to the remarks made by Judge Rentoul about the acoustics of the Old Bailey. He did not know the peculiarities of Court No. 4, but his own experience in Court No. 1 was different, for he had not heard any duplicating of sound there, and business could be conducted satisfactorily. Any such defect in the courts would be an accident, and he had yet to learn, he said, that an architect could know before his design was built that it would be true in acoustics, as a true principle in the science could not be defined.

Captain the Hon. FITZROY HEMPHILL responded for the London County Council, and remarked that the aim of the architectural profession and the Council was similar, for both desired to improve the conditions of the people by good building. He felt there was a bond of sympathy between the Society and the Council, inasmuch as the Society had done such good work in raising the status of architects by examination throughout the country, and those members of the Council who had worked hard to improve London were grateful to the profession of architecture. But great responsibility would rest in the future upon architects. During the next fifty years the profession would have opportunities of building and rebuilding probably the two greatest thoroughfares in the world; he referred to Regent Street and Kingsway. The criticisms levelled against Mr. Norman Shaw's magnificent designs he hoped would not be listened to. They were without justification, for even in the lineal area of glass in the new shop fronts in Regent Street there would be 5 feet more space than there was before. Another point, and one in which he sought the support of architects, was in regard to the elevations of the buildings in Kingsway, which should make London the most beautiful city in the world. The speaker also referred to the proposed new county hall and said he did not believe that the architects in England were not able to compete against any foreigner in designing such a building.

The Mayor of BATH also responded to the toast, and cordially invited the members of the Society to Bath when they visited the West of England in the summer excursions.

Mr. ATHERLEY-JONES, K.C., M.P., proposed "The Society of Architects." He said there was no profession more worthy of admiration than that of architecture, which combined the highest and the noblest conception of true utilitarianism in a combination of the beautiful and the useful. It was the object of the Society to uphold that ideal and improve the status of the profession, and with that high purpose the Society had promoted a Registration Bill in Parliament. Unfortunately the Bill had not gone through, but he trusted that the Society would continue to work in the interests of the public, and press its measure until success was achieved. He wondered what the fate of the new building would be which the County Council proposed to erect on the border of the Thames, and expressed the hope that the new party would not display any parsimony in the undertaking. In conclusion, the speaker urged the members to still strive to rouse the Legislature to the need for architectural registration, and induce the kindred Society, the Institute, to enter into generous rivalry with them in order that they might secure the passage of the measure.

The PRESIDENT, returning thanks for the reception accorded to the toast, said it was twenty-three years since a small body of architects banded themselves together mainly with a view of promoting a Bill in Parliament to secure the statutory registration of architects. That was the birth, as it were, of their Society, which had reached maturity, and which included in its ranks nearly 900 gentlemen practising the profession of architecture, not only in the United Kingdom, but in practically every part of the Empire. The Society was increasing in numbers daily, and extending its scope and influence. Only last year a branch was established in South Africa, and although in its infancy had done much to promote the influence of the Society in that part of His Majesty's dominions, and examination centres had been formed at Cape Town, Johannesburg and other localities. A gratifying feature of the last few years was the large number of young men who had become affiliated to the Society in the students' section, and had availed themselves of the opportunities afforded them of entering for various studentships and scholarships offered by the Council. The Council were considering a comprehensive scheme of architectural education, which it was anticipated would be of the greatest advantage to students, particularly those who were unable to participate in the advantages available to metropolitan students. All that pointed to the fact that the Society was fulfilling the objects for which it was founded, viz. the statutory education and registration of

architects. Never since its foundation had the Society ever deviated from the path which it then marked out. It had persistently fought for the principle and had spent time and money in this direction and was doing so still. At the present time Mr. Atherley-Jones, to whom they were so much indebted for his efforts in the cause of registration, was awaiting a favourable opportunity to reintroduce the Bill into Parliament, and they were fortunate in having many friends who had promised their support to the measure. The reform was as necessary for the protection of the building public as the profession. So far as the actual progress of the Bill was concerned, there was nothing to report owing to the exigencies of Parliamentary procedure, which in the existing state of affairs reduced the chances of a private member's Bill to a minimum. In the meantime, however, their energies were directed to consolidate professional and public opinion on the principle, and they had the sympathy and approval of a large body of architects in different societies who were in favour of the Bill. The Society of Architects' Bill was not brought forward in any selfish manner, but desired the reform to apply equally to the whole of the profession. It would be absurd to suppose that any Bill which did not protect vested interests, and provide for the inclusion of every bona-fide architect, would have the least chance of being sanctioned by Parliament. At the International Congress of Architects last July the question of registration was discussed, a paper having been read on the subject by Mr. Robert Walker, one of their past presidents. Many foreign architects and men from distant parts of the Empire expressed their views and sympathy, and the following resolution, moved by Mr. Ellis Marsland, was carried with but two dissentients, "That it is desirable in the interests of the public of all nations, and of the profession of architecture, that all practitioners should have a statutory qualification." That showed the trend of public opinion. The President welcomed Mr. Montgomery, M.P., the organiser of the Building Trades Exhibition, opened recently by the Lord Mayor, and he reminded the gathering that in 1885 the Society organised a very successful Architectural and Building Exhibition in the Crystal Palace. Mr. Montgomery, he said, was to be congratulated on the success of the present exhibition, which was of great interest to all architects and persons engaged in the building trade, who were keenly interested in anything which enabled them to keep in touch with the latest improvements in building commodities and methods of construction. It was their custom to take one or two trips during the summer to places of architectural interest, and the Council had determined this year to visit the interesting county of Somerset. In anticipation of these excursions, he desired to convey the thanks of the Society to the Mayor of Bath for his offer to entertain the members when they visited that city. With regard to street improvements, the President hoped the County Council would see their way to dispose of the sites in that magnificent thoroughfare Kingsway, and that at no distant date handsome buildings would be erected thereon which would add to the beauty of the Metropolis and assist the reduction of rates. As regarded the alteration and rebuilding in Regent Street, he entirely agreed with Captain Hemphill. Art and commerce seemed to be at loggerheads, the shopkeepers asserting that the architects were sacrificing business considerations to architectural display. Time alone would prove this, but he hoped and believed their fears would not be realised. He was confident that the Society might look forward to an increased sphere of utility in the future, and that members could rely on the Council doing their utmost to promote the best interests of the profession.

The last toast submitted was "Our Visitors," proposed by Mr. G. A. T. Middleton, vice-president, and responded to by Sir Henry Trueman Wood and Mr. A. A. Hudson.

HUNTERIAN MUSEUM.

THE works committee have reported to the Glasgow University Court that they had considered a report by the Master of Works on the lighting of the Hunterian Museum, in which he pointed out that the lighting might be improved by admitting daylight by the sides of the roof or by electric lighting. It was resolved to recommend in the meantime that fourteen roof lights be placed in each of the side roofs over the galleries. These lights would in no way weaken the side roofs and they would not be visible from the outside. The estimated cost was 300*l.* It was

also resolved to recommend that six electric arc lamps be fitted up in the roof of the museum for general lighting at an estimated cost of 45*l.*

Dr. M'Vail said to place glass on the roof would entirely alter the architectural features of the north front, which was by far the handsomest front of the building. He thought they should take the opinion of an architect before proceeding to carry out any such scheme.

Professor Stewart said the point really was whether the alterations would spoil the building from the outside or the inside. They would not spoil it from the outside. It might be that they would spoil the shadows inside, but they wanted light and they must get it. If they could get daylight it was much cheaper than artificial light.

Dr. M'Vail moved that the opinion of an architect be taken, and after further discussion it was agreed to get the advice of Mr. Scott and Mr. Burnet before proceeding to carry out the works committee's scheme.

A SURVEYOR OF COUNTY BUILDINGS.

A JOINT sub-committee of the general purposes and education committees of the county of Cumberland have prepared a report on the duties and emoluments of the county architect, which they had had under their consideration. The report stated that they were of opinion:—
 "(1) That the ordinary repairs, alterations and maintenance of all county buildings, police stations and schools might with advantage be undertaken by one man, to be styled 'the surveyor of county buildings and schools,' and that the salary attached to the office be 300*l.* per annum and reasonable travelling expenses, the County Council providing the necessary clerical assistance at a cost not exceeding 100*l.* and an office, and also paying for such books, stationery, postages and telegrams as they consider requisite. (2) That the said surveyor be required to devote the whole of his time to the services of the county, and be responsible for the above-mentioned duties, and in addition that he prepare and submit plans, drawings, specifications and estimates, and take out quantities, obtain tenders, and carry out the execution of any new work which he may be required to do by the county property, the standing joint or the education committees, and all plans, specifications, &c., so prepared shall become the property of the county. (3) That he shall attend all meetings of the County Council and any committees which he may be requested so to do, and that he be required to keep and submit quarterly to the education and county property committees an account of his out-of-pocket expenses, such expenses to be charged respectively to the education committee or the County Council as the case may be; and that he also submit quarterly a requisition of such books, stationery, &c., as he may require during the ensuing quarter, and also keep a journal, in such form as may be required by the County Council and the education committee, showing the dates of his visits to county property and the extent of any repairs or alterations he found necessary. The present county architect receives a sum of 390*l.* per annum, and finds his own offices, clerks and office expenses, and the Education Clerk of Works receives a salary of 200*l.* a year, has an office at the Courts, and has about 50*l.* a year for travelling expenses as well as 65*l.* for a clerk; books, stationery, drawing paper and postages, &c., amounting to about 45*l.* a year, are also paid, making the total expenditure at present about 750*l.* Your sub-committee consider that if their proposal is adopted the future payments will be as follows:—
 The said surveyor to receive a salary of 300*l.* and 100*l.* per annum being paid for clerks; travelling expenses being about 80*l.* and stationery, books and other office expenditure estimated about 60*l.*, making a total of 540*l.* per annum."

The report was adopted.

Mr. G. H. Willoughby, F.R.I.B.A., the assessor for the fifty-four sets of competitive drawings submitted in connection with the Failsworth public library, has awarded the first place to Messrs. E. Ogden & P. C. Hoy, of Examiner Buildings, Manchester. The premiums offered were 20*l.* and 10*l.* for the designs placed first and second respectively, but on the recommendation of the assessor the District Council have decided to award premiums of 10*l.* each to the following competitors:—Frank W. Mee, Manchester; David Bird, Manchester, and Speir & Beavan, Cardiff.

NOTES AND COMMENTS.

THE designs for the proposed Scottish National Exhibition which will be held next year will have to be sent in by May 11. Premiums of 100*l.* will be given for the designs assigned first and second place by the assessor, Mr. J. J. BURNET, and one of 75*l.* for the third design. Competitors will be allowed to offer suggestions about the arrangement of the site in Saughton Park. The general scheme of what is to be provided is as follows:—(1) Buildings for general exhibits of an internal area of not less than 100,000 superficial feet, and for machinery and exhibits in motion of an internal area of not less than 20,000 superficial feet. This should include at least one restaurant and one tea-room as part of, but not necessarily inside, the main building. (2) A concert hall seated for 2,000 persons, with space for large orchestra and organ. These buildings may or may not be under one roof. (3) A fine arts building of not less than 1,500 lineal feet wall space. This building should be of simple plan, preferably fireproof, absolutely apart from the other buildings, and easily capable of extension to 2,000 lineal feet. (4) A permanent conservatory shelter, or winter garden, of an area of not less than 3,000 feet, must form part of the buildings, and in selecting the position of the permanent bandstand and the winter garden it should be kept in view that it is proposed that these erections should remain as features in the design of the public park which will be formed on the termination of the exhibition. It is proposed to have two entrances, one by the contemplated Corporation Bridge, over the Water of Leith, and the other from Balgreen Road. The total cost of the buildings mentioned in articles 1, 2, 3 and 4 is not to exceed, exclusive of electric light, gas, water, or other supply piping, the sum of 20,000*l.*

THE annual report of the National Art Collections Fund is a most satisfactory document, and it is surprising how many gifts have been offered to the National Gallery, the British Museum and the Victoria and Albert Museum. At the end of December there were 710 members and six honorary members. Owing to the circumlocutory procedure which must be gone through in this country before any object is purchased from the public funds, there is a risk of more nimble administrations carrying off prizes. There are two sub-committees of the Art Collections Fund; one for the purchase of pictures and the second for the purchase of works of other classes. Having so much power opportunities will not be neglected. Special contributions are received from members towards the acquisition of objects of unusual importance. The corresponding French society has a membership of 2,000 and an income of about 2,000*l.* The acquisitions are not necessarily confined to ancient works.

THERE are some things which do not support STERNE's theory about the superiority of what is done in France. Trade-mark registration is one. The annual report of the British Chamber of Commerce refers to a case which is offered as a warning to exporters. A well-known British manufacturing company shipped to its branch in France certain catalogues to be used in the sale of goods of their make, and containing an illustration of a character so common in England in connection with this class of goods that no house has ever attempted to register it. One of these catalogues came into the hands of a small French manufacturer, who promptly wrote to the firm issuing the catalogue, claiming that the illustration in question was an infringement of a mark which he had registered in France. His statement was found, on inquiry, to be correct, and the British manufacturer, whose good faith in the matter was undoubted,

agreed to discontinue the use of the illustration question rather than engage in litigation over advertisement which contained nothing essential to business. British manufacturers should obtain registration, or rather deposit, of their marks in France, and also ascertain whether they have not been anticipated by any competitor. According to French law, the deposit of a trade-mark is not attributive but declarative of ownership; the deposit establishes the date at which the claimant was using the mark, but his claim to sole ownership of the mark may be overthrown if it can be proved that such mark had been previously used in France. For example, had the British manufacturer above cited been able to prove that catalogues containing the illustration in question had circulated in France prior to the deposit of the illustration in France as trade-mark by the French claimant, the claim of the latter would have been set aside.

THE first NAPOLEON adopted several measures to celebrate his victories, and in that way painters and sculptors obtained many important commissions. He was not satisfied with statues, and he resolved to have the biggest vase in the world fashioned in marble as a field for the representation of his victories. He obtained three of the finest blocks which Italy could yield. But before they were handed over to the sculptor the French Empire collapsed. The Grand Duke of TUSCANY considered they would be an acceptable present for GEORGE IV., who, recognising the purpose for which they were originally intended, gave a commission to Sir RICHARD WESTMACOTT for a colossal Waterloo vase, and the marble would thus by one of the ironies of fortune be made to represent the downfall rather than the triumph of NAPOLEON. When the work was completed it was about 16 feet in height, the largest diameter was about 10 feet, and the weight was not less than 20 tons. When King WILLIAM IV. came to the throne the vase appeared to him to be a sort of white elephant in stone. The National Gallery, which was then a new institution, was considered a suitable depository for it, and in 1835, before WILKINS' building was completed, the vase was placed in the hall. It was soon recognised as a nuisance, for it was an obstacle to the ingress and egress of visitors; and besides, in days when iron or steel girders were not available, a dead weight of 20 tons on a confined area was fraught with danger. The opening of the South Kensington Museum afforded an opportunity which was seized. But it was even more dangerous in its new abode, and the resolute HENRY COLE had it taken to pieces and put out of sight. The trustees of the National Gallery were, however, in an official sense its possessors, and inquiries about the manner in which they discharged so onerous a trust were made from time to time. But the area of the National Gallery was more insufficient than before, and the dangerous gift was kept at a distance. Then the subject was brought under the consideration of the Office of Works, without avail. Finally, His MAJESTY, with his customary good nature graciously offered to allow the unfortunate vase to be set up in the grounds of Buckingham Palace, and there it is for the present at least.

ILLUSTRATIONS.

ALDWYCH THEATRE.

ELEPHANT AND CASTLE STATION, THE BAKERLOO RAILWAY.

DESIGN FOR GOOLE SECONDARY SCHOOL.

CATHEDRAL SERIES.—CARLISLE: THE CHOIR, TRIFORIUM, AND CLERESTORY (SOUTH SIDE).

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. Leonard Stokes, vice-president, in the chair.

Mr. ALEXANDER GRAHAM (hon. secretary) announced the decease of Frank Barlow Osborn, of Birmingham, elected Associate 1864, Fellow 1872; R. Creese Harrison, Associate 1882, Fellow 1889; and John Wardle Donald, of Southfields, elected Associate 1888.

M. A. W. WEISSMAN, of Amsterdam, read a paper on

Gallery Building.

In designing a museum, he said, the architect should keep in mind that it is essential to his success that the works of art for which the building is intended shall be perfectly safe in it, and can be shown to their best advantage. If the architect's chief concern is for the exterior to make a good first impression the museum will be a failure, as is the case with many continental galleries. Though the selection of a site is usually decided by the authorities alone, the actual position of the building and the grounds surrounding it need the architect's most careful consideration, especially with regard to protection from fire breaking out in neighbouring buildings, and the provision of the light best suited to pictures. Modern architects prefer the gallery-rooms lighted from the ceiling. On the Continent, as a rule, the gallery buildings have two or even more storeys: the pictures are in the upper rooms with skylights; the ground floor contains antiquities, sculpture, &c. The staircase leading to the upper storey affords a splendid opportunity for decorative treatment which would be out of place in the rooms, as the works of art themselves form a decoration which is better left to speak for itself. Visitors should be able to find their way with ease and not have to pass a second time through a room. There should be one entrance only. Dwellings are not desirable in museum buildings. Night attendants should be provided to make a circuit of the buildings at fixed intervals. It is desirable in buildings intended for temporary exhibitions to make provision for the pictures to be brought by lifts to the gallery-rooms. Well-lighted rooms for restoring and copying ought not to be omitted. Care should be taken to prevent the objects of art in a gallery suffering from dust, humidity, or sudden changes of temperature; exterior walls, therefore, should be made double. With regards heating, the best results are obtained by a low-pressure hot-water apparatus. This can be designed to meet all requirements, both as regards the temperature of the rooms and their ventilation. The air between the ceiling and the roof must not be shut up, and openings should be provided so that the air of the room can rise to the glass, and be exhausted there by ventilators. Gratings can be placed in the walls near the floor, where fresh air is obtained. The rooms can be lighted from the ceiling or by a window in a wall. Rooms lighted by the ceiling are suitable for large paintings of the Italian and Flemish schools; those of the Dutch school side-light is preferred. The author discussed the rules laid down by Magnus and his own system of measurement in order to find the right proportion of light space to floor space and to get the best result possible. He has found that a room is best if from 12 feet to 36 feet wide. Walls ought not to exceed 15 feet height. The opening in the ceiling is found to be best when half the floor surface of the room. To prevent the room being lighted too much, the upper part of the roof should not be glazed. If the dark space round the ceiling-lining is 5 feet wide, only the roof openings opposite can let the pictures, and the light from the openings at the side, which causes the annoying glimmering of the picture surfaces, is completely shut out. In a room with a height of 22 feet from the window is the limit where sufficient light can be obtained, and in such a room there should be one window. The glass-line should be 7 feet from the floor and the window run up to the ceiling. Rooms with a height of 20 feet should be 20 feet high and their length not exceed 100 feet.

A gallery-room should have restraint and repose, the colours should be quiet in design and colour, and the decoration be reduced to a minimum. The dado, which should be 3 feet high, should have a panelling of dark wood, left unpolished to prevent reflection on the mouldings. Instead of the ordinary picture-rods under the cornice a small moulding should be placed along the wall, into which hooks can be screwed and removed at will, or the lowermost moulding of the cornice may be so designed as to support the pictures.

The author went on to give some notes on important gallery buildings in Europe—that at Brunswick, built from 1883 to 1887 by Mr. Sommer; the gallery at Cassel (1871-7) by Mr. von Dehn Rothfelser, which stands unsurpassed; the Alte Museum at Berlin, built from 1825 to 1828 by Schinkel; the Kaiser Friedrich Museum, Berlin, built by Herr Ernst von Ihne; the National Gallery, London, spoilt architecturally by its low elevation, its insignificant dome and its pepper-box turret. Since the addition of the new wings and the central octagonal hall the author considers the interior arrangement of the National Gallery one of the best to be seen, and the lighting extremely well managed.

Having referred in more or less detail to Hertford House, the palatial home of the Wallace collection, the Alte Pinakothek and the Neue Pinakothek at Munich, Semper's famous Dresden gallery and the Hofmuseum at Vienna, the galleries at Brussels, Antwerp, and Mr. Cuyper's Ryksmuseum at Amsterdam, the author went on to describe the gallery buildings he has himself erected or designed. The City Museum at Amsterdam was built at a cost of 45,000*l.* from 1892 to 1895. As there was no architectural style peculiar to the nineteenth century, the building had to be suggested more or less by the fine art of the time when there existed a style of interest in Holland. This style he found in the Dutch Renaissance of the beginning of the seventeenth century. But he did not follow closely the examples set by former ages. In designing the details he went his own way, avoiding the copying of sculpture and of the curvature of mouldings from ancient examples. The central hall contains the principal staircase, which has a skylight with glass of a warm yellowish tone. Floors in the gallery-rooms are teak "parquet," the wood-work being oiled to show the beautiful grain. Originally the walls of the rooms were painted, but now canvas in warm tints, such as olive-green and deep red, has been put on them.

The author showed plans and gave a description of a house, which included a gallery-room, which he had erected for a gentleman possessing a valuable collection of modern Dutch and French pictures. Particulars were also given of a scheme for rehousing with greater safety the masterpieces of Franz Hals, which are now exhibited in the ancient town hall of Haarlem.

The paper was illustrated by a large number of plans and views of the various buildings described.

Sir L. ALMA-TADEMA, R.A., said art belonged to humanity, and architecture especially so, and it was therefore well to find a brother architect crossing the Channel to give his experiences in building. The paper which they had heard acquainted them with galleries on the Continent while they were spared the unpleasantness that was so often endured in crossing the sea. He for one had enjoyed the paper very much, and although in many ways he agreed with the lecturer, there were some points on which he differed. In the building of a museum there were two sides to be considered. One related to the architectural treatment and the other to the objects to be housed in the building. It was on this question that he differed with the lecturer, and he suggested that a museum should be adaptable for the exhibition of different objects. He reminded them that painters did not use top lights in their studios, for the reason that such lights cast shadows and hindered the artists in their work. The side-light was best; it was the light in which they saw nature and in which they passed their days. Pictures had their planes, and in a building erected for exhibiting them artists had a right to claim that the pictures should be seen under the most favourable conditions. Position was all important to the true effect of a painting, and Sir Laurence quoted an instance in which a picture painted for the town hall in Amsterdam was changed from its original position and the fine effect of the work spoiled. So, too, he said with Rembrandt's *Night Watch*, which was painted for a room with a side-light—the schutters' room. In order to reduce the risks from fire in museums, Sir Laurence would not allow the guardians of such buildings to have living accommodation on the premises, though there should be constant inspection during the day and night. Fireproof buildings began to be the fashion in the fifties, but in spite of all that was said in their favour, a museum constructed as fireproof for the province of Antwerp was burnt. In conclusion Sir Laurence said he was sincerely grateful for what he had heard in the lecture, and he asked the meeting to join with him in a hearty vote of thanks to their brother architect who came from the other side of the Channel.

Mr. J. D. CRACE seconded the motion. The paper, he said, had put before them some of the complicated problems which arose in the building of a picture gallery. If nothing else had been said but to lay stress on the fact that all pictures were not seen equally well by the same light, M. Weissman's journey would not have been taken in vain. There was a useful hint also in the suggestion that the difference of tone in pictures of varying styles should be maintained by suitable framing. In the pictures of the Dutch school, belonging to such a class as Teniers and Van Ostade, &c., the low tone of colour gained infinitely by the employment of a black frame, with a small amount of gold to separate the picture from the frame. One of the great charms of those works was the extraordinary knowledge they showed of interior and atmospheric perspective, which was carried to a height no other school ever attained. Regarding the floors of galleries, Mr. Crace said it must be within the memory of many of those present that Barry in the National Gallery introduced oak floors, with a white marble margin near the walls; but before two years had elapsed the marble was removed, owing to the objections against it as a reflecting surface.

Sir ASTON WEBB, R.A., said he found himself very much in agreement with many of the points in M. Weissman's paper. He thought painters were rather difficult to please in regard to picture galleries and the way in which their works should be seen, though he suggested architects should endeavour to bring together the various views expressed by painters as to the best way of exhibiting works of art. The paper had referred to the circulation of visitors in galleries, and the point was an important one, for Sir Aston Webb said it was rather tedious and annoying after having gone through galleries with an enormous number of even beautiful works, to be compelled to return the same way in order to leave the building.

Mr. H. H. Statham, Mr. Alfred East, A.R.A., and Mr. Reginald Blomfield, A.R.A., also supported the vote of thanks.

WESTMINSTER CATHEDRAL.*

(Concluded from last week.)

The Sanctuary Dome.

WE are now in a position to examine the eastern dome, that differs in several respects from those of the nave. Unlike the latter, that seem to rest on the flat roofing of the church, the dome of the sanctuary emerges gradually out of the substructure—the extrados of the pendentives forming a pyramidal series of offsets or steps that follow the plan of the dome. The reason for thus exposing the pendentives outside was to limit the height of the supporting walls on the north and south, so as to give greater elegance to the eastern turrets, and to bring this part of the building into closer harmony with the choir. To further this object the vaults over the organ galleries are also exposed, the whole group presenting a subtle gradation of parts more Oriental than the rest of the building, and perhaps more expressive of the internal arrangements. The abutment for the main supporting arches of the sanctuary dome is provided by the staircase turrets on the east and by the transept piers on the west, while for the dome itself abutment is provided on the north and south by the vaults over the organ galleries, on the west by the dome of the nave, and on the east by buttresses built on the wide supporting arch that forms part of the vaulting to the choir; these buttresses are stiffened by the outer wall of a passage-way that passes through them to provide communication between the staircase turrets. The circle developed by the pendentives is 52 feet in diameter. On the closely boarded centring for this dome other centring had to be constructed for the window openings, the reveals of which represent a series of counterforts all round the dome. Centring had also to be constructed for the wall of the drum or circular podium, designed to disguise the counterforts and to protect the glazing from the drainage of the dome. The cavities between this wall and the shell of the dome are covered by slabs of concrete, weathered to a sunk gutter or channel near the outer edge that conveys the water to projecting spouts or gargoyles placed between the windows. The flat of the drum is covered with asphalt that passes partly up the dome under the outer covering, as before described. The exposed vaulting and the pendentives around the dome are also asphalted. The wall of the podium is cemented.

* A paper by Mr. John A. Marshall, read before the Architectural Association on April 12.

All cavities are ventilated by drain pipes communicating with the outer air.

The Crypt and Choir.

It would be convenient now to inspect the upper part of the choir, but we had better perhaps descend by one of the eastern turrets and begin at the bottom—on the foundations of the church, in fact. The floor of the choir is some 13 feet above that of the nave, so it was almost impossible to avoid the formation of a crypt, only a very slight excavation being necessary to get the required height. The depth of this excavation was, however, limited to level below which it was impossible to go by an existing platform of concrete, about 9 feet thick, that extends over more than half the site and served as the foundation for the earlier building. As the top surface of this platform practically the floor of the crypt, the architect was anxious to dispense with footings around the apse inside—a slight departure from the Building Act that was graciously permitted; but on the outside footings were provided, though they were not a structural necessity. At that time the footings were covered by the ground that rose above the floor of the crypt, but a subsequent alteration of the level led to their exposure, and they are now again concealed by a retaining wall that forms a low circular podium between the buttresses.

The eastern termination of the cathedral suggests the Romanesque or Lombardic style—if you will—of Northern Italy: the crypt opening into the church, with the retaining wall above, closely following St. Ambrogio's, Milan; the open colonnade under the eaves, the timber roof of the vaulting, are all familiar features. The huge buttresses, however, give distinction, and resist the pressure of the vault having a span of 48 feet. Up to nearly half the height this vault is a solid mass of brickwork, rough-corbelled over to the curve and faced with concrete. Above this level the vault is a concrete shell 18 inches thick at the bottom and 12 inches at the crown. A retaining wall of concrete is built on the haunches to receive the counterforts, or sleeper walls, on which are placed the principal trusses of the roof. The buttresses of the apse rise to the height of the retaining wall, and the two are connected by massive concrete lintels, forming a gallery across the gallery, behind the buttresses. The galleries are covered with concrete slabs, cast *in situ*, that form a flat around the roof. To prevent the arcades of the gallery being pushed out by the expansion of the concrete the flat and the lintels were kept clear of the brickwork until the concrete had thoroughly set; the joints were then made good. The retaining wall above referred to was raised a little above the flat, to form a curb, on which were placed the wood plate for the rafters. The asphalt covering of the flat is turned up the curb and under the plate, the joint being covered by the lead apron flashing of the eaves. The roof is ventilated by drain-pipes, that pass through the retaining wall to the gallery. To convey the water from the asphalt flats throughout the building to the rain-water pipes a dish is formed in the concrete, and at the bottom of the dish a curved length of glazed earthenware drain-pipe is built in, with the socketed end upwards, so that the asphalt could be turned down or dressed into the socket. All rain-water conductors that are built into the brickwork are formed of glazed and socketed earthenware pipes.

But we must not linger over these details, neither have we time to ascend the campanile; we wish, however, before closing this section of our subject, to draw your attention to two singularities in the construction that call for some explanation. Firstly, Why should the vaulting in some cases be entirely of concrete and in others entirely of brick? Secondly, Why should some of the vaulting be protected by extraneous roofs while in other places the surface is fully exposed to the weather? Obviously, when the shell of the vaulting is of a graduated thickness and curved on plan concrete is the strongest and most adaptable material to use; the complications of groin vaulting are also most readily cast in this material. So we find, for the pendentives and the domes, for the vaulting of the choir and chapels, for the more complicated vaulting of the crypt, aisles, baptistery and porches concrete has been used; but for the vaulting of the transepts, and the corresponding vaulting of the triforia, brick is the material employed, in order that the deep soffits of the brick-supporting arches in front may appear as part of the vaulting behind and the line of junction between the two should not show, thus insuring a uniformity of surface texture until the unaffected dignity of the interior is impaired by the application of something more assertive and restless.

Respecting the contrariety of the roofing, it will be as sent to you as it was to the architect that a timber roof the nave and sanctuary, even of low pitch, would have uncouth and harsh; such a roof would also have been monplace, whereas these parts of the building have a distinction not displeasing and most interesting, as they do, from the mighty and unbroken podium led by the lateral chapels, they appear disdainful of section and defy the elements.

But there is a law of contrast as well as of analogy; the variations of this law are, however, easily exceeded, and a careful eye is necessary to prevent the intrusion of distant elements. At the Westminster Cathedral the most interesting instances of its application are afforded by the pinnacles and by the roofs and turrets of the transepts and choir. Structurally it would have been quite possible more consistent to have exposed the vaulting outside throughout the building, and we can imagine what the effect would be. But the Greeks did not always expose their temples to the cold; they appreciated, quite as much as we do, the charm of the rippling garment; even Aphrodite was veiled the luxury of a pair of sandals. And so, at the Westminster Cathedral, the rounded surfaces of the vaulting are not everywhere exposed but discreetly concealed in places by extraneous roofs suggestive, in a measure, of the East beneath.

A piquancy and an interest are thus imparted to the design; we may theorise about discordant elements, but are forced to acknowledge the refining influence of the architect's skill.

When we consider the execution of this great design—way in which the various materials have been put together—it will be admitted that the extreme accuracy and finish of the work are in striking contrast to that spontaneity and directness of purpose so evident in the Christian architecture of bygone times. These early buildings testify to a readiness of execution, resulting in a variation of style, quite unattempted, yet interesting and beautiful; we like to think that this is not entirely due to the lapse of time. We also like to believe, though it may not be true, that when the ancient workman was bedding a stone, or laying a brick, or driving a pin through a tenon, he was not ashamed to finish these slight operations before responding to the imperative call of the foreman's whistle. Nowadays, it would seem, a man may not do this, his work is so much a fascination for him; at the shrill note of the foreman the implements of his toil drop from his hands, and he rushes from the scene as for his life. Under these circumstances the architect feels in the more tranquil atmosphere of his office—when the sublime and the beautiful are not forgotten—he must make for every stone and every brick throughout the building; nothing must be left to the workman's discretion; the genuinity; the serenity of the execution must not be impaired, even by a putlog hole, and this reminds us that no putlog holes were permitted outside the cathedral, where the scaffolding was arranged as for masonry. The extreme precision of the execution just referred to—if it does not only betray the hand of the workman—is certainly evidence of Mr. Bentley's desire to soften down the asperities of architectural design. Anything harsh, uncouth or "out of place," as he termed it, was always avoided; and if this carefulness sometimes led to a lack of vigour or stiffness, it can truly be said that the mass of his buildings never frittered away, the dignity of an unbroken roof, the surface of the walling was left unimpaired, the construction was faultless, the detail telling, yet refined.

Having now dwelt on some of the most salient features of the construction, some reference will be expected, in a design with so comprehensive a title, to the internal decoration intended by the architect to form an essential part of the conception, but which unfortunately he did not live to carry out, and scarcely commenced. When Mr. Bentley received instructions to design the cathedral he had already been out of this country, certainly not to "the land of the citron blooms." He then felt it his duty to see for himself those incrustations of marble and mosaic so lovingly described by Paul the Silentiary and John Ruskin. He did not, however, cross the Adriatic nor visit Constantinople. He had realised his powers, and was therefore in a position to discriminate. He took with him a small notebook, but, excepting four plans of churches, it came back empty. He had neither time nor inclination for mechanical details that would have dispelled the charm, as it did eventually for Ruskin in Venice. The Italian tour did not determine the style of the cathedral, though it confirmed it.

The first sketch plan, made after the architect's return from Constantinople, suggests, in parts, Sta Sophia, Constantinople, though Mr. Bentley never saw that building. The final plan shows as we have seen the influence of St. Mark's, tempered by an ideal he had made his own. Mr. Bentley's suggestions for the revetment of the interior show, as might be expected, an appreciation of the principles underlying the application of marble and mosaic as exemplified at Venice and at Ravenna. The well-defined line of demarcation between the two materials at a uniform level; the high and narrow slabs, rivetted to the walls and piers, and "opened out" so that they could not possibly be mistaken for solid masonry; the strips or facets that roughly follow the curves; the extreme thinness of the veneer, exposed at all salient angles; and, above all, the vast expanses of sheeting, due to the unbroken wall surfaces and the massiveness of the piers, undisturbed by mouldings, and made more impressive by the insertion, at rare intervals, of choicer slabs and by the brilliancy of carving, these are some of the qualities we associate with the ideal type of marble revetment. This being so, it is evident that the essential features of Mr. Bentley's plan scarcely afford scope for a full development of this type. The subdivision or multiplication of the piers, and the lack of unbroken wall surface on the ground floor demanded a treatment on independent lines, that may perhaps be described as a compromise between the Byzantine and the Renaissance.

Another marked divergence from the Byzantine type—in an opposite direction—is seen in the sparing use of columns for the gallery arcades, resulting in a wide intercolumniation, again in favour of the Renaissance. But if the piers and walls do not present an ideal field for the application of marble, this cannot be said of the floor space, where unbounded facilities are afforded for that most essential feature—from the architectural point of view—a marble pavement throughout the building. The value of the marble paving in relation to the wall lining can be seen in the chapel of the Blessed Sacrament, and in the two western chapels of the nave. In the nave itself, a commencement of Mr. Bentley's scheme for the paving has been made by laying the narthex and the strips or borders between the piers and columns, so that these latter are spared the indignity of rising from a platform of wood-block flooring. The marble paving of the sanctuary, around the baldacchino, has just saved this immense canopy from a similar insult, though it can never compensate for defects due to the lack of Mr. Bentley's personal supervision. The same may be said of the organ gallery screens adjoining. Unfortunately, while the painter can rectify a weakness or a false note of colour by a stroke of the brush, the designer in marble is committed for ever to the first touch. His only safeguard is to remember that the doctrine of harmony and restraint applies to all the arts, and if an extensive palette is a snare to the painter it is a still greater entanglement to the designer in marble, whose best effects are produced by a limited range of colours. The most beautiful and varied material used by the architect is soon brought into discredit if misapplied or mixed up with other materials. The simple slabwork of a fishmonger's shop is more impressive than the incoherent displays so often seen in more important buildings, where the chief aim of the designer seems to have been to destroy those very qualities that give value to the material. But the intrinsic value of marble does not depend entirely on the beauty of the colour or the interest of the veining. Strength and durability must be considered, or the result, in our humid atmosphere, may be as transient—if not as beautiful—as a sunset or a smile. In the majority of instances the very nature of the material is against its permanency. The pasty magma and the infiltrated fractures, to say nothing of artificial "stopping," are the channels most infected by the destroyer. Indeed, the few sound marbles of good colour that can safely be used without restraint may be counted on the fingers. The weakest marbles, like certain persons, are often the most attractive; they should be reserved for occasional indulgence only. I will not weary you more than I have already done by attempting a description of the marbles used at the cathedral, especially in view of the fact that the subject of marbles in general has only recently been dealt with by those able exponents Sir Laurence Alma-Tadema and Mr. William Brindley. We may, however, be permitted to remind you that in the two western chapels of the nave Mr. Bentley initiated the principle of framing the variegated revetment with white marble only. Thus there is not that confusion of colour or workmanship, nor that rampant effect of the strings, cornices

and architraves that one so often sees when the reverse method is adopted. In a word, the effect is refined rather than bizarre. The respective merits of these two chapels cannot be considered apart from the mosaics, and if the chapel of the Holy Souls is the most concordant, this is because its mosaic decoration most nearly approaches Mr. Bentley's ideal.

The guiding influence of the architect is here strikingly apparent throughout, and Mr. Symons, who made the cartoons for the mosaics from his own sketches, has admirably followed the architect's suggestions, without that self-effacement that would have destroyed vitality. While not opposed to tradition, the work is as unfettered in style as the cathedral itself. If the general effect is satisfactory, the barbarity of the technique may be condoned.

These subsidiary parts of the cathedral may be regarded as experimental in view of the vast area awaiting decoration in the nave. For this Mr. Bentley left no suggestions—excepting details for the marblework. Some men get ideas very quickly, flashes of inspiration—a kind of radio-activity, and the thing is done. Without a moment's hesitation they rush in where angels fear to tread. No wonder their works look crude and unfinished, and will not stand the test of time. With others the idea grows or develops, they feel their way gradually, one thing leads to another, and ultimately to a solution of the problem. The result has entailed much labour, though it may seem to have been attained without effort—the work endures. This was Mr. Bentley's way.

Mr. H. H. STATHAM, proposing a vote of thanks to the author, said in one respect he was the right person to do so, for no one could be more in sympathy with the paper. They seemed to have got back that evening to real architecture, and not only architecture, but real building. The Westminster Cathedral was a composition of grand building on a grand scale, in which the whole construction was honest and solid and what it professed to be. When he saw frameworks of steel covered over with masonry, a very common sight in London, he was made melancholy, and it had been therefore quite pleasant to hear about work that was built in a different manner. While listening to Mr. Marshall they really seemed to have got to the essential points of a Mediæval building, and although they all regretted very much the death of the great architect of the cathedral, on the other hand they could believe he was a happy man to have such a work to carry out. Mr. Statham said he sometimes wondered whether the interior in its present state did not look finer than it would do when the surface was decorated. In conclusion, he proposed a hearty vote of thanks to Mr. Marshall for his able paper on one of the most remarkable buildings of modern times.

Mr. J. E. NEWBERRY seconded the motion.

Mr. ARTHUR KEEN said the paper was on one of the finest subjects that could be given to a London audience. When he considered such a remarkable work as Westminster Cathedral the idea came to him that good and sound architecture and building could only be produced by the principles of Mediævalism. The building most nearly allied to the cathedral in England was the church of St. Bartholomew at Brighton, built in brick, but treated in such fashion as to give interesting surfaces both inside and out.

The Bishop of ARINDELA, in alluding to the cathedral, said Mr. Marshall was ably carrying out Mr. Bentley's conception. As soon as he began the work they all felt that the deceased architect's mantle had fallen upon him, and they were quite confident how he would sustain it. In decorative work Mr. Marshall had already shown his skill in the wonderful gate and screen in the chapel of the Blessed Sacrament. All they lacked was the means to finish the structure. As regarded the decoration, he had every hope that if Mr. Bentley's traditions were adhered to it would be the proper completion of his work.

The North-Western Section of the Co-operative Union, representing 485 co-operative societies in Lancashire, Yorkshire, Cheshire and Derbyshire, at a conference at Accrington on Saturday approved the proposal to form a co-operative landowning association, with a suggested capital of 100,000l. The object will be to find an advantageous outlet for co-operative capital by acquiring suitable estates, and developing them wherever possible upon garden city lines.

ROAD CONSTRUCTION.

A CONFERENCE organised by the *Surveyor* was held at Olympia in connection with the Building Exhibition. Several papers were read by county surveyors on the administration and construction of roads, from which the following extracts are derived. All the papers are printed in full in the *Surveyor* :—

Need of a State Road Department.

By E. J. Lovegrove.

As far back as 1865, as the result of scientific investigation, tables were prepared in France for the guidance of road-makers in selecting their materials; and reference again to American practice, the Massachusetts Highway Commission, appointed in 1893, governed by three commissioners, with duly appointed engineers, is advised by geologists, and the same scientific advice is sought in this country.

The United States Department of Agriculture has rendered excellent service in the direction of research. For example, one of their most recent publications—*Journal of Agriculture*, 1907—gives the result of investigations as to the decomposition of felspars, and treats of the factors which mechanically and physically modify that decomposition. Results are also given of the cementing values of mixtures of granites or diabases with limestones and dolomites, and the relative solubility of these minerals. Research of this character is of the utmost value. The department also generally advises engineers in respect of materials that they propose to use for highway work.

In this direction the method in England, while essentially practical, is non-scientific, and a great part of the acquired knowledge of experienced road-makers is unrecorded. There is much to be done in the direction of research which would materially assist in the more advantageous selection of rocks for road construction and maintenance. Information is required as to the chemical and mineralogical composition of the rocks used, their structural porosity, cleavage, crushing strength, resistance to abrasion, suitability for treatment by waterproofing material, and the possibilities of obtaining better results by the use in combination of different classes of material.

An office of reference could preserve quarry samples and produce co-efficients of suitability for resistance to highway wear, with recorded notes of actual practice in macadam and all classes of permanent paving. In connection with this subject mention should be made of the valuable assistance which has already been rendered by the Geological Survey.

Too much stress cannot be laid upon the necessity and desirability of the formation of a State highway laboratory, as it cannot be suggested that scientific research will do otherwise than materially assist in bringing about the best possible result in the construction and maintenance of the main and local highways of the country, and this phase of the question could be dealt with on its own merits as distinct from the formation of a State road department.

Design and Construction of City Roads.

By E. B. B. Newton.

Where there are tram lines a width of at least 12 ft. on each side of the track is desirable.

Camber.—The following remarks refer to level roads. For roads with a longitudinal fall, from a mathematical point of view only, the camber should be greater than in a level road; practical considerations require less. Camber of itself does not make a road more or less slippery, but may intensify the effect. Nothing will justify a road being unsound; such a one will be greasy often, but a smooth one occasionally. Therefore, as sufficient camber is essential at present if a road is to be sound, the lesser will be a proper, but not an excessive, camber is obligatory.

The by-laws for new streets require a camber of between $\frac{3}{8}$ inch and $\frac{1}{2}$ inch for each foot in width. For granite macadam and flint gravel carriageways at a point midway between the summit of a channel and the gully, the authorities favour a camber of $\frac{5}{8}$ inch. For granite sett roads about $\frac{1}{2}$ inch of camber, wood roads about $\frac{3}{8}$ inch and asphalt roads about $\frac{1}{4}$ inch, properly set out, though low, are adequate and assist the vehicular traffic.

As usually set out the haunches are too steep and the centre too flat. A cross-section formed of two straight lines is not practicable. The usual circular arc causes the surface to be uneven, as previously mentioned.

Mr. Deacon recommended an approximate hyperbola. Dividing the half cross-section into four equal parts the

se to be given at one-quarter of the width from the hannel is .35, half-way .65, three-quarter way .81 and at the centre 1. The author's rule is a mean between a straight line and a parabola—*i.e.* .33, .63, .85 and 1 respectively. The figures for the usual circular arc are respectively .4, .75, .94 and 1, which shows its defects. If the cross-section of a level road have a small camber the longitudinal fall in the gutters causes the summit of the gutter to be early level with the centre of the road. To avoid this, asphalt is best laid sometimes with an undulating surface longitudinally.

A good foundation is imperative, and for the surface paving the choice of a material depends on local requirements. Wood holds the field perhaps at present. Cork may prove useful. Asphalt must be kept quite clean to be practicable. Tar paving is still uncertain for streets with more than the lightest traffic. Flint gravel has little beyond cheapness and noiselessness to commend it, but it is perhaps the less greasy of all roads. Setts of igneous rocks have numerous points in their favour, but are too noisy as a rule. Some special setts, and perhaps Kleinpflaster, etc., are not quite so noisy. Setts of stratified rocks are little used in cities. Of the igneous rocks for macadam choice must be made of a material which will wear "gritty" and not into a very sticky or clay-like compound with water. As to blinding, its quantity is best minimised, but in the majority of steam-rolled roads it is indispensable, and even for patching small holes in cities various circumstances render its use almost essential. Creosoting wood blocks gives a greasy surface, but its many advantages make it desirable even in the case of hardwood blocks.

An imperfect scheme well executed may be better than a good one badly administered. Only "money will make the mud to go." When a road is dry there is little danger of deslip. Absolute cleanliness of road surfaces removes the danger of slip, but it cannot prevail with excreta, dust, mud and sludge from broken stone roads and soot, &c., in the air. To be clean, the roads and their neighbours must be non-friable and well shingled.

The proper use of water in sufficiently large quantities will keep the roads non-slippery, but the London County Council will not let us keep clean our streets by means of unlimited quantities of water and flushing direct into the sewers, and the washing of wood roads at night is not always advantageous, especially in the winter time, quite apart from the danger of frost.

In cities a proper system of scavenging by orderlies is essential, with frequent receptacles into which the mud, etc., may be swept during the day and cleared away at night. It is obvious that in busy thoroughfares such mud collection during the day is out of the question. Judicious shingling will always keep a road non-slippery, but as fast as the shingle is ground to a paste with moisture the sticky mud must be removed and broken up by the addition of more shingle. This may create an unpleasant state of affairs occasionally, but oftentimes it is the only practicable remedy. Regular shingling of creosoted wood roads is necessary. Shingle preserves its grittiness far longer than igneous rock chippings, which soon grind down into a pasty mud. All should pass through a $\frac{1}{4}$ -inch or $\frac{3}{8}$ -inch square mesh sieve. One objection to flint shingle is that it cuts the rubber of tyres, but the tyre makers cannot grumble at this: owners are saved from side-slip and the few people who prefer igneous rock chippings are not likely to be faced with a deficit in their favourite grit, so nearly everybody will have some comforting reflection if we pin our faith to water and the material which has proved so useful since prehistoric times.

The Uses of Tar.

By A. Dryland.

For many years tar concrete has been used for roads, but until recently has been principally confined to providing surfaces for highways of light traffic in towns. The author, over twenty years ago, converted several miles of boulder-derived narrow streets in a seaside town to tar-macadam roads composed of broken flints from the sea-shore and burnt shingle obtained from the same source. Although the materials were by no means ideal, the purpose of providing a clean and comparatively noiseless roadway was served, and with annual surface dressings of tar and fine shingle and small repairs those roadways are still, I believe, good and efficient. In several seaside towns tar concrete compounded of limestone has been in successful use for many years as a road material. More recently tar slag has been largely used, and with a considerable, although I

believe varying, degree of success. Experiments on a considerable scale have been made with basalts, granites and quartzites as the aggregate for tar concrete. With some of these the author is aware there have been failures. I hope the discussion of this paper will elicit the experience of road engineers upon the suitability and durability of all these materials for tar concrete. It has always appeared to the author that the adhesion of the tar to the aggregate was the secret of success in tar concrete. A good deal has been said and written about the "impregnation" of the material forming the aggregate by the tar. The author would like to elicit opinions as to this impregnation, his personal view being that a material that is sufficiently porous to absorb gas-tar to any considerable extent is not of a sufficiently durable character to withstand any considerable traffic. The author's view is that the principal requirement is a hard material which breaks with a sufficiently rough surface to form a good adherence for tar. Many of the hardest and finest-grained road materials are, in the author's opinion, unsuitable because of the clean smooth surfaces left by fracture.

As to the preparation and laying of the concrete, the following are, in the author's view, essential points:—

1. An aggregate of the character before suggested, free from dirt or dust, with all moisture expelled by artificial heat.

2. Well-boiled gas-tar, that known as "distilled tar" being preferable, applied to the heated aggregate at a temperature closely approaching boiling-point.

3. The thorough admixture of the ingredients in such proportions as will insure the coating of every particle without an excess of tar, the quantity needed varying with the kind of material and the gauge.

4. The ripening of the material previous to laying for a period of four to eight weeks in bulk.

5. A firm and true foundation.

6. A coarse aggregate for bottoming, not less than $2\frac{1}{2}$ -inch gauge, and topping not smaller than $1\frac{1}{2}$ inch for roads having any considerable traffic, with a total thickness of 4 inches at least.

7. The material should be laid on a dry surface, be thoroughly rolled, and receive a top dressing of a small amount of clean stone or slag grit.

Varying success has attended the use of tar concrete, but the author thinks when it has not been successful it has been due to want of attention to some of the above-mentioned details, or to bad weather interfering with the work when in process of laying.

There are, no doubt, limits to the ability of the best tar concrete to withstand traffic, just as there are to the best ordinary macadam. In the author's opinion it is more likely to be a success on open roads than in damp or perpetually shaded situations, excess of moisture being deleterious to the life of the tar.

By tar grouting the author means the use of tar in some form in place of the usual slurring of ordinary macadam roads. It has been used with considerable success, especially when followed shortly after by a surface dressing of tar and grit. It is of the utmost importance that the whole operation of laying the macadam and the grouting should be performed in dry, warm weather, when both the road and the material are perfectly dry, and the metal should be firmly consolidated before the tar is applied. The author has seen successful results obtained by this method with a top dressing of clean $\frac{1}{4}$ -inch basalt chippings.

Under this head a reference might be made to the system of spreading the metal upon a layer of fine and rather moist tar concrete and rolling until this is forced upwards as a grouting. The author has not seen this carried out, but sees no reason why it should not meet with considerable success, especially if followed by a top dressing.

For tar-painting and spraying a very dry road is essential and hot weather a great advantage. Moisture in the road surface will prevent proper adhesion of the tar. A newly-coated road surface is also necessary to any considerable measure of success. Once the surface had become worn and compacted the tar cannot penetrate sufficiently, and a thin film only is formed, which is destroyed by wet or frost.

Another most important matter is the thorough removal of dust from the surface and between the stones, to permit a sufficient key. All those who have had much experience in the application of tar know that it refuses to penetrate fine dry dust, and will realise the importance of thorough brushing. It has occurred to the author that if a suction process, similar to that in use in the "pneumatic cleaner,"

could immediately precede the application of the tar it would be advantageous. Perhaps some of the designers of tar-spraying machines may develop this in some practical form. The deeper the penetration of the tar the nearer the success of the process of tar-painting or spraying will approach tar-macadam, and the removal of the dust to a good depth is essential to penetration. Attempts at injection by force will, in the author's opinion, fail unless the dust is thoroughly removed.

Non-Skidding Road Surfaces.

By Douglas Mackenzie.

The primary necessity in selecting a material for a non-skidding road is to have a compound surface composed of two or more substances, differing in the degree of hardness, but these materials must be so finely divided that the road is sufficiently smooth for perfectly free rolling. The coefficient of friction on such compound surfaces is very high, amounting to as much as '8, but a further consideration of equal importance is that none of the substances of which the surface is composed should be able to form grease or a lubricating substance under the attrition of traffic.

Granite is an ideal substance for this purpose, because it is composed of crystals of different materials differing in their degree of hardness, but it is impracticable to make roads of granite perfectly monolithic—that is to say, in complete slabs—the full width of the road. In order to make it practicable to construct a granite road the material has to be divided into blocks of a sufficient size for convenient handling.

The most perfect granite surfaces are to be seen in Hamburg, where large setts are used, cut with extreme accuracy, so that the surface is perfectly flat and the joints are so small as to be practically indistinguishable. This is quite a different class of road to the granite sett roads in our English towns, where the surfaces of the individual setts are very much rounded, and the tyres of wheeled vehicles, instead of rolling smoothly, have to bounce from sett to sett. Granite roads made with perfect setts are almost noiseless, the only sound being due to the hammer of horses' shoes, and as this antiquated form of haulage is steadily reduced the noise will be inappreciable.

An approximation to this form of granite surface—very much cheaper—is that employed on many of the German country roads, and which is known there as "Kleinpflaster." It is introduced into this country under the title of "cubette paving" or "durax paving," and is composed of small setts laid at random, and broken by special machines to about $4\frac{1}{2}$ -inch cubes. As the joints are none of them square to the direction of motion, the wheel is always riding on two or more of them, and does not jump from set to set. Consequently the wear on these setts tends to smoothen the road instead of roughening it as with common town setts.

Next to the first-class quality setts employed in Hamburg the best surfaces are obtained by breaking granite to about $1\frac{1}{2}$ -inch cubes, and binding it by means of an elastic matrix. It is, however, necessary to remember that the interspaces between the pieces of broken granite should be very small, and therefore the $1\frac{1}{2}$ -inch granite should be mixed with some $\frac{1}{2}$ -inch, some $\frac{3}{4}$ -inch and some granite dust, so that the quantity of matrix required is very small and the joints between the pieces of granite in the road surface will never be more than $\frac{1}{8}$ -inch under the most adverse circumstances. There seems to be a great difficulty in getting tar to adhere to granite, and so the tar has to be treated by distillation and also by the addition of various substances so as to considerably alter its nature. There are half a dozen such materials now on the market, and they will not only adhere to granite, but they are unaffected by English temperatures and do not become soft in summer and brittle in winter as is the case with untreated tar. These materials give an exceedingly good surface from the non-skidding point of view, because not only do you have the advantage of the compound nature of the granite, but you have the addition of another substance of a different degree of hardness in a sufficiently fine state of subdivision to give you the ideal roughened surface. It is also practical with such a matrix to use limestone in a state of fine subdivision where limestone is much more easily obtained than granite, but this is not quite such a suitable substance, as finely-ground limestone has certain lubricating properties, and therefore the mud arising from this surface in wet weather makes a nasty slippery grease.

Great objection is raised by some councils to the cost of improved roads made on this system, especially for country roads, but it must be remembered that a great deal of the

deterioration of country roads is due to the effect of weather instead of traffic, and if a thoroughly waterproof road constructed in the first instance it is absolutely weatherproof, and therefore does not deteriorate from any other cause than the attrition of passing traffic.

I have already mentioned that one source of skidding, due to the action of gravity when the surfaces are incline and with a properly waterproof surface the water will run off with much less camber than the old-fashioned road. Probably a camber of 1 in 50 will be quite sufficient for these roads, and therefore the skidding due to the pull of gravity towards the gutter need not be at all a serious matter. The mistake has been made in some parts of the country of adopting waterproof roads with the same road contour as that previously in use, but one of the great advantages of modern materials is the reduction of the camber which they will permit.

Road Bridges.

By Howard Humphreys.

As bridge design to carry self-propelled traffic occupies more and more attention, I trust you will be with me if I make one or two suggestions, especially with regard to arches.

In the first place, and generally, it is a mistake to use iron or steel girders where it is possible (even at a slight excess of cost) to use good brick, stone or properly designed armoured concrete.

With regard to arch bridges. In this class of bridge little attention has been given in the past to the ratio of rise to span. I have had to determine the direction of the thrust line in very many bridges of this class, and, speaking broadly, the conclusion I have come to is that the strongest form is that in which the ratio of rise to span varies between one-quarter or one-third to one, as then the arch realises its best theoretical form under ordinary loading, namely, that of an inverted catenary.

In the construction of the arch itself the fact is often overlooked that when loaded such arch may be considered as a special condition of a "bent column." No one would think of building a vertical column of brickwork to carry load without most carefully bonding the courses together, but moving loads acting upon a bent column have far more tendency to separate the rings of brickwork than dead moving loads have to cause severance between the courses of an unbonded vertical pillar. It would seem, therefore, as though there was overwhelming reason for bonding arches. I am aware, of course, that a difficulty will once present itself to your minds, namely, that in small radius bridges the joints at the extrados of the arch will be exceedingly wide if my suggestion is followed, but when the radius exceeds 14 feet this is not the case. Where the radius is less it is possible to build partly in rings, but with bonders through here and there.

My attention was originally drawn to this point by Mr. Richardson, the well-known engineer of the Severn Tunnel. He held, I think, that an arch built in vertical bond was about one-third to one-quarter stronger than one built in rings, and I see no theoretical or practical reason for doubting this conclusion. Arches should invariably be set in Portland cement mortar, not only on account of the great power of adhesion, but because it prevents permeation of water through the brickwork, and consequent erosion of joints.

Weakness sometimes shows itself in brick and stone bridges through the spandril walls being too light, and either bulging or sliding bodily outwards. There is a natural dislike to putting tie-rods with unsightly washers in new bridges, but it is quite possible to put in such tie-rods and conceal the washers under the facing course of the spandril wall. I know of no better preventive of bulging or sliding than properly-placed tie-rods, as the bonding of spandrils to the extrados of an arch is difficult and unsatisfactory.

THE NATIONAL GALLERY.

IN the report of the Trustees of the National Gallery for the past year it is said that at a meeting of the board on July 24 Sir John Tanner, on behalf of H.M. Office of Works, submitted plans for the extension of the Gallery at Trafalgar Square. These plans were approved, subject to a recommendation that larger lights should be provided where possible, for the ground floors, and copies of the plans, as amended and finally approved by the Directors,

have now been deposited with the Trustees. The importance of this extension for the proper exhibition of the collection is very great. Many admirable pictures are now hanging so high that they cannot be properly seen, and many examples of the Dutch and Flemish schools are too crowded to be appreciated. The twenty screens now in the room spoil the dignity of the rooms and seriously impede the supervision, while the light upon them is almost always too vertical for the pictures upon them to be properly seen. It is hoped that the extension will make screens unnecessary. The Trustees urge the importance of carrying out the enlargement of the building with the least possible delay.

Among the additions to the collections are:—"Lulli and the Musicians of the French Court," by Hyacinthe Rigaud; "Diana of the Uplands," by Charles W. Furse, R.A.; "Chaucer at the Court of Edward III.," by Ford Madox Brown; "Hero and Leander" (a marble bas-relief) by H. Armstead, R.A.; "Thomas Gainsborough, R.A." (a marble statue), by Thomas Brock, R.A.; "The Fortune Teller," by George Morland; "Lady Cockburn and her children," by Sir Joshua Reynolds, P.R.A.; "Venus and Cupid," by Velasquez; and twenty-six paintings by Italian artists. The Gallery in Trafalgar Square was visited by 9,387 persons on the free days during the year, showing a daily average of 2,750. In addition 41,952 persons visited the Gallery on Sunday afternoons. On students' days (Thursdays and Fridays) 63,371 persons were admitted.

The National Gallery of British Art at Millbank has been visited by 264,423 persons on the free days during the year, showing a daily average of 1,271. In addition 39,504 persons visited the Gallery on Sunday afternoons. On students' days (Tuesdays and Wednesdays) 48,207 persons were admitted.

The total number of students' attendances at the Gallery in Trafalgar Square on Thursdays and Fridays throughout the year was 16,245. Independently of partial studies, 5 oil-colour copies of pictures have been made, viz. 4 from the works of sixty-seven old masters and 381 from the works of twenty-one modern painters. Three hundred and eighty-four new students have been entered on the books during the year.

The total number of students' attendances at the Gallery of British Art on Tuesdays and Wednesdays throughout the year was 9,476; and, 251 completed copies of the pictures have been made in oil-colours, 123 in water-colours and twenty-one in pastel. Sixty-six new students have been entered on the books during the year.

ASSOUAN DAM AND THE TEMPLES.

An important despatch relating to the raising of the Assouan Dam has been received from Lord Cromer. Already it is said the reservoir has conferred enormous benefit on Egypt. Sir William Garstin estimates that the value of the lands already provided with perennial irrigation has been increased by no less than 24,510,000*£*, and that, when the canals now in course of construction are completed, this figure will rise to no less than 312,900*£*. The increased rental value is already 65,000*£*, and will eventually amount to 2,022,350*£*. The whole of this rise in value is directly attributable to the construction of the dam. In addition to this, the cotton crop, the value of which was estimated last year at 1,000,000*£*, has been secured. There is, it appears, no other alternative, but the raising of the walls of the dam over 23 feet unfortunately involves the almost complete submersion during a portion of the year of the temples of Philæ. Lord Cromer said he received a short time ago a letter from the Society of Antiquaries of London, in which they expressed themselves as follows:—"The Society feels bound to enter a protest against any scheme that would involve the wholesale destruction of historical remains, unless it be clearly demonstrated that the scheme is an absolute necessity for the well-being of Egypt, and that the same benefits cannot be obtained in any other way. Lord Cromer submits that the requirements very reasonably put forward by the Society have been fully fulfilled. No one can regret more than himself the necessity of bringing forward these proposals. On the other hand, he has no hesitation in saying that it would not be justifiable to sacrifice the present and future interests of the people of Egypt in order to save the submersion of the temples."

Sir William Garstin in his report says:—

"When many years ago it was decided to build a dam at the Assouan cataract, thus forming a reservoir which

involved the partial submersion of the Philæ temples, the reproach was brought against the Department of Public Works that it had selected this particular site without any investigation of the Nile Valley to the south of Wadi Halfa. It was also asserted that other places equally suitable for the purpose might probably have been found on the river whose selection would have obviated the necessity of flooding certain of the Nubian monuments. At the time that the project for Assouan was prepared an investigation of the kind proposed would have been impossible, as the entire region south of the frontier at Sarraas was in the hands of the forces of the Khalifa. Such a reproach can no longer be brought against the Department. The question before it is how best to preserve records of these ruins, and minimise the injury that must be done to them by their submersion. It is needless to say that every possible precaution will be taken to save them, and that the funds necessary for such an object will not be grudged by the Government. With regard to the measures that should be taken, I think I cannot do better than attach to my present note a memorandum written by Captain Lyons. His opinion will, I feel sure, carry great weight.

His principal suggestions are as follows:—An archaeological survey of Nubia should be carried out at the expense of the Government, and every effort should be made to render it as complete as possible. The different archaeological societies in Europe should be invited to co-operate with the Egyptian authorities in this work by sending representatives to assist in these researches. Wherever possible, the foundations of the monuments submerged should be reconstructed and consolidated, as was done in the case of the Philæ temples. Such repairs as may be considered necessary to insure the stability of their superstructure should also be undertaken. A thorough and complete examination of all the ancient sites, settlements and cemeteries which will fall within the limits of the raised water-levels should be carried out, and drawings or photographs sufficient to preserve a complete record must be made by competent artists. Lastly, the results of these investigations must be published to the world. I have no hesitation in stating that this programme will be adopted, and I trust that in this way the injury caused may be minimised as far as is possible.

With regard to the monuments upon the Philæ Island, which to many visitors form the chief attraction of the Nile journey, I propose to make a few special remarks. I have been informed that the question of moving these temples from their present site and rebuilding them upon a spot well above the water-level has been again raised. In my note upon "Perennial Irrigation," published in 1894, I suggested moving these structures to the adjacent island of Bigeh, at an estimated cost of 200,000*£*. This proposal raised a storm of dissent and disapproval from archaeologists, and the idea was consequently abandoned. I do not know by whom it has now been put forward.

Since this proposal was made the Government has consolidated the foundations of these buildings by underpinning them, carrying the masonry everywhere down to the solid rock. Their stability is now assured, and I have no hesitation in saying that they are safer than they have ever been since first constructed and far safer than the majority of the monuments existing in other parts of Egypt. There is consequently no fear of their being structurally injured by the raised water-levels. With regard to the inscriptions, it is not so easy to foretell what the effect of the flooding will be. It may, however, be fairly anticipated that those on the higher portions of the stonework, which have not been affected by the deleterious salts contained in the rubbish of the Coptic village which formerly covered their bases, will remain as clear and as sharp in outline as the marks cut on the old quay walls, which have been submerged annually for some twenty centuries. Of course, the accessibility of these temples—to the winter visitor—will suffer, and this is certainly most regrettable.

Anyone wishing to see them, however, can do so by visiting Assouan between the months of July and October. During this period they will be annually uncovered. I now consider that it would be a mistake to move these temples. There would be no gain to their stability. Their accessibility could only be slightly improved, and they would no longer stand in their original surroundings. Lastly, their inscriptions—which it is intended to carefully copy and record—would be endangered by such removal.

Another proposal has been made, namely, to build a watertight wall round the temples, high enough to prevent the water from obtaining access to them. I do not think

that this proposal is practicable. Such a wall would never be really watertight, and it would undoubtedly spoil the monuments from an artistic point of view, as it would preclude any possibility of their beautiful outlines contrasting, as they do at present, with the natural setting in which they were originally placed. I think, then, that it will be wiser to leave them as they stand.

I have already alluded to the regret that is felt by all those upon whom the unfortunate necessity has been imposed of recommending a course calculated to do injury to these picturesque and interesting relics of an earlier Egypt. By none is this regret more keenly felt than by me. I have repeatedly stated in my previous reports upon the subject that, unless it was proved that no other alternative was possible, I would never recommend the raising of the Assouan Dam, and the consequent further submersion of the Nubian Valley. I should certainly not do so now were I not convinced that it is the only course possible, and that the decision now taken by the Government is one that cannot be seriously challenged.

Captain Lyons, the director of the survey, in his report says:—Much has been done to preserve the ancient monuments of Egypt, but in the areas to be submerged not only such ancient monuments as exist, but all records of the earlier civilisation of the region, must be carefully and accurately collected and studied.

The work falls into three divisions:—1. The conservation of such structures as may be wholly or partially submerged by the consolidation of their foundations. 2. Repair and reconstruction of the upper portions of these where such is advisable. 3. The systematic study of the ancient structures, sites, settlements, cemeteries, &c. The first two of these will require the services of a capable architect, while the last will need the co-operation of students of archaeology.

In 1895 a survey of the Nile Valley on the scale of 1:100,000 was made from Assouan to Korosko, and the results were published in 35 sheets. Since then the cadastral survey has been completed, and accurate maps (scale 1:25,000) are available for the whole of the cultivable areas, and can easily be extended to include any outlying sites. It is most desirable therefore that the systematic study of the reservoir area should take the form of an archaeological survey of this portion of the Nile Valley, for which the topographical basis is already prepared. Certain well-known archaeologists have in recent years examined portions of the region, and their advice would be of the utmost value. On the previous occasion want of the necessary funds and the superior attractions of sites in Egypt probably prevented archaeological institutions from undertaking investigations in Nubia. It is to be hoped that the Egyptian Government may be able to allot funds not only for the necessary works of conservation, but for the prosecution of an archaeological survey of the region, with the aid of archaeologists whose studies have led them to explore such fields of archaeology as are represented in Lower Nubia, and the publication of the results.



Ozonair, Ltd.

SIR;—The attention of my clients, Messrs. Ozonair, Ltd., has been drawn to the fact that there is being circulated at the present time the prospectus of a company called "The Craig Ozonizing and Ventilating Company, Ltd." The prospectus, which is dated March 13, 1907, states that the company is formed to acquire from John Richardson Craig, jun., of 145 Bath Street, Glasgow, all his rights and title to and interest in the patent accepted for the United Kingdom, No. 16681, dated August 17, 1905. The prospectus in referring to what is probably the most important part of any ozonizer, viz. the electrodes, sets forth that "the electrodes have been specially designed to obtain from the silent discharge the highest possible efficiency in producing ozone from oxygen or atmospheric air," and reference to the specification of the patent proposed to be acquired shows that the electrodes are therein described as being made of sheets of wire gauze. No mention, however, is made in the prospectus of the fact that my clients, who are the owners of Letters Patent No. 4548 of 1903, gave notice on December 31, 1906, of opposition to the grant, nor of the fact that the result of such opposition

proceedings was that in the preamble to the claims Mr. Craig's specification the words, "I lay no claim to the use of wire gauze sheets in the construction of electroc in ozonizing apparatus" were inserted, and Claim 3, which laid claim to the electrodes, was abandoned.

It should also be mentioned that there is set out in the prospectus a report upon the patent by Messrs. Robert Brown & Co., of Renfield Street, Glasgow, and they are referred to as the well known patent agents. Further, contrary to what would appear to be suggested in the opening sentence of their report, no patent had been granted at the date of such report, the above-mentioned opposition proceedings being then pending.—Yours faithfully,

L. MELVILLE CLARK.

53 Chancery Lane, London, W.C.:

April 19, 1907.

GENERAL.

The Glasgow Institute of Architects at their annual meeting elected the following office-bearers for the year: President, Mr. James M. Monro; vice president, Mr. George Bell; auditor, Mr. Alex. Skirving; secretary and treasurer, Mr. C. J. MacLean. The various committees for the year were also appointed.

The Will of Mr. John Finnie, aged seventy-seven, Tywyn, Llandudno, Carnarvon, and of Cook Street, Liverpool, the artist, for forty-one years headmaster of the Liverpool School of Art, and before that for some five years in business in Newcastle as a glass painter, has been proved at 1,409/.

The Ancient Abbey of St. Mary at Buckfast, on the bank of the Dart, is being restored by the monks in memory of Abbot Natter, who perished in the s.s. *Sirio* off the coast of Spain last August. The community have resolved to work upon the old lines, and to fashion the new building with their own hands. At the present time some of the monks are busy facing the old stones and overhauling the foundations.

Selby Abbey is to be reopened after complete restoration on October 19. The work will cost, according to the estimate, 50,000/., of which 17,000/., remains to be raised.

The Annual Meeting of the Artists' General Benevolent Institution for the relief of distressed artists and the widows and orphans was held on Monday. Sir Edward Poynter, P.R.A., was re-elected president, and Sir Arthur Webb, R.A., was re-elected treasurer. It was announced that the festival dinner would take place at the Hotel Métropole on May 9. In the ninety-second annual report the President and Council congratulated the subscribers upon the continued prosperity of the Institution. The gross receipts in 1906 were 5,422/., 19s. 11d., the sum of 2,895/., 6s. 6d. having been subscribed at the last dinner. The amount of 4,326/., was distributed during the year among 203 applicants in sums varying from 10/., to 100/.

The Establishment Committee of the London County Council have had under consideration the question of the county hall, and a statement of the exact position of affairs in regard to it is in course of preparation. A hope was expressed on Tuesday that the committee would be able to lay it before the Council very shortly.

M. Ch. Sedelmeyer, the picture dealer, has arranged to have auctions of his collections in his galleries in the Rue de la Rochefoucauld, Paris. The English and French paintings of the eighteenth century will be sold on May 16, 17, and 18. The works of other schools will follow. The sale will end on June 14.

Mlle. Heuvelmans is one of the ten students who are engaged in the final competition for the Prix de Rome in sculpture, being the first lady who was considered eligible for the distinction.

The Curator of the Walker Art Gallery, Liverpool, is endeavouring to arrange a memorial exhibition of the work of the late John Finnie, R.E., in the Walker Art Gallery on an early date. He is especially anxious to trace examples of Mr. Finnie's early work in domestic genre and of the period during which he painted landscapes in the quasi-Raphaelite manner of Davis, Windus and Huggins.

The Special Committee of the Manchester Corporation appointed to consider the establishment of a work committee have reported against the project, because among other reasons, they believe it would increase the municipal debt and be a serious check to progress and discovery.

The Architect, April 26th 1907.



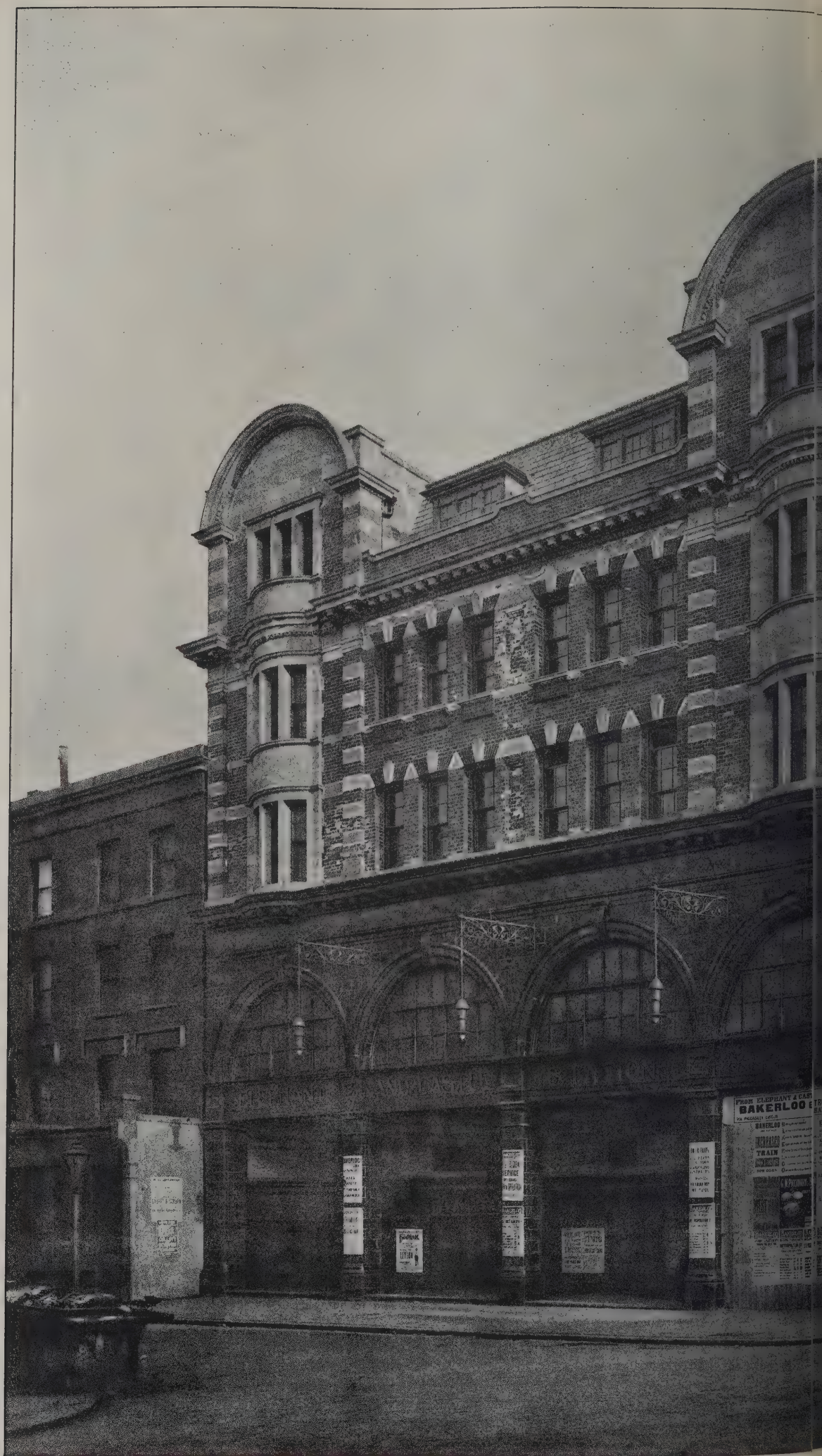


PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

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ALDWYCH THEATRE.

W. G. R. SPRAGUE, Architect



PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.



"INK-PHOTO" SPRAGUE & CO. L^{TD}. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

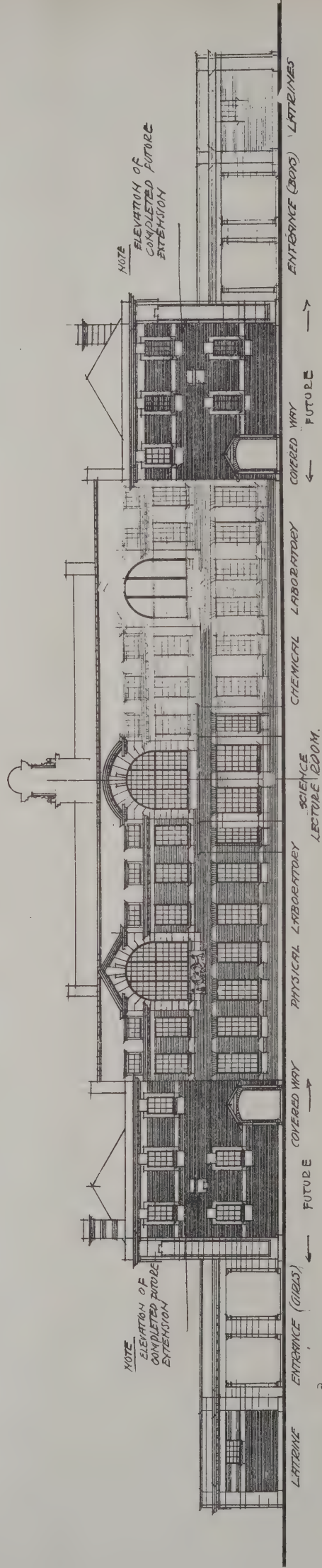




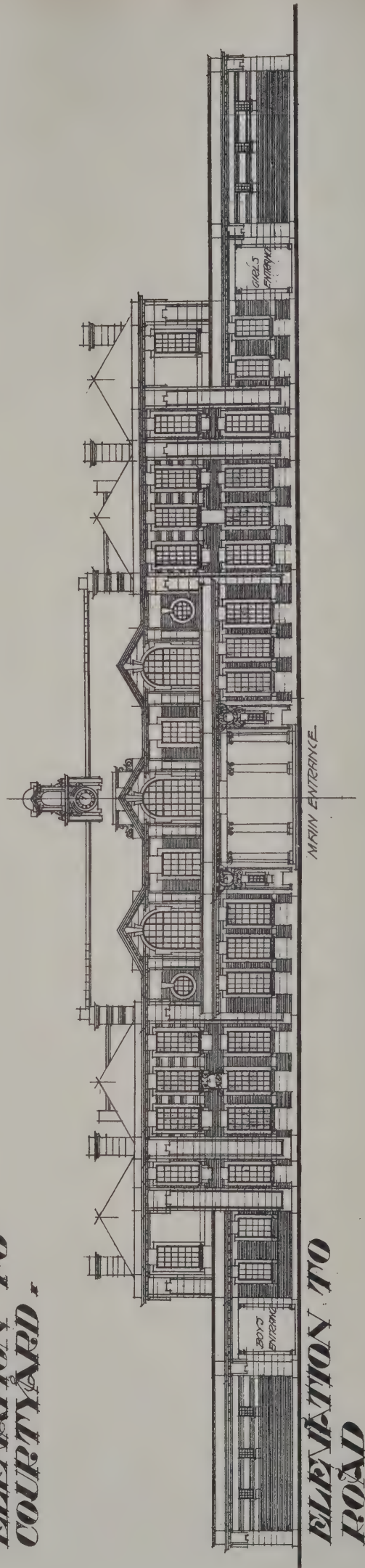
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TRIFORIUM, AND CLERESTORY: SOUTH SIDE.

Chie. Architect, April 26th 1907



**PLENTY TO
COURTARD.**





DESIGN FOR GOOLE SECONDARY SCHOOL.

By EDWARD CRATNEY.

The Architect.

THE WEEK.

letter which Mr. FREDERIC SHIELDS sent to the Mayor of Manchester, in reply to an invitation on occasion of the opening of an exhibition of the s works, merits a place in the archives of the ration. Mr. SHIELDS wrote:—"The generously terms of the telegram just received have cheered eatly, so that I cannot refrain from a more explicit ssion of thankfulness than my answering wire ted. Marvellous is it to me that this rich recog- should come from the chief magistrate and other representatives of the great city into which I was d, alone, a friendless youth, without a relative, to with the extremest poverty for long years. When ngth emerged from the depths, with the attain- of some small artistic skill, it was in Manchester st success was reached, and many names of ester men are cherished in my heart who en- ed me by the purchase of my works and the al of most faithful friendships. And now, again, he length of my sojourn in the Metropolis might ccount for oblivion of my being, Manchester es forth her friendly welcome to my works, and this day have rendered as friendly welcome to my had I been able to avail myself of her cordiality. cross my desire to respond to this invitation there en a stern 'It is forbidden!' is the one grief that s my happiness in the possession of the goodwill d this day from dear old Manchester, my foster-." Mr. SHIELDS was born in Hartlepool, but he his artistic career as a designer in Manchester, eral of his pictures were executed in that city.

OTHER public meeting has been held in Shrews- aid in obtaining funds for the restoration of the of the abbey church. A tender amounting to was lately accepted, but the rehanging of the d other expenses will increase the amount rl to 3,000*l*. Towards that amount a sum of was promised. The Rev. Prebendary AUDEN a interesting account of the origin of the building. he said, on February 25, 1087, that the great DE MONTGOMERY founded Shrewsbury Abbey. ere told that there existed at the time of the invasion a little wooden church near the side ver Meole, which flowed into the river Severn. sult by the great SIWARD, and was in possession er priest, ODELERICUS, who was one of the wise as and friends of ROGER DE MONTGOMERY. This as a man of property and importance, and he s patron to found an abbey upon the site of the wooden church, and volunteered to give his own r for the purpose. The idea was accepted, and on ay 28, 1087, ROGER DE MONTGOMERY went with a s retinue, in solemn state, to the little church ter, and there pledged himself to erect a stately its site, and to endow it with all the suburb of that lay outside the eastern gate. He laid his on the altar as a solemn pledge of his inten- e carried it out, and within the next few years ally abbey rose. Seven years afterwards (1094) as an old man and broken in health. He was e the time at the castle he had erected where rry Castle now stood, and after the manner of e decided to become a monk. He laid aside ta, and became a brother of the monastery he ounded. After a few days' illness he died, and ued between the high altar and the altar of the hel. Within the building there rested the ashes nom he might describe as one of the great race ous Salopians whom he believed they all de-

lighted to honour. Since that time the abbey had passed through many vicissitudes. It became one of the most important abbeys in the country; but afterwards it went through the dreadful time of Tudor spoliation, and was to a great extent ruined. In fact, as had already been observed, it would have been removed from the face of the earth if it had not been the parish church as well as the church of the abbey.

ARBITRATORS serve temporarily as judges of the High Court, and should be remunerated at correspond- ing rates. But officials of the Courts are disposed to adopt a different standard in dealing with the expenses of an arbitration. Last week an appeal was heard before Lords Justices MOULTON and BUCKLEY concern- ing an effort to cut down fees. The case arose in con- nection with the building of the Bexhill asylum. Messrs. LOVATT, LTD., were the contractors, and a sub-contract for plumbing was entered into with Messrs. S. MASON, LTD., which amounted to about 15,000*l*. There was a difference between the two firms respecting a sum of between 3,000*l*. and 4,000*l*. It was referred to Mr. GEORGE FENWICK, the surveyor, who decided in favour of Messrs. LOVATT. His account amounted to 536*l*. The hearing of the evidence occupied him during twenty- two days, for which he charged 10 guineas a day. Time was also spent in preparing the award, and it was also necessary to pay for legal advice. Messrs. MASON took exception to the amount, and it was reduced by the Birmingham District Registrar to 240*l*., which amount was confirmed by Mr. Justice RIDLEY in chambers. Mr. FENWICK appealed. Counsel said that the Registrar considered that the services of an arbitrator could be obtained for five guineas a day. Lord Justice MOULTON said it was of great importance that litigants should have the services of men of experience and of character in such cases, but they must expect to pay fair fees for such services. He did not think they could have got a professional gentleman of eminence to act as arbi- trator for less than the sum claimed. The fees charged by the appellant were fair for a person in his position in his profession. Lord Justice BUCKLEY concurred, and the appeal was therefore allowed. An investiga- tion which required over three weeks could only be conducted by a man of exceptional capacity, for with technical evidence relating to the details of plumbing there is no opportunity for those pleasant interludes which arise in ordinary Courts, and which allow of the relaxation of attention on the part of the judge. It is possible the services of a very young barrister might be obtained for five guineas a day. But no architect or surveyor of standing could afford to lose twenty-two days without fees of a higher amount.

THE name of the historical painter ARTHUR MÉRICE is not known outside France, but he was comparatively wealthy, and has made good use of his possessions. The house in which he lived and other premises in the Passage du Trône he has bequeathed to a philanthropic society, in order to be converted into four separate institutions, viz. a sanatorium for consumptives, a dis- pensary for the poor, a night asylum and "un fourneau économique." A sum of 800,000 francs is also left for upholding the establishments. The position in which the property stands is not entirely unsuited for a sana- torium. The Passage is confined, but it is in the vicinity of the Place du Trône, which is a fine open area well adapted to serve as a place of assembly out- side the barrier of the city on one side. It was there the great throne and triumphal arch were erected to receive LOUIS XIV. and MARIE THÉRÈSE after their marriage, and it must also have been one of the principal places of execution during the first revolution. Vin- cennes is also within a short distance of the proposed sanatorium.

ARCHITECTURE AT THE ROYAL ACADEMY.

IF considered, as the Royal Academy is generally, as a spectacle, the Architectural Room this year is unusually successful. In the preceding 138 exhibitions we doubt if so high a standard of draughtsmanship was ever reached as is now apparent. There are water-colour drawings of interiors which LOUIS HAGHE would have admired, and the majority show an absence of conventionalities which is satisfactory. There are only about two hundred drawings, but as many are so small as to appear insignificant by contrast, the exhibition may be said to depend for interest on about one hundred examples.

Another peculiarity is worth notice. Any ordinary visitor who took the trouble of comparing the list of exhibitors during a few years could hardly fail to arrive at the conclusion that a limited number of architects seemed to have a monopoly of the wall space. This year several new names are inscribed in the magic circle. Although they may not be connected with designs of a revolutionary character, they at least suggest that the committee for once at least showed a willingness to encourage men who hitherto were outsiders among outsiders.

Recently there have been indications to recognise important competitions by allowing several of the designs to appear. This year the "Palace of Peace" has its turn. It was wise to fix on that project. If tested by the list of prizes, England somehow did not appear to stand well in the competition. That, no doubt, might arise from having a jury who were governed by principles which were not valued among us. But when the fantastic design which was adopted was reproduced in the newspapers, people could hardly avoid thinking that the English designs must have been very inferior in quality if they could be surpassed by such a production. The eight or nine designs which are now in the Academy are enough to demonstrate that the English architects deserved more respect than was meted out to them. It is in a way to be regretted the favoured design cannot be seen without being formally exhibited (for no committee of the Academy would allow it to be hung through its merits), in order that the public could understand the peculiarities which captivated the jury. In fact, such a selection as occurred at The Hague is a satire on the system of deciding architectural competitions by the aid of jurymen, and it would have been more expeditious and quite as reasonable to draw lots, or shoot, or gamble for the man who was to have the prize.

The first of the Palace designs we see is one showing the detail of the chief entrance by Mr. J. C. CARTER, of Cardiff. It is a pity the whole design was not exhibited, for near the entrance the windows appear as if they were elongated by some force acting from above or below. The care taken with one part indicates that Mr. CARTER endeavoured to adopt a rather original treatment, which to some at least would make the Palace appear as symbolic. Mr. JAN F. GROLL evidently believed that towers and turrets would suggest the aspirations of the founders. Mr. S. D. ADSHEAD assumed a low building of Classic type would best serve for occasional congresses; but his treatment of details, although suitable to a novel building, will not win approval. Mr. JOHN BELCHER evidently acted as if he were preparing a design for a *bona-fide* syndicate in the City. He submitted geometrical drawings, and from those of the grand staircase and the longitudinal section, which are in the Academy, we can see that he avoided everything that could be considered as sensational. It is an example of modern Classic which would be pleasing if carried

out as suggested, but which would enable a millionaire to be gratified if he cared to invoke the auxiliary for its adornment. Messrs. PAGE & HALLEY suggest an ornate entrance and dome, but the contrast is strong between those parts and the plain window of the body of the building. Mr. CLIFFORD ELLIS' design is rather indefinite in the general effect, but the details may have shown more decision. The design by Messrs. WILLS, ANDERSON & COTMAN soon recalls the views of ancient Assyrian palace-temple. The cube appears to be selected as the unit, and the upper part is suggestive of an altar on which bloody offerings to Peace could be sacrificed. It is not one of the most interesting of the competition designs, but asserts itself among the whole collection in the room. Mr. H. T. HARE treats his design with unusual breadth to be seen in his Classic details. The ordinary windows of the room gain by flanking with emblematic figures in relief. The dome is raised and appears rather squat, but it may have been considered most suitable in a flat country. The colour of the design by Mr. A. W. S. CROSS might be taken as representing one of the palaces of art in the Champs-Élysées on some festive occasion. The column with its statue of gilded bronze appears to be a necessary part of the composition, although absent from the programme. The buildings appear at their best and are undoubtedly most attractive.

We must now glance at the ordinary work of the time as it appears in the room. Messrs. RUSSELL & COOPER show their "St. Pancras Central Library." The site resembled a truncated triangle at the corner of the thoroughfares. The building is low, and by employing a range of columns on the principal faces the design becomes an ornament to the district, apart from its utility as a building. Mr. HALSEY RICARDO's "Addison Road, Kensington," has attracted attention, and is often referred to as a model of adoption in our smoke-laden Metropolis. The design is liberally but not lavishly introduced with colour without. The style is more Italian than Modern, and the green of the garden is continued through the outer walls. In the interior hall there is colour in the lower part, but its attractiveness must make the upper part appear rather cold and incomplete. Colour is a foe to economy, in whatever manner it is employed. "Polesden Lacey, near Dorking," by Mr. A. M. POWNALL, on one face appears a long, plain, white building with external shutters of green to the windows, but the south elevation looks like eighteenth-century work. The "Courtyard of House at Witley, Surrey," by Messrs. FORBES & TATE, shows plain timber work which have a good effect. The "Proposed House at Camberley," by Messrs. POULTER, suggests a good example of a commodious building with large windows. It is a finesse about the drawing, especially in the window by which they appear to have some novel features. In the "Residence at Camberley" the window-hells are rather novel. The "Proposed 'Temple' School at Rugby School," by Mr. JACKSON, R.A., disintegrates in its parts; the roof is awkward, and spoils the effect of keeping with the tower or turret.

A "Villa at Antibes" is the only contribution by Messrs. GEORGE & YEATES, and it is "skied" by the building has an appearance of being in keeping with the place. The red roof and white walls stand out against the luxuriant vegetation. The two vases in the foreground have also an excellent effect. The Ground is so valuable within the City it is no wonder it is found more economical to substitute loft buildings for those which used to serve for business purposes. The "New Offices for the Northern Assurance Company, Lothbury, E.C.," by Messrs. E. MOUNTFORD & E. A. GREENING, corresponds with the latest accepted treatment. The ground storey is treated with semicircular windows, for the exterior in the Regent Street Quadrant is approved by architects if not by traders. There are three floors, with the

ter columns, a bold cornice and attics. "Wyphurst, Leigh," by Mr. R. BLOMFIELD, is a large house and is shown by a vigorous drawing in pen and ink. It is used in the walls, with occasional patterns of a deeper colour, and it could be taken as an Early Renaissance example. The "United University Club" shows a similar view from that of the illustration published last week. Some of the windows are large; there are "flags" and armorial shields which enhance the structural masonry of an admirable building.

Mr. BRIERLEY, of York, has adapted the arrangement of the "New Dining-Room at Normandy Park, Wiltshire," to accommodate paintings which already existed, and the panelling of the walls and ceiling has been adapted for a purpose which is not always visible. The dining is among the finest in the room. "Interior of a House in Northumberland," by Messrs. OLIVER, SON & WOOD, shows a gallery on two sides with a frieze on another wall. The whole is suggestive of a former age. Messrs. L. F. CRANE & D. F. BLOW show rows of small cottages around a green space at the end of a street, and the drawing reveals possibilities for landers which are not ruinous. The "Entrance Hall and Staircase, Redhill, Surrey," by Mr. S. W. GRANT, is a panelled composition which would serve in a future age. The "Study for the Courtyard of the Gatehouse of the Monastery, Caldey Island," by Mr. J. C. FERRIS, is marked by a desirable unity. The great arched way on one side is in keeping with the large arched windows of several lights, and the smaller windows also have arched heads. The curves form a contrast with the horizontal lines of the roofing and the vertical of the tower. Another panelled dining-room with a frieze introduced over sideboard is by Mr. C. ELIOT. The design for Hither Green Library, a one-storey building, is shown by Mr. S. TOWSE. The "Gaiety Theatre, Strand," by Messrs. E. RÜNTZ & FORD, is a presentation of the curved end and cupola, but the design fails to suggest the height of that part of the building. St. Peter's, Hammersmith, has been traditionally considered to be one of Sir CHARLES RESSY'S early churches, but he was not the architect. G. C. HORSLEY has designed a reredos for which oak panelling and painted decoration are required. The "Hall of Residence, University College, Reading," by Mr. C. S. SMITH, presents architecturally several buildings erected round a square with a fine entrance tower. The "National Telephone Exchange, Gerard Street, Soho," by Mr. LEONARD BAKER, is another example of the construction of semi-circular windows on the ground floor, with rectilinear windows on the upper storeys. Mr. O. B. HATCHARD shows from Khartoum a large coloured drawing of a proposed Design for Government Buildings in a "Tropical Climate." Khartoum and other towns in the Sudan are not remarkable for their native architecture, but it is to be feared the English administrators are not exacting about the styles of new official buildings. The design, happily, is not British, but rather it is or not more Indian than Egyptian is open to doubt. The "New Wing to Commercial Travellers' Hotel, Pinner," of which Mr. H. O. CRESWELL is the architect, is we suppose in keeping with other parts. A similar style is adopted and the colour will be subdued and pleasing if it corresponds with the drawing. From Mr. N. N. NELL is an "Entrance Front to House at Exbury." Mr. J. T. LEE'S "Interior of St. Margaret's, London," shows the chancel and parts near it. There are charming glimpses afforded within a confined space, of mouldings, panels and other details are elaborately worked. Mr. DARE BRYAN'S "Proposed Baptist Chapel" is a fine original. Grouped and massive columns are the chief features of the front, but their duty must be to support a small ventilator or a small window. Mr. E. W. ALLFREY has a pleasing "Design for a Library, Southwark," which, like many other designs of its class, had to be adapted to a difficult site.

(To be continued.)

THE SORROW OF CHARLES GARNIER.

DURING a period of forty years—or from the time he gained the great prize in the competition for the Opera House until his death—CHARLES GARNIER was one of the most prominent of the notabilities of Paris. He had all the qualifications for the position. Wealth, family influence and other inherited advantages have their value in France as elsewhere; but since the Revolution the belief in talent having the right to a career has been put in practice among Frenchmen to an extent which no other country in Europe has had the courage to rival.

CHARLES GARNIER was a true *gamin de Paris*. In his prime he could be described in the elder DUMAS'S words as "grand et découplé comme le lutteur antique, musculeux comme un Spartiate." In his youth he must have appeared as eligible to work as a wheelwright like his father. But his mother, having more insight, knew he was not fitted for such toil. She therefore sent him to one of the schools of drawing, and there he showed so much talent he was taken into an architect's office. From it the passage to the Ecole des Beaux-Arts was not difficult, and a young fellow who could design for a variety of businesses was not likely to lack employment. GARNIER was only twenty-three when he gained the Prix de Rome.

For some of the French students Rome is considered to be merely an official stamp of ability. The result is that, seeing how little is gained by such representatives of French art, many wise men advocate the abolition of the Villa Medici. CHARLES GARNIER profited by the example of his humble parents, and he worked as hard as any wheelwright of Paris. On his return he startled critics by the quantity of drawings which he had prepared, not to show his appreciation of ancient work or his competency to assume the position of ICTINUS or any other great architect, but simply to sell to dealers or amateurs. His friend EDMOND ABOUT compared the collection to the varied stock which the better class of Cheap Jacks brought with them to surprise provincial villages, and the artist was said to resemble the *débütantes* of the theatre who display their versatility not only by representing characters, but by singing, dancing, playing, &c. GARNIER was, according to ABOUT, not only endowed with ability, but he appeared to have ubiquity. His views comprised scenes in Rome, Venice, Florence, Pistoia, Genoa, Pompeii, Naples, Sparta and Constantinople. Then, like Maitre JACQUES, he could throw off the painter's blouse and put on the black frock coat of the architect, for in the same exhibition were twelve splendid drawings of restorations of French buildings in the kingdom of Naples, which were intended to serve for a history of the Angevin kings in Sicily.

GARNIER'S merriment was in those days as generally recognised as his skill in designing and drawing. Indeed, without that gift life would have been for a long time at least a burden to him. If ever a man who held the Prix de Rome was justified in expecting that his castles in Spain were to be surpassed by the structures for which he was to receive commissions in France, it was CHARLES GARNIER. But he had to submit to the lot of the dullest prizeman, for in Paris he could find no other employment than in a position corresponding to an English clerk of works. He eked out his pay by an occasional water-colour drawing, and two which were presented to Queen VICTORIA came from his hand. Fortunately for him the Empire, which was then at its zenith, required a memorial, and no form could be discovered which was more characteristic than a grandiose Opera House. The theatricalism of the Imperial system was not in keeping with that of the French classic drama, and the Théâtre Français served well enough for monumentalism. But a theatre in which the audience was intended to be as much a spectacle

as any presented on the stage, and in which all the arts could be combined to honour the *régime*, was as happy a thought as the *coup d'état*, and, as it happened, was more of a success than the conquest of Mexico. To the surprise of all but his young friends, CHARLES GARNIER's designs were unanimously selected in the second competition. The Government had the good sense to be decisive, and the works were commenced after an unusually short interval. GARNIER set about his duties with an impetuosity that could be compared to TINTORETTO's, and a number of artists who had studied with him in Rome and Greece showed their eagerness to loyally co-operate with him. PAUL BAUDRY, who, like GARNIER, had sprung from a humble class, and who might have been the favourite portraitist of the Imperial Court, cheerfully sacrificed not only his prospects, but we may say his life, in order that he might adorn the building of his fellow-prizeman. GUSTAVE BOULANGER, who could easily have rivalled MEISSONIER, preferred to work on a large scale as a wall-painter under GARNIER. The spirit of the time among one class of artists is suggested by the vigour and defiance of the figure of *The Dance* by CARPEAUX. With all the eagerness of artists and workmen the work was not finished when the fatal events of 1870 occurred. But the Republican Government recognised its responsibility, and the Imperial memorial was consummated, as it was commenced, out of the national funds.

Under the Empire GARNIER was too much engrossed with his building to devote the time to play the courtier with success, like VIOLETT-LE-DUC and other artists. He became a more prominent Parisian after the Empire had vanished. Apparently, the French people imagined that he required to have the command of a Treasury for his buildings, and even millionaires hesitated about offering him commissions. However unsatisfactory may be the state of his ledger, an architect is bound to keep up the appearance of success. At a time when less prominent men were flourishing CHARLES GARNIER found long intervals must elapse between the occasions when his unquestioned talents were called into action. Yet he had to assume all the appearances of a favourite of fortune. Not only so, but he was expected to impart joy to those who came near him. He must always be ready to supply impromptu witticisms, to aid in the production of a comedy, to knock off a string of verses, to deliver a speech which would delight as well as instruct. What added to the piquancy of the efforts was the recollection that they came from a man who followed one of the gravest professions. It was no wonder many who enjoyed the pleasure believed that GARNIER was not an architect who was always considering his clients' interests.

During the latter years of his life a more intense sorrow than any arising from limited commissions had to be supported. GARNIER had married a daughter of EMILE BERVY, one of the principal philologists of France. In 1872 a son was born, who early gave promise of extraordinary abilities. In him was also combined a power to undertake serious works with remarkable skill in the combination of fantastic contrasts. CHARLES GARNIER recognised in him a spirit akin to his own. But in course of time he discovered that the seriousness was to be yielded to science rather than to art. CHRISTIAN GARNIER took up the study of languages, and made progress in it as if philology was to be the great business of his life. But the more he studied the more he perceived that geographical nomenclature was in a state unworthy of an advanced age. According to Cardinal NEWMAN, there cannot be a wider, a nobler, a more philosophical subject than geography, especially when it comprises ethnology and any other branch of knowledge which is related to it. CHRISTIAN GARNIER wished to impart to geography a scientific method which hitherto seemed to be foreign to it. He began with place names, and for that purpose he had to give more or less attention to about 120 different languages. That was necessary, for he wished to

bring all the geographical names, however ancient and however savage, under some common law to all of uniformity throughout the globe. It was a colossal undertaking, and would no doubt require the aid of investigators in all lands. But the French Academy of Sciences did not consider the project was ridiculous for they awarded CHRISTIAN GARNIER one of their prizes. A similar prize had been awarded in 1834 to the German LEPSIUS, but the official report declared that the younger GARNIER's system was superior in simplicity and elegance to all preceding proposals on the subject. It was said that it would preserve the name of the author among all those who had interest in geographical studies, and that reputation had been gained at a time when the majority of scholars had scarcely commenced their studies. It adds to the interest of his success that CHRISTIAN GARNIER had been long aware he was doomed to an early death and he resolved to do something to increase knowledge among men before he passed away.

The position of CHARLES GARNIER under these tragic circumstances excites as much pity for him as for his son. He loved CHRISTIAN with the ardour which he showed in many varieties of circumstances. He was aware of his son's impending fate, and he could not endure his absence for a moment. It was necessary that CHRISTIAN GARNIER should live in several places, partly in the hope of obtaining some relief, partly in order to pursue his studies among as many varieties of people as was possible. If he were endowed with health and strength, he would have followed his geographical researches in all parts of the world. CHARLES GARNIER could not endure his son's absence for an hour. Some of his letters have been given to the world by Madame CHARLES GARNIER through the agency of M. PAUL DENIS. And we doubt if in the whole mass of letters that exist there are any so poignant as those to his absent son from the great architect, who was compelled to live amid so many distractions in Paris. We may adapt THACKERAY's words to say, "he can't bear to let go the youth's delicate hand."

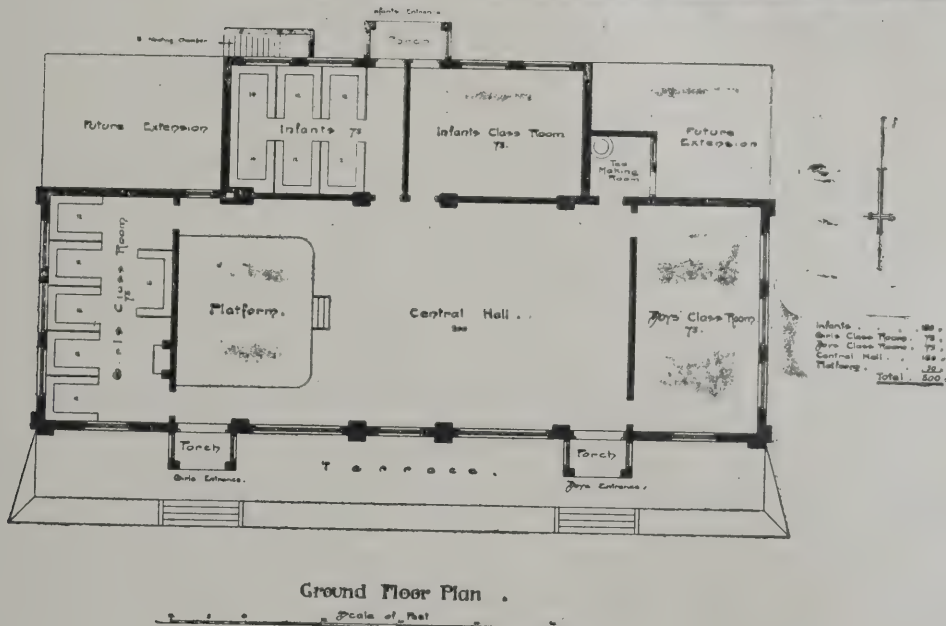
The different moods of the writer are clearly brought before us. As a true artist he could not be without some jealousy of science, and he felt occasionally a little for CHRISTIAN preferred science to his father. At one time he complains of a letter being too geographical and too scientific. Then as a creator himself it pains him to think that his son is pursuing a theory. A single letter a day will not ease the heart of the poor architect. Often he writes two of them. He implores the son to write to him, or if he has not time to send telegrams. Indeed, it is evident from a comparison of their letters that the father suffers infinitely more than the son, although the latter may in his stoicism and to avoid giving pain refrain from a full recital of all he had to bear. As time goes on the anxiety for news increases. The impatient architect follows every stage of his son's journey, consults time tables and postal guides, and indicates the hours when he expects to receive news. When a return to Paris is arranged, there is cessation of misery for the father. He counts the time he tells the son, not only by the days, but by hours and minutes. He that at one time was able to boast of success under various forms appeared to have only one ambition, and that was to say to his friends, "CHRISTIAN was thinking of me two hours ago." Some people who may not have met CHARLES GARNIER would say the French are theatrical even in their grief, and this is merely one example. The fact is the man was endowed with extraordinary energy because the things that weighed on him as if they were alive, and he could not find peace until he had settled all their claims. Paternal affection seized hold of him with such a strength it was impossible for him ever to know what peace was.

The father's trouble appears more bitter from the contrast offered by the letters of CHRISTIAN. In the end we have by a terrible irony a repetition of one phrase:

CHARLES GARNIER's mind and that which was most appreciated by society in Paris. The old *gamin de Paris*, who built opera houses and casinos with joy, knowing that he was aiding in the world's amusement, appears as if transmigrated in the son. CHRISTIAN is dying, and yet in the watering-places, or wherever he is sent in search of a cure, he writes little pieces for the theatres and the music halls, as if in that way he could find the only solace to his pain. In his letters home he bravely avoids suggesting his downward progress—the cry is still "Vive la Bagatelle!"

SUNDAY SCHOOL, ST. GEORGE, READING.

THE proposed building contains, as is shown by the plan, a large central hall and four large classrooms, the object being to subdivide the classes in the classrooms, as shown on plan. The total accommodation is for 500 children, all on the ground floor. The estimated total cost, including the heating, furniture and lighting, is 3,000*l*. The building is in keeping with the church. The architect is Mr. GEO. W. WEBB, F.R.I.B.A., Market Place Chambers, Reading.



CHARLES GARNIER had said he could not witness his son's death; his reason was not strong enough for such a test. He was spared that scene, for his own death preceded his son's by a month. There can be no question the agony he passed through during the absence of CHRISTIAN must have had effect in weakening his constitution. But the circumstances of his death will hereafter impart a pathetic interest to the history of a man whose anxieties as an architect were not able to overcome the affectionate instincts he derived from nature.

THE LATE W. W. ROBERTSON.

A LONG career as an architect and public servant closed with the death of Mr. Walter W. Robertson, formerly of H.M. Office of Works, Parliament Square, Edinburgh, and a former Master of the Edinburgh Merchant Company. For more than twenty years, says the *Scotsman*, Mr. Robertson was principal architect under H.M. Board of Works in Scotland, and although he retired from that office three years ago owing to a slight paralytic stroke, he did some professional work since his retirement, and at the time of his death was consulting architect to the Scottish

Education Department. About the end of October last he had another paralytic stroke, from which he never in any large measure recovered. He resided at Wardie Bank, Boswell Road, Trinity, where his death took place. Born sixty-one years ago, Mr. Robertson received his early professional training under the late Mr. Morham, city architect, Edinburgh, and afterwards he had varied professional experience with the firm of Messrs. Holden & Sons, Manchester. His connection with H.M. Office of Works dates from 1871. In that year he became technical assistant to Sir Douglas Galton, who then occupied a post that has since been abolished—that of H.M. Director of Works. Subsequently Mr. Robertson acted as assistant to Sir John Taylor, one of the architects of the Office of Works. While occupying these posts his work was mainly in London. His services and ability, however, were soon further recognised by his being appointed head of H.M. Office of Works in Scotland. During his tenure of this office he superintended a large amount of important new work in the erection of Government buildings in different parts of Scotland. Among the work carried through while he was principal architect were the erection of Glasgow General Post Office, Glasgow Inland Revenue Office, the Blackford Hill Observatory, Edinburgh; new post offices at Dundee, Inverness, Perth and other towns; the extension of the Royal Scottish Museum, Edinburgh (then called the Industrial Museum); and the extension and alteration of the Register House, Edinburgh. About the end of March 1904, after he had had a paralytic stroke, he gave up his post under the Board of Works. He was a member, and at one time president, of Edinburgh Architectural Association. In the work of some of the other corporate bodies in Edinburgh he took a considerable interest. Joining the Merchant Company in 1883, he passed successively through the offices of assistant and treasurer, and in 1895 was appointed Master of the Company, an office which he filled with acceptance for the usual term of two years. At the close of his term as Master he was presented with his portrait in oil, which has now a place on the walls of the offices of the Company in Hanover Street. In Masonic circles he was well known, as he took an active interest in the affairs of the order, and was at one time R.W.M. of the Lodge of Edinburgh (St. Mary's Chapel), No. 1, which is one of the oldest lodges in the United Kingdom. Mr. Robertson is survived by a widow, four sons and two daughters. Of his sons, two are in Edinburgh—one of them an advocate and the other an architect. Another is a clergyman in London, and the fourth is in the Indian Civil Service.

THE QUANTITY SURVEYORS' ASSOCIATION.

THE annual dinner of the Quantity Surveyors' Association (Incorporated) was held on April 26 at the Criterion Restaurant, W. Mr. A. J. Gate, the president, occupied the chair. Among those present were Messrs. A. A. Hudson, W. Lawrance, H. England, E. J. Hill, G. Gard Pye, J. Chessum, W. Woodward, F. L. Dove, A. W. S. Cross, J. Howard Colls, H. H. Bartlett, W. R. Hood, G. L. Crickmay, H. W. Crickmay, T. Costigan, J. Johnstone, A. G. Cross, C. W. Ball, W. G. Walder, G. J. Clarke, W. Thomas, F. Woodward, C. R. Reekes, A. Huntley, S. Chatfield Clarke, R. J. Tollit, W. Hoffman Wood, H. G. Tarrant, J. G. Mayhew, H. A. A. Gate, J. Aylott, J. Bartlett, D. A. Ross, H. J. West, C. Pearson Shaw, C. Pearson Shaw, jun., H. T. A. Chidgey, R. S. Ayling, H. Riley, H. M. Hodgson, H. J. Camp, H. P. Barber, B. E. Laine Pearson, H. Smith, A. S. Bennion, J. S. Parmenter, R. L. Curtis, jun., W. P. Horsburgh, C. W. Bowles, G. A. Ovitts, C. A. Kennett, P. Bywaters, H. C. Garland, H. C. W. Dodd.

After the loyal toasts had been honoured, Mr. A. A. Hudson proposed "The Quantity Surveyors' Association" and its President. He said he considered it a great honour to be allowed to propose that toast, but he could not refrain from wondering why it was that he had been selected to do it. Possibly the organisers on seeing him had come to the conclusion that he required a good dinner such as he had just had. He had been informed that the Quantity Surveyors' Association was only three years old, and when he saw what a representative gathering had come together on that evening he could only conclude that a very great thing had been achieved. The profession of quantity surveyor is of essential importance to architects, builders and lawyers. It is above all an accurate profession, and the members are accustomed to think in figures. He himself in his legal practice was bound to rely practically entirely

upon them, and that reliance had never been placed in vain. Architects he divided into two classes, viz. artists and business men; very rarely was there a combination of these two characters. He would like to make one or two suggestions to the Association. It seemed to him that its sphere of usefulness might be extended beyond their ordinary present duties. The profession of architecture needed the assistance of a business man, and in his opinion a quantity surveyor will become an indispensable attribute, not only in starting, but during the progress of works—in small works as well as in large contracts. The Association ought to apply itself to the preparation of a building contract which would be perfectly equitable, both to employer and to builder. The existing form does not altogether fulfil these conditions. No one could be better qualified than a quantity surveyor to undertake the task. It would be an enormous boon if a perfectly equitable building contract, based on the quantities, were prepared. We shall have to consider in the future vast changes with regard to the development of property. Whatever might be the reason for the existing slackness in the building trade, he did not doubt that the Association would quickly push their way to the front and take every opportunity to develop it. He might, if time allowed, say a very great deal of Mr. Gate, the president, whom he had known for many years. He would content himself with the statement that the Society had never had a better one. It was inevitable that a new society such as theirs should arouse some opposition and meet with many difficulties.

The President, in response, thanked the company for the manner in which they had received the toast, and congratulated the meeting that, consisting as it did almost entirely of architects, surveyors and builders, so many of them were present and not yet in gaol, as a friend of his, a criminal lawyer, had assured him that modern legislation had already spread its nets for the brains of the country (which he defined as architects, surveyors, builders and betting men), and with proposed Licensing and Land Bills, which would involve landlords who could not get their rent and tenants who would not pay it, brewers, publicans and public, the lawyers would have three-fourths of the population in prison in less than two years, and the rest building extra gaols for their own use when their turn came. As to the Association, it had, as Mr. Hudson said, accomplished a great deal. The Council believed that much had been done. It was not an advertising society; they did not thrust themselves forward; the deliberations of the Council (involving as they did such matters as the rejection of candidates, &c.) were necessarily private, but they believed they had done and were doing work which was and would be of great benefit to the profession generally. When the Association was founded it was not expected to reform everything in a minute or in a year or two, for they were not foolish visionaries but practical men, many of whom had been in the profession thirty or forty years, endeavouring single-handed and to the best of their ability to effect needed reforms. Single-handed they could not do it, but they hoped and thought they could when they became associated together; and they believed that they were now to a great extent stemming what had been going on. They could have achieved more but for a big log in their path; in fact, had there been no Surveyors' Institution there would have been no difficulty at all. Nothing was easier than to keep up motion when it was once obtained, but it was inertia that was difficult to overcome. If they could have got the Institution to act according to its charter, as it should act, all would be well, but it ignored its charter, and that was the great trouble. He was glad to say that their little body of less than 200 members had been able to move to some extent this body of about 6,000 members. The tail had done more than waggle the dog; it had moved the dog on—a doubly difficult task, because if the tail pulled the dog it would be backwards, and the Institution went fast enough in that direction without any assistance, but the small tail had actually pushed the large dog forward. The Council took credit for never having asked for assistance in their task, arduous as they knew it to be, and though sure that architects and builders alike would help if appealed to, the Association felt itself to be strong enough to accomplish what it had to do, and they would not ask others to help them, but would leave time to show that what they were doing was as much for the good of those others as of themselves. They were working for themselves, of course, for the evils they complained about affected them as surveyors; but what they were doing was also for the good of architects and builders, for what was the position

of an architect or builder with a bad quantity surveyor? How many architects had been troubled by their tenders coming to too much, and had known that this was because the quantities were bad? How many builders had had their quantities come to too little and did not know where they were? Architects and builders alike would presently get to understand thoroughly the objects of the Association, and that its members guaranteed the absolute accuracy of their quantities, and agreed to pay in the event of the quantities being wrong without nonsense or prevarication. By Article 13 every member was bound to pay client or contractor for any error in quantities, and should a quantity surveyor with the letters Q.S.A. after his name make his quantities too full or too short, there was no need to trouble a solicitor, who knew very little about such matters, or a counsel, who knew still less, or a judge, who knew nothing at all (witness the case of the judge who gave the decision that if a contractor found that part of something had been left out in a bill of quantities it would be an error, and redress could be obtained, but that if the whole had been omitted, he could not, as that was not an error), and all that need be done was to write to the Council of the Association asking for redress if the quantities were inaccurate. The Council would act at once; there would be no law's delay. The Council, consisting of men who had been in practice for from twenty to forty years, formed the most competent tribunal that could be found to decide such questions. With regard to altering the existing form of contract, they were obliged for the suggestion, as they were for any suggestions which were meant for the good of the profession; but he did not think the time had come to interfere with the existing document. The present form was as fair a contract as could be arranged on the present lines, and he did not think there was any great dissatisfaction with it. Still, he understood Mr. Hudson's point. It was absurd to undertake to execute a building according to the quantities, and surveyors would be the last to wish any building to be so executed, as it would be a bad day for them when they could have no more extras and omissions. He thought when any revision of the present contract form was desired, builders must take the first steps in that matter, and quantity surveyors would be pleased to co-operate. Referring again to the Surveyors' Institution, the President said that that body had had a charter granted them to uphold the status of the profession and to regulate its customs and usages. A number of members of the Association, who were also Fellows of the Institution, called a protest meeting to be held at the Institution premises (under their right to do so) to request the Institution to fix a scale of fair charges and publish it, and stay its Fellows from working at half-price and less. Well, the meeting was held, but not one of the professional journals was represented. Of course, the proposals he and others made were outvoted, but they were able to express their opinions, and they referred to the charter and the abuses of it, and called upon the Institution to remedy the evils, but not one word of that was allowed to be printed in the transactions or notes of the Institution, although the official shorthand writer of the Institution was present. Since then the Institution had issued a circular to public bodies, deprecating competition by quantity surveyors, but they did not issue a scale of charges. The Institution in its circular complained that competition tended to reduce charges and lower the status of the profession; but when a little school to cost about 20,000*l.* was put up to competition a Fellow of the Institution promptly tendered for and took the job at $\frac{1}{2}$ per cent. He wrote to the President and asked him if he would bring the matter before the Council, and the reply he received was to the effect that it was the policy of the Institution to allow its members to charge what they liked. This, from an Institution which had a charter to improve the status of the profession and regulate its practices. He thought that was plainly announcing that the policy of the Institution was to allow its members to go to the deuce and drag the profession with them.

Mr. W. R. Hood, F.S.I., London vice-president, in proposing "The Architects," declared he would have preferred that toast out of all those on the list if he had been asked to make a selection. In thanking architects for attending he would like to say that much mutual assistance was possible between architects and quantity surveyors. The practical relationship between the two was already very close and was one that will grow more and more so. There was need for the two to be kept quite distinct. He could not agree with the suggestion that the Association should set to work

to create a new form of contract. He considered that the present-day architectural education was capable of improvement. The official examinations did not sufficiently foster the artistic side. Therefore he might express a hope that architects no less than quantity surveyors will be raised in the future.

The response was made by Mr. A. W. S. Cross, M.A., who expressed a right to have more than ordinary interest in the work of the Association, from the fact that many years ago he himself had had the audacity to think that he could prepare quantities. His self-satisfaction continued for some time as his work presumably passed muster, for he continued his career with profit to himself. Unfortunately he met his Waterloo when a most captious and critical individual took exception to his quantities. He left the pleasant groves where presumably the being who looks after quantity surveyors resides and took to architecture. He heartily wished the Association success in their efforts, and knew he voiced the feelings of many sympathetic architects in expressing a readiness to render any possible assistance to the Quantity Surveyors' Association.

Mr. H. T. A. Chidgey, in proposing "The Contractors," explained that although the toast came low on their list it was by no means low in their estimation. It was a pleasure to see so many distinguished contractors, and he hoped that on future occasions there would be even a still greater number. Much might be said concerning the interrelations between quantity surveyors and contractors. One of the best friends of the latter was a quantity surveyor. They were well past the days when they considered themselves natural enemies. London has every reason to be proud of her builders and contractors. A builder must be a Napoleon of strategy in addition to possessing other qualities if he is to unite diverse conflicting interests. He has in the first place to win his job against men equally sharp and ready to make concessions as himself. He must satisfy exacting architects. His men are to be kept in continual employment, and there must never be too many of them or too few. He thought that the man who can accomplish all that had thoroughly earned the respect of the community. He took pleasure in the knowledge that many contractors whom he met professionally were on his list of friends.

Mr. Fredk. L. Dove, L.C.C., president of the London Master Builders' Association, emphasised that however lacking his words might be in eloquence they were an endeavour to express the sincerity of his good wishes towards the Quantity Surveyors' Association. He was perpetually puzzled by the expression "jerry-builders," who had no apparent connection with the prophet Jeremiah, unless it were their continual complaints. They were hangers-on to building contractors. However, it was not solely a question of bad builders, but also of a bad public which demands more than they have a right to expect for their money. There are always people ready to supply every sort of demand. Unfortunately such employers exist only to the detriment of thorough building firms, for the irresponsible outsiders force into existence a ruinous competition. Many bills of quantities as supplied at present are conspicuous by their often bewildering brevity rather than for their accuracy. In perfect quantities both these qualities should be found. The preparation of a universal form of conditions of contract had been discussed for many years past *ad nauseam*. A few years ago a form had been agreed upon, and although it was by no means faultless, it gave comparative satisfaction and might well be allowed to stand. If any alteration were necessary it should be effected in the direction of the guarantee exacted. Builders have come to the conclusion that the bond is an unreasonable onus upon them. Experience has shown that the builders stand in no less need of protection against many clients who never pay. They are, indeed, frequently robbed by means of their guarantee of payment.

The toast of "The Visitors" was proposed by Mr. Walter Lawrance, F.S.I., past president of the Quantity Surveyors' Association, and was responded to by Mr. J. Howard Colls.

At the conclusion of the dinner a concert was given under the direction of Mr. Arthur Helmore.

The Stretford Education Committee will apply for sanction to a loan of 3,300*l.* for the extension of the Victoria Park school, Stretford. The architect was instructed also to prepare plans for the erection of an infants' school in Stretford Road.

NOTES AND COMMENTS.

THE late CHARLES EAMES KEMPE, who died on Monday in his seventieth year, held a peculiar position in art. At Lindfield, in Sussex, he was esteemed as a country gentleman who had a hobby in producing windows for churches. In trade circles we are afraid he was looked on as a competitor who adopted irregular methods, and was able to persuade the clergy to consider his commonplace windows as inspirations. There was no doubt his practice was anomalous. But a man who was educated at Rugby, and was an Oxford Master of Arts, was probably justified in following a novel code of commercialism. It is said that in Sussex alone there are over 120 windows in churches which he supplied. Although his name is connected mainly with stained glass he was prepared to supply various other kinds of work on demand.

ACCORDING to the annual report, the members of the Berkshire Archaeological Society still enjoy the privilege of holding the meetings at the Abbey Gate, of which they are the tenants under the Corporation of Reading. For some years past one of the rooms has been occupied by the Central Aid Society. This has now been acquired by the committee, has been furnished and decorated, and is used as the library and secretary's office. During the past year some correspondence has passed with the Corporation concerning the extension of the lease of the Abbey Gate, on the condition that the Society should spend money upon the decoration and restoration of the building. Some difference of opinion was manifested with regard to the amount proposed to be expended and the repairs required, and the negotiations fell through. Hence the committee have reverted to the original annual tenancy. Possibly, at some future period, the matter will be again raised. It is, however, satisfactory that the whole building is now held by the Society, and thanks are due to the Corporation for granting so suitable and convenient a home. Another subject of correspondence with the Corporation had reference to the ceilings of the old house in Minster Street, still in the Society's custody. It was hoped that the Corporation would have erected these ceilings in some part of the new buildings connected with the town hall, but they have abandoned such intention. It would have been satisfactory if those relics of old Reading could have been preserved in the municipal buildings. The Corporation had been approached with reference to further excavations in the Forbury Gardens, for the purpose of investigating the Saxon cemetery. The town clerk writes to say that such excavations in the spring would interfere with the work of the gardeners, and suggests a renewal of the application in the autumn. There were 158 members, and as the expenses will have to be increased, it is desirable that members should endeavour to strengthen the Society by obtaining new members.

THE destruction of buildings in San Francisco was scarcely ended when the criticism of the methods of construction appeared in various journals. The American Society of Civil Engineers acted wisely in seeking evidence before coming to any conclusion on the subject. A general committee and six special committees were appointed to investigate the remains, and the report has been recently issued. Five types of buildings were adopted, viz. (1) wood frame structures; (2) structures with brick, stone or concrete-block walls with timber floors and partitions; (3) structures with brick and stone bearing walls, metal interior frames and fireproof floors; (4) structures with steel frames supporting all wall and floor loads; (5) reinforced concrete structures. A distinction is made between damage by fire and damage by earthquake. There was little damage by the latter to wooden frame buildings. Buildings of masonry with timber suffered most from the shock and the loss of life was greatest in them. The third type of building was more damaged than the

fourth, although the fourth, which included the majority of the tall buildings, became most exposed to earthquake damage. Much depended on the character of the bracing. The damage to steel frames was almost negligible. Reinforced concrete construction is now so generally adopted in American cities, it sounds strange that only a few instances of the type existed, and they were built several years ago. The old portion of the Stanford University Museum, a complete structure, was uninjured except for a few cracks. The connecting brick portion was badly shattered. Roble Hall at the same place, a three-storey and attic structure, was uninjured except where some brick chimneys fell, breaking the roof and floors. The sub-station at Redwood City was uninjured, and a part had to be rebuilt. This structure was built on marshy ground near the bay, and was exposed to the worst effects of the shock. A warehouse in San Francisco in course of construction, with two storeys up, had its brick walls wrecked, but the reinforced concrete frame and floors were uninjured except by the fall of the walls. The floors of the Academy of Sciences and of the Folger Building were uninjured by the shock, and the same is true of the complete reinforced concrete building, three storeys high, in Alameda. The factory buildings and residences were uninjured. All the evidence points to the superiority of this method of construction. The reporters have come to the conclusion that the effect of the earth motion is to set a building moving. The structure is thus subjected to all the stresses occurring in a truss sustaining a live load. The amounts of the stresses are unknown and cannot be predicted, as the intensity of the shock is unknown. Obviously the shock may range from a tremor to that of violence that would wreck any building.

ILLUSTRATIONS.

UNITED UNIVERSITY CLUB, SUFFOLK STREET, FALL MALL, S.W.

THE COMMON HOUSE, WIMBLEDON.
PARKSIDE HOUSE, WIMBLEDON.

THESE buildings have been erected at Wimbledon, overlooking the Common, where it was desirable to introduce the country type of dwelling. The great feature in each case has been the sitting-room hall and the drawing-room, which extend the whole depth of the building. The plans are long and narrow, so that they could have the maximum amount of frontage to the views across the Common, the depth being curtailed accordingly, so that an ample garden could be arranged in the rear. The brickwork generally was in brindle bricks, the walls being rough-cast and the entrance bays of Stamford stone. The half-timber work was in oak, and the tiles were hand-made Broseley tiles. The interiors of the buildings are generally finished in white enamel, with oak panelling in the entrance hall, the floor being laid with red herringbone tiles.

The whole of the work was designed for and carried out by Mr. F. G. MINTER, of Ferry Works, High Street, Putney, under the direction of the architects, Messrs. HUBBARD & MOORE.

HOUSE AT BOVINGDON, HERTS.

THIS house, which is now in course of erection, is situated on a very pleasant site of several acres at Bovingdon, near King's Langley, Herts. The external walls are of hand-made, sand-faced red bricks of varying tint, and the roof will be covered with similar tiles also different somewhat in colour. The window frames, which will be painted white, are to have iron casements and leaded lights. A special feature has been made of the loggia, or out-of-door room, entered from the hall, drawing-room or dining-room. The principal garden front faces south-west and the entrance forecourt north-east, protected by a belt of very fine hollies. A lodge and stabling will probably be built in conjunction with the scheme. Mr. A. TIMBERLAKE, of King's Langley, is the builder, and Mr. WALTER E. HEWITT, A.R.I.B.A., of 22 Buckingham Street, Strand, W.C., the architect.

THE ARCHITECTURAL ASSOCIATION.

THE concluding meeting of the Association for the present session was held on Friday evening last at premises in Tufton Street, Westminster, Mr. Walter Cave, vice-president, in the chair. Messrs. L. D. Martyn and R. H. Somers-Smith were guest members.

House List, 1907-8.

At the election of officers for the forthcoming session voting papers were received, eight being rejected as invalid. The results were:—President, Mr. Walter Cave. Presidents, Messrs. Arthur Keen and H. Tanner. Council, Messrs. R. S. Balfour, E. Guy Dawber, A. Needham Wilson, Louis Ambler, F. Dare Clapham, W. Curtis, E. W. M. Wonnacott, J. S. Gibson and Sir A. Cunliffe Thomas.

Motion of thanks were passed to the scrutineers of the voting papers, the retiring members of the Council, Messrs. John Mitchell and John Murray, and the School of Design members.

Mr. F. W. SIMON read the following paper, entitled

Liverpool Architecture.

I accepted the invitation of your Council to read a short paper on Liverpool architecture with considerable doubt as to my ability to interest you sufficiently—you who are in daily touch with the works of the leaders of our profession; yet as you have expressed a desire to hear and see something of what Liverpool architects have recently been doing, I feel that you will bear with my shortcomings. The paper deals with modern work and not with that of the past with the works of living architects. Therefore, gentlemen, I must refrain from criticism which may be indulged in over a cigar by the fireside but is not for the public platform, and must leave you to form your own opinions and to proportion praise or blame as you may think fit. I come, therefore, before you to-night more as a showman than as a lecturer, and I shall hope to interest you for a short time by showing a number of photographic views thrown upon a screen by the aid of the lantern, accompanied by a few explanatory remarks. There are a number of working drawings and photographs which have been kindly lent by architects with whose work I shall deal, and which I trust you will find time to glance at on the conclusion of my paper.

Liverpool cannot boast of any buildings of great antiquity, though it is celebrating this year the 700th anniversary of the granting of its city charter. Little seems to have come of this early encouragement, and 250 years ago Liverpool was still little more than a village on the banks of the Mersey. Yet now Liverpool has its architectural reputation, and I should like briefly to refer to a few of the old buildings. The Town Hall is the oldest public building in Liverpool. It was erected in 1756 from designs by William Wood, of Bath. The interior was destroyed by fire in 1895, and was reconstructed, and the dome was added at the same time. The reception-rooms, which occupy the top floor, form a very fine suite treated in the Adam style perhaps a little later, and they still contain the furniture of the period. Then we have St. George's Hall, which has been described as the finest building in the world—at any rate, Liverpool people like to think it so. As a matter of fact this remark is attributed to Mr. Norman Shaw. As you all know, it was erected from designs by Elmes, between the years 1838 and 1854. Harvey Lonsdale Elmes was only twenty-four years old when he was awarded the premium in the competition which was held for this building, and we, the present generation of architects, congratulate ourselves that, though so young, he was entrusted with this important work. I will not enter into a further detailed description of this noble building, which was completed after Elmes's untimely death by Mr. R. Cockerell. Without doubt St. George's Hall has had great influence in creating among the Liverpool architects and the Liverpool public a respect and a desire for noble and stately architecture. The interior does not appear to me to be as successful as the exterior. The building, in Paris, to which it may be compared, is much more so. It is also spoilt by the present colour decorations and the gaudy stained-glass windows. At the back, or rather to the west front of St. George's Hall, the Corporation have recently laid out what they are pleased to call a garden of municipal bungling. I trust poor Elmes does not know about it, for the repose of his soul would be sadly disturbed. Don't miss seeing this if ever you go to Liver-

pool. Mr. Cockerell also designed the Bank of England, in Castle Street, a building of great dignity and refined detail combined with great vigour and originality. This building I can recommend to students for careful study, and may I suggest that it would be of high educational value for some student to measure and publish in book form Cockerell's more important works?

The Classical tradition created by St. George's Hall was continued in the designs of the Picton Reading-room or Rotunda, erected in 1860 from the designs of Mr. Thomas Allom; the Walker Art Gallery, in 1874, from the designs of Messrs. Cornelius Sherlock and H. H. Vale; then the Brown Library and Museum; and, finally, the Technical Schools and Museum extension, by Mr. Mountford. The Municipal Buildings, in Dale Street, which were opened in 1867, were designed by Mr. Robson. The Government Offices, in Victoria Street, is a simple building with its detail carefully thought out. Opposite this is the Post Office, a picturesque design in the French Renaissance style, by Sir Henry Tanner. Behind the Town Hall are the Exchange buildings, enclosing a large space which goes by the name of "The Flags," where the merchants and business men of the city are wont to congregate. It wears now a rather deserted appearance, owing to the removal of the cotton brokers to their new Exchange. The Exchange Buildings were designed by Sir Digby Wyatt. The University is an important work designed by the late Mr. Alfred Waterhouse, and another important building which belongs to old Liverpool and which I had almost forgotten is the Custom House.

Now we come to a group of buildings on which I will dwell, perhaps, a little longer, believing that it is to these more especially that your attention has been recently directed and which have led you to express the wish to hear and see something of recent Liverpool architecture. I will mention first the head offices of the White Star Steamship Company. You will recognise Mr. Norman Shaw as the author of this building. It reminds one at once of his design for New Scotland Yard. Like it the two lower storeys are faced with granite and the upper storeys are treated in brick with stone bands and dressings. Mr. J. Francis Doyle, of Liverpool, was associated with Mr. Shaw in the designing and construction of this building. The design arrests one's attention by reason of its boldness and its able detail. Will it be heresy if I throw a doubt upon this treatment of a lofty city building? The charm of great gables and ample roofs is convincing in the fine old tithe-barns of England and the long, low cloth-halls of Flanders, but are they right when applied to a lofty city building? Yet the genius of Norman Shaw should surely be a sufficient guide in this matter. Another of Mr. Shaw's works is Parr's Bank, in Castle Street, carried out in conjunction with Messrs. Willinck & Thicknesse, which, with its simple and beautifully proportioned fenestration, comes as a delightful relief from the surrounding work, where every storey has a fresh motive and every window a fresh type of embellishment. Here, again, the lower storeys are in granite and the upper walls are faced with marble with grey bands. This is an experiment and we have yet to see how marble stands in a Liverpool climate. The window dressings and cornice are in terra-cotta. Messrs. Willinck & Thicknesse have kindly lent me a large number of photographs. My next subject is the head office of the Royal Insurance Company, the work of Mr. J. Francis Doyle. I think we may say that Mr. Shaw's influence is apparent in the design of this building. Mr. Doyle has kindly lent me a full set of one-eighth scale working plans. They merit most careful study, as do also his details of the interior and the steel construction. It was the wish of the directors that the large general office, which occupies the full width of the building on the ground floor, should be unobstructed by columns, and Mr. Doyle devised a very clever form of construction to achieve this and to get rid of the deep girders which would have been necessary for a span of 50 feet in order to carry the great weight of the corridor walls and double chimney-shafts of the upper floors. The steel construction is quite independent of the walls. The steel stanchions rise from the sub-basement to the wall head. On the third floor they are connected by arched steel girders, 34 feet apart, and from these girders the first and second floor tie beams are suspended. These girders are hidden in the thickness of the double chimney-breasts, and it is interesting to note that each chimney-stack weighs over 620 tons. Mr. Doyle is to be congratulated on this able and novel solution of a very difficult problem and also on the production of one of the finest buildings in Liver-

pool. The lower storey is faced with granite, the remainder of the walls are faced with Portland stone. The sculptured work was executed by Mr. C. J. Allen, of Liverpool. The board-room is panelled in walnut, and from the ceiling are suspended some fine old Dutch candelabra. Mr. Doyle is also responsible for the Bank of Liverpool, Moss Street branch, and the North and South Wales Bank, Bold Street branch, and the one-eighth scale working plans of these two banks are exhibited.

The largest building recently erected in Liverpool is the new Mersey Dock and Harbour Board offices. The Dock Board, you may be aware, controls and regulates the Mersey port, with its enormous traffic and its acres of docks, and I believe I am right in saying that the traffic which enters and leaves the port of Liverpool exceeds in tonnage that of London, Glasgow, and several other ports added together. With the growth of the port it was found necessary to centralise and provide more accommodation for the ever-increasing staff, and so the Dock Board determined to erect a building ample and spacious, a visible expression of its powers and influence. We may congratulate Messrs. Briggs & Wolstenholme, Mr. F. B. Hobbs and Mr. Arnold Thorneley on the fine building they have designed and carried to a successful completion. Unfortunately, I cannot show many photographs of this building as it has only just been completed and is not yet opened. But the architects have been most kind, and have lent me a set of eighth scale working plans, some large half-inch scales of the dome, and also drawings of the steel construction and a full size drawing of the large cornice. A study of these drawings will give you a fair idea of the building. This building occupies the southern portion of one of the finest building sites in Liverpool, namely, the site of the old St. George's Dock, and it faces the landing-stage and the river.

Two streets have been carried across the old dock, dividing it into three portions. A little consideration and forethought and the Dock Board would have reserved for themselves the central block and made their own building with its dome the central feature, reserving to themselves the control of the sites on either side; but they do not seem to have thought of this, and disposed of the other two sites without restrictions, and on one is to be erected a building with its main cornice 130 or 140 feet above the street level, whereas the cornice of the Dock Board offices is only 70 feet. Thus the opportunity for carrying out a fine architectural scheme has been lost. This building has many points of interest, both in plan, design and construction. It is raised on concrete arches and piers, which are founded on the solid rock at the bottom of the old dock some 30 feet below the street level. No use is made of the space below the basement floor, which is some 7 or 8 feet below the street, and is covered with a layer of asphalt to keep down the tide which at times is said to rise in the old dock. The main feature of the plan is the large central hall with its radiating corridors which give access to the various departments. This hall is carried through every storey with surrounding galleries, and finds its architectural expression in the dome which crowns the building. This dome is 50 feet in diameter at the drum, and the finial is 220 feet above the street level. You will be able to study the construction of this dome from the architects' detailed drawings, but I might explain that the stonework of the drum is supported on a steel structure formed of composite steel stanchions, three at each octagonal angle, so placed as to form a triangle on plan and braced horizontally at each floor level. These stanchions are carried down to a concrete bed with a steel grillage, placed on a foundation of blue brick, which in its turn rests upon the concrete piers mentioned before. The steel stanchions are encased in breeze cement concrete, which helps to stiffen the metal, renders it fire-resisting and preserves it from decay. The outer dome is also framed up in steel with a 6-inch thickness of breeze concrete, in which is embedded a layer of strong expanded metal sheeting, wood plugs are let into the concrete and to this the copper covering is attached. Portland stone has been used throughout for the exterior; the lower portion of the central hall is lined with marble, and the upper portion, for the sake of economy, has had to be carried out in plaster. The total cost has been about 300,000*l.*, and the architects tell me that they have persuaded the directors of the Dock Board to agree that 5,000*l.* be added to the contract to cover all extras, and that there shall be no remeasurement whatever. I think in this they have shown almost as much skill in their diplomacy as in the architecture. Colonial House, the headquarters of the Elder-Dempster Steamship Company,

is another important building by Messrs. Briggs, Wolstenholme, Hobbs & Thorneley. The one-eighth scale plans exhibited in the room and from them you will see that plan is a simple and effective solution of a problem which must occur from time to time. The exterior is faced with Cefn stone and has a base of red polished granite. The shafts of the large columns on the upper floor are also red granite. The new Blue Coat Hospital or School is another work by the same firm of architects, and again they have kindly lent me their plans. I will not detain you by a long description of them, except to remark that it is a charity foundation for resident poor boys, and so lies rather outside the usual type of school buildings. The school chapel is particularly interesting.

The next building is the new Cotton Exchange by Messrs. Matear & Simon. The cotton trade is one of the most important in Liverpool. Formerly it was carried on in an open air on "The Flags" behind the Town Hall. The room was acquired in which to meet and do business under shelter, and this also soon proved inadequate, and a new and larger Exchange became a necessity. The problem had to solve was to provide a large, spacious, well lighted and ventilated exchange-room, with numerous telephone boxes, cable-rooms, post office and telegraph office, smoking and reading-room for the members of the Association, board-room, secretary's suite, bank and clearing house, arbitration and appeal rooms, and as many offices to let as possible. This building stands on an island site, 355 feet long by 145 feet wide, and the main front faces south-west. It is essential that a cotton office or sale-room should face north, north-west, or north-east, as a steady sunless light is required in order to judge accurately the nature and value of the cotton staple. We took advantage of this requirement, and placed our sale-rooms and offices to let to the back—namely, north-west and north-east—and brought the exchange hall right to the front, and so found ourselves in the happy position of having to design a façade untrammelled by the usual window requirements. The plan generally laid out at 10-feet centres, both latitudinally and longitudinally. This greatly facilitated the setting out, and provided, so to speak, a module for the whole building, and has, I believe, helped in a great measure to secure a unity of scheme and effect. I might also mention that the clear area in the centre between the columns measures 103 feet long by 73 feet wide, the longer side being equal to the diameter of the square of the shorter side. It may interest some of the younger students to know that this proportion is that of many of the Italian patios, and that it provides a constant ratio between the two sides, making a subdivision into equal spaces easy. Portland stone is used both externally and internally, the columns in the great hall are monoliths of Royal Pearl Norwegian granite with blue Belge marble caps and bases, and I may say that these columns form an integral part of the structure. The walls of the entrance porches are lined with Italian mazzano, and this material was used also for the large door architraves and the chimney-pieces. The north-west elevation is constructed entirely of steel encased with cast-iron. This form of construction was adopted in order to reduce the divisions between the windows to a minimum, for it is a great drawback in a cotton sale-room to have broad shadows cast upon the cotton samples which are spread out for inspection on the counter below the windows. The wall panelling and doors of the big hall are in mahogany. The smoke and reading rooms are in walnut, and the board-room and ante-room in oak. The chimney-piece in the board-room is in mazzano. The drawings which I have brought are not as complete as one could have wished, but owing to the great speed with which this building was carried out all unnecessary labour and repetition and elaboration of the drawings had to be avoided; for the contractors, with a bonus or a penalty of 2*l.* a week in view, were like hungry wolves howling for information. I have prepared for this paper a half-inch scale detail of a portion of the front. The drawings were not given in this form to the contractors, but in small sections. There is also a full-sized detail of the cornice, the capital, base and pedestal of the large Ionic arcade of the front. It may be mentioned that I increased the cornice beyond the proportion it usually holds in relation to the frieze and the architrave. This was done to allow the entablature generally to tell more effectively in relation to the whole façade. It may be interesting to you to know that this building, costing over 200,000*l.* and carried in some cases 30 feet deep into the solid rock, was erected, completed, opened and fully occupied in eighteen months, and that the contractors of the Waring White Building Company gained a bonus.

Whether we shall get any commission on this still remains to be seen.

My survey of Liverpool buildings might be prolonged indefinitely, but I feel that I am perhaps nearing the fulfilment of your desires, and that you have a sufficient indication of the more recent development of our art in Liverpool. Before closing, however, may I refer very briefly to a few works of ecclesiastical and domestic character. Foremost is the new cathedral. It has still to be built, but the architect, Mr. Gilbert Scott, has kindly lent me a few drawings, which are exhibited on the walls. You are no doubt familiar with his beautiful and original design, and agree with me that Mr. Scott is to be congratulated on having achieved such great success so early in his career. I will no doubt bring his work to a successful issue, and future generations will couple his name with that of James, the youthful designer of St. George's Hall. St. Agnes Church is by the late George Edmund Street. The charming vicarage was designed by Mr. Norman Shaw. Quite near to St. Agnes Church is the church of St. Clare, a very beautiful work by Mr. Leonard Stokes, who has kindly lent me some drawings. Then we have the important church on Mossy Hill, which is such a conspicuous landmark as one approaches Liverpool by the London and North-Western Railway. It is by Messrs. Austen & Paley, who have kindly lent me some photographs which do not do the design justice. Messrs. Austen & Paley are also responsible for the parish church at Waterhouse. Mr. Percy Scott Worthington has lent me some drawings of his church hall in the Ullet Road, which is a charming piece of work, and to Mr. W. D. Caröe I am obliged for the loan of the drawings for his interesting designs in brick of the Swedish Church, in which he has so cleverly expressed the Scandinavian nationality.

With the domestic architecture of Liverpool and its neighbourhood it is hardly possible to deal in this paper. I have a few photographs of an interesting house at Hoylake by Messrs. Woolfall & Eccles, which they have kindly lent me. Dawpool, Mr. Ismay's house, by Mr. Norman Shaw, is well known to you, and possibly also the house on Aldston Hill, designed for Mr. Hudson by Messrs. Grayson & Gould, reminiscent of Little Moreton Hall and other fine old half-timber houses in Cheshire. Finally, I must not forget to mention the industrial village of Port Sunlight.

In conclusion, I would thank you, gentlemen, for your patient hearing. I would express my apologies and regrets to those architects whose work I have not had time to refer to and my heartiest thanks to those who have come so generously to my aid with their drawings and photographs.

Mr. E. GUY DAWBER, who proposed a vote of thanks to the author, said the paper was one of the most interesting delivered during the session. It was a departure from the usual fortnightly paper, because it dealt with the work of a large city which they in London were not acquainted with, and the lecture therefore suggested a precedent for other papers which could describe the various large cities. For instance, said Mr. Dawber, they might have Birmingham, with its many old buildings, and there were many other cities the description of which would afford interesting evenings. The photographs of the buildings were excellent, and as they were shown through the lantern one could easily believe himself to be in Liverpool. He happened to know the city very well. It was a significant fact for Liverpool, the speaker thought, that both Elmes and Gilbert Scott, quite young men, should have had the opportunity of doing what must be considered some of the finest work in this country, if not in the world. With regard to St. George's Hall, he thought it was a calamity that the "Stone-workers' Yard" should have been allowed on the adjacent land. On a site behind St. George's Hall the ground had been cut up with stone walls and balustrades without any attempt at design, and in the worst type of *l'art nouveau*. Mr. Dawber was sure there were a great many sculptors who had put work in that "Stone-workers' Yard" without knowing how it was to be surrounded. The beautiful work of Goscombe John was quite spoilt in that respect. Mr. Dawber knew no town or city which showed so much the influence of Mr. Norman Shaw as Liverpool, and it was found in commercial offices and in the smaller buildings. In the Bank, in Castle Street, the speaker cited as almost reaching his ideal of a dignified street front. Whether the marble facings would be a success and whether the stone surface would last time alone could show. The Cotton Exchange was an excellent example of modern work, and they could congratulate Mr. Simon on carrying out such a magnificent building within so short a space of time.

Mr. W. CURTIS GREEN seconded the vote of thanks, and said he had always regarded Liverpool with especial affection and admiration. To him Liverpool always seemed to be in the forefront of educational matters, and in the general class of buildings, both public and private. It would also seem to be a successful place for young men.

Mr. H. H. STATHAM said that, as an old Liverpool man, he was sincerely interested in the paper. St. George's Hall was his first impression of architecture when a child, and he entirely agreed with the opinion quoted in Mr. Simon's paper, that it was one of the finest buildings in the world, allowing Greek architecture to be suitable to the English climate.

Messrs. E. W. M. Wonnacott, Louis Ambler, A. Keen and the Chairman also expressed their thanks to the author of the paper.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT the annual general meeting held on April 24 the following office bearers were elected for the session 1907-8:—*President*, Hippolyte J. Blanc, R.S.A.; *Past President*, H. O. Tarbolton, F.R.I.B.A.; *Vice-Presidents*, W. T. Oldrieve, F.S.I., F.R.I.B.A., John McIntyre; *Hon. Secretary*, Colin B. Cownie; *Hon. Treasurer*, W. Glassford Walker, C.A.; *Hon. Librarian*, John Watson, F.R.I.B.A.; *Hon. Assistant Librarian*, Jas. A. Arnott.

Messrs. Alfred Greig, A. Hunter Crawford, F.R.I.B.A., and Victor D. Horsburgh, A.R.I.B.A., were appointed members of the committee of management.

The prizes in students' design competitions were awarded as follows:—*Design for a Bank*—(1) D. M. Kinross, prize of 5*l.* 5*s.*; (2) T. Linton, 1*l.* 1*s.* *Design for a Porch*—(1) S. G. Follett, 3*l.* 3*s.*; (2) W. S. Walter Todd, 1*l.* 1*s.* *Design for a Board-room*—(1) A. W. Graham Brown, 3*l.* 3*s.*; (2) T. J. Beveridge, 1*l.* 1*s.*

Mr. Blanc delivered an address on "Holyrood Chapel and Restoration." Before entering on it he referred to the death of Mr. W. W. Robertson, formerly of H.M. Office of Works, and a past president of the Association. Perhaps no more complete or concise monograph of Holyrood chapel and palace had appeared than that from his pen, printed in the Transactions of the Association. It was agreed that an excerpt from the minutes be sent to Mr. Robertson's relatives. Mr. Blanc described in detail the present condition of the chapel, and explaining the architectural characteristics of Scottish abbeys and cathedrals showed plans of two English abbeys—Hayles, in Gloucester, and Halesowen, in Worcester—which he believed were somewhat similar to what Holyrood was. Beginning with the oldest part of the chapel, the Norman door, he proceeded south, and illustrated several bays of the cloister, and afterwards showed south-eastern and northern views of the edifice. Photographs of some old prints of the chapel were next shown, and then details of the tower and of several of the bays in the north aisle. Other views included photographs of the interior, sections of the north aisle as seen from the gallery at the west end, and the south wall of the nave, which is 4½ feet thick. In connection with the south wall of the nave, Mr. Blanc showed the deviation from the straight line which occurred when the roof gave way in 1768. That deviation, he explained, is about 14 inches, and was caused by the fall of the mass of masonry which formed the roof. Mr. Blanc, illustrating the south aisle, explained the changes of architectural style expressed in that aisle, and traced the change from the semicircular to the pointed arch. Reproductions were given of a drawing by Kemp, the architect of the Scott Monument, showing a suggested restoration of the interior of the abbey, and of a print of about the date 1687, showing the chapel fitted up as a chapel for the Knights of the Thistle. While not entering into any questions connected with the proposed restoration of the chapel, Mr. Blanc, in directing attention to the beauty and interestingness of the details of the chapel as it now stands, said that if any restoration were undertaken strict care ought, he thought, to be taken to leave the existing features undisturbed. On the motion of Mr. G. S. Aitken, seconded by Mr. Thomas Ross and supported by Professor Cooper, Mr. Blanc was accorded a vote of thanks.

"La Construction Moderne" has published illustrations of the new War Office, Whitehall, in the numbers for April 20 and 27. The building is described as one of the most remarkable in London.

DEVON AND EXETER ARCHITECTURAL SOCIETY.

THE annual meeting of the Devon and Exeter Architectural Society was held at Torquay on April 20, the president, Mr. Harbottle Reed, F.R.I.B.A., of Exeter, being in the chair. The hon. secretary, Mr. Allan J. Pinn, presented the report. The number of members was 95.

Many meetings have been held. Among the subjects discussed at meetings were "The suggestions of the registration sub-committee embodied in a circular issued by the R.I.B.A. in reference to the important question of registration of architects," and also from the charter revision committee with reference to the alteration of the R.I.B.A. charter.

A well-attended meeting was held at the College Hall, Exeter, to listen to papers given by Mr. A. W. S. Cross, M.A., F.R.I.B.A., and Mr. G. Hubbard, F.S.A., F.R.I.B.A., upon the subject of "The Revision of the Charter of the Royal Institute of British Architects." As a result of the discussion the following resolution was passed:—"That this meeting of the Devon and Exeter Architectural Society, cordially approving the general principle of the resolution respecting the statutory qualification of architects carried at the general meeting of the R.I.B.A., April 3, 1906, strongly urges the Council to give effect thereto." The papers read were:—"Is a National Style in Architecture Desirable?" by Mr. C. J. Tait, F.R.I.B.A.; "A Brief Account of the City of Cairo, from the Arab Conquest of Egypt in A.D. 640, until the Othman Conquest in 1507," illustrated with lantern slides by Mr. C. King, F.R.I.B.A.

The Three Towns' branch report that during the past year many meetings have been held in connection with the amendments to the Plymouth building by-laws, and whilst regretting that their suggestions have not been adopted *in toto* by the Council, they are satisfied that many valuable improvements to the old code have been effected, to the advantage of the business property in the heart of the town and to the advantage of public health.

Mr. Harbottle Reed delivered the following address:—He said it seems to be the custom that the retiring President should in some way refer to his past year of office, but as the report has covered the doings of our Society it will be unnecessary for me to enlarge upon its generally satisfactory character. Much useful work has been done and some instructive papers read. True, we have not all lived up to our advantages, especially the younger members.

I have to express my thanks to those Fellows and Associates who were good enough to vote for my election on the Council of the Royal Institute of British Architects, and as your representative I have attended several meetings at the Institute when matters of local as well as general interest have been brought forward. It appears evident that the provinces are to have due consideration in the affairs of the Institute. The principle of statutory qualification having now been adopted, the committee is framing a measure to render it operative; the suggested provisions will probably appeal to us according to the varying standpoint whether we view them as aiding the advancement of architecture or the protection of the practitioner.

The most important event of the year was the seventh International Congress of Architects, which at your desire I attended in London. The meetings were of a most successful character owing to their perfect organisation. It is sometimes objected that in functions of this nature the picnic element is a large factor. Well, let us hope it will continue to be so if it fosters the spirit with which we regard—shall I say used to regard?—picnics as being opportunities for friendly intercourse and pleasure. The Congress has, however, its serious side with a full complement of papers and discussions. Vienna will be the next place of meeting in 1908. I have been asked by one of our members who attended that in London to draw attention to the importance of these cosmopolitan concourses of art, where some of the most eminent architects of the day from all the world over meet in common council, and such fraternisation must surely aid the amity of nations, while increasing the knowledge of our great art. Perhaps our friend had an idea that we might arrange a little party to attend and show that when anything is going on Devon must not be left out in the cold.

Among the great competitions that of The Hague Palace of Peace has caused some discord, and it is to be hoped that the international competition for the London County Hall will have a more satisfactory outcome. Locally it is not altogether surprising that the Dartmouth Municipal Buildings competition, in which our members refrained

from taking part on account of the objectionable condition has resulted in trouble. Promoters of competitions for public buildings, especially in the interests of the payers, ought not to issue conditions which cannot be accepted by architects of standing.

May I offer a few remarks upon some matters which, although they have a direct bearing upon our work, are of a very general nature, and therefore the business of no one in particular. The setting and environment of buildings does not always receive the consideration it deserves, it may be, for many reasons. In this respect the student who builds castles in the air—elaborate structures not destined to materialise—has the happiest time, being utterly free to picture his imaginary erection in harmony with its surroundings, or rather with facile pen and brush he puts in a setting to suit, but in actual practice few architects have the opportunities of Napoleon's architect. We can expect to be called upon to design palatial avenues, but nothing be done towards a more comprehensive and dignified treatment of towns? We talk loudly of Imperial ideas, but the average English town demonstrates most clearly that it is a mere aggregation of units, each only caring for itself, with something to buy or something to sell, but rarely anything to give for the good of the community unless some immediate return is assured. The more patriotic temperament provided the unmatched buildings of the Greeks, who knew something of the joy of life beautiful. We are content with more sordid surroundings so long as life is made easy and pleasures unlimited.

True, there is an attractiveness in the name Garden City which deservedly is occupying the attention of those interested in the housing question. The idea seems very delightful and much to be desired; but is it necessary to go so far afield and begin new cities? Would it not be better to realise what we have in some of our large towns? Take Exeter, for instance. Within the last few years a speculating builder has accomplished a great deal towards destroying its natural beauty at the expense of charming residences and open grounds, some of an ornate description.

The approaches by rail to our cities are often of the most appalling description, endless back yards in various states of disorder or dilapidation. It is not a necessity that the backs of houses should always face the railway, where it is so something might be done in co-operation with the companies to effect the planting of suitable trees, especially with electrification of the lines looming in the distance, which will remove the smoke evil. The London and South-Western have themselves done something in the way of planting. Then the approaches by highway with the advent of the motor car, reviving their old importance, after it had passed to the railroad, and let us hope fresh enactments will be provided. At present in many towns the highways are being defiled by the endless motility of the jerry-builder, who crowds his house fronts as close to the footpath as possible. It would be to the interests of the community if these main roads were made 50 feet wide in place of the by-law 36 feet, and space would then be obtained in which trees could be grown. Further, if it were too much to expect that small cottage rows should not be erected on the main arteries, at least owners must be compelled to keep back 10 feet from the path, and should be made impossible to allow the rear of small houses to be placed as in Cowley Road. Another revision of the by-laws might tend in this direction, for it is quite unnecessary to have all the side streets, which are crossed by their residents or those who supply them, 36 feet wide. By all means keep the same distance between the building lines, but a road of 28 feet would suffice, and the extra 4 feet in each front garden would make it worth attention.

It should also be obligatory to provide a certain rational open space for planting or grass, and a ground landlord should not be permitted to lay out an estate for several hundred houses without such open space. This may seem Utopian, but my next point is more so, and possibly the evil I refer to is felt more keenly in Exeter than at Plymouth. It is the irreparable damage which is being done by the speculating builder to the residential quarters where houses of a good class, having pleasure grounds attached, are being confronted by rows of very low-rental houses. Freehold land has its disadvantages, but there should be some means of preventing certain parts of towns which are admittedly occupied by superior residential property from being ruined by the incursions of the jerry-builder. Special areas must well be defined where small houses should not be erected.

Even our monumental erections often lack open space or elevation of floor-line not due to the architect. One of the most telling features of the Brussels law courts is the magnificent position. Conversely, the want of a basement is a distinct loss to the new civic buildings at Cardiff.

Plymouth has a fine Guildhall square and an unequalled open space on the Hoe, but it is rare indeed to find in our English towns the open market-place of continental cities, surrounded by noble piles of buildings. A unique site for a monumental building was afforded by the removal of the old houses near Exe Bridge; the opportunity has been lost, and shops of a very commonplace type cover it with their back entrances on the new boulevard. Someone was inquiring recently, after the laying of a foundation of a building which at the time was up to the first-floor level, why the names of so many officials appeared on it? I think foundation-stones are very useful; they generally vary in size according to the lack of beauty in the building, and it is right that future citizens should know who were responsible for the perpetration of such erections. But there are other inscriptions which destroy all sense of proportion of façades and should be brought within the scope of by-laws. I allude to the disfiguring large-letter signs. What with these and sky-signs, not to mention the tramway standards, our streets are losing all sense of proportion.

So much for some of the externals, and as I may be expected to refer to our aims, may I quote Sir Joshua Reynolds:—"The value and rank of every art is in proportion to the mental labour employed in it, or the mental pleasure produced by it. As the principle is observed or neglected, our profession becomes either a literal art or a mechanical trade. In the hands of one man it makes the highest pretensions, as it is addressed to the noblest faculties. In those of another it is reduced to a mere matter of ornament." To the general public the latter appeals more readily. That the general public is taking a growing interest in matters of art is undoubted, but it is evidently an acquired taste, and requires an enormous amount of stimulating before the due appreciation of architectural efforts will become a matter of course. There is a proposal to include its study at the older universities, and steps are being taken to obtain its recognition in the arts of the new London College. Still, if the public do not evince a warm interest in modern buildings it may be excusable, for the ordinary work is rarely attractive. It is said, "The great end of art is to strike the imagination," and any work which does so is likely to command attention, yet you daily face miles of streets utterly devoid of beauty, with buildings whose crude and misplaced ornament cannot result in mental pleasure of the smallest degree. It may be, gentlemen, that we are not altogether blameless; we are forced to devote so much attention to the more utilitarian side that we abandon as hopeless attempts to strive for real beauty of form, and are fain to obscure with redundancy of ornament the absence of design.

At the conclusion a hearty vote of thanks was proposed by Mr. C. Cole, seconded by Mr. N. G. Bridgman and carried unanimously.

Mr. Harbottle Reed proposed Mr. M. Alton Bazeley (Plymouth) as president for the ensuing year. It was seconded by Mr. C. Cole and supported by Mr. B. P. Shires, and was carried.

Mr. Bazeley, in returning thanks for the honour conferred on him, said he would endeavour to keep up the dignity of the chair and advance the interests of the Society as his predecessors had done before him.

Mr. C. Ralling, of Exeter, was elected vice-president; Mr. Allan J. Pinn, A.R.I.B.A., of Exeter, hon. secretary; Mr. S. Dobell (Exeter), hon. treasurer; and Messrs. J. Crocker, F.R.I.B.A., J. Jerman, F.R.I.B.A., J. A. Lucas, A.R.I.B.A. (Exeter), and O. B. Peters, F.R.I.B.A. (Launceston), were elected to fill vacancies on the Council.

The Bombay Memorial of the recent tour of the Prince and Princess of Wales in India is to take the form of a museum of the products and industries, the art and archaeology, and the natural history of Western India. The Government of Bombay have approved the proposal of a special committee that the building for art and archaeology should first be taken in hand, other portions of the scheme being postponed for a time. The President of the Royal Institute of British Architects is to be requested to select four gentlemen of repute in the profession who would be willing to submit designs at a premium of 100*l.* each, and a like amount is to be paid to the authors of the two best designs prepared in India and sent in competitively

ARTS IN HUNGARY.*

A PASSIONATE love for art as well as for music is the birthright of every Hungarian. Right from the very earliest ages there were signs of great artistic taste and display amongst the Hungarians. St. Stephen, the founder of the Hungarian kingdom and the introducer of Christianity into Hungary in the year 1000, had done a great deal during his forty years' reign to encourage the arts and sciences of the country. He founded numerous bishoprics, abbeys and churches, both at home and abroad, the walls of which were adorned by the finest frescoes of the time.

Amongst his immediate successors St. Ladislaus (1077-95), the brave and chivalrous king, proved also a true patron of the arts, likewise his successor Kolomon (1095-1114), the conqueror of Dalmatia. The last-named monarch, owing to his great learning and scientific attainments, was commonly known as the "Book King."

That enlightened ruler Andrew II. (1205-35), who granted to Hungary in the year 1222 the "Golden Bull" or the Magna Charta of Hungary, a few years after the charter was granted to England by King John, was also a great patron of the arts. Upon his return from Jerusalem as the leader of the Crusaders he devoted a great deal of time to the reorganisation of the State, and likewise to the encouragement of arts and science.

Unfortunately, owing to various internal troubles and strifes, but principally as the result of the Mongol invasion, the art treasures of the country perished and its edifices were reduced to ruins, and the cathedral of Pécs alone bears witness to the high development of the artistic taste and splendour of that period.

The basilica of Esztergom, built in the twelfth century, may also be considered of great artistic value, whilst the renowned church of Ják, with its noble porch, and the church of Lebény, and a number of other churches are rightly famed in the history of art.

It may be of interest to point out here that in those days the principal churches were erected right in the interior of the country, far away from any city, and these churches were so constructed as also to answer the purpose of places of refuge and defence against the repeated invasions of the Mongol hordes and other tribes, and these circumstances no doubt accounted for the fact that most of the churches belonging to this period were destroyed during the country's struggles.

With the accession to the throne of Charles Robert of the house of Anjou (1308) the Italian renaissance art was introduced into Hungary, both by Charles Robert and during the long reign of his son Louis the Great, and for the next two centuries art and science prospered throughout the land.

We have only to look at one of those volumes belonging to the famous collection of King Matthias (1458-90) known to history as the Corvina Library, and we shall at once be convinced of the highly artistic taste which was developed in those days. The wonderful ornamentation and the marvellous miniature paintings in those volumes, which were written on parchment, furnish the best proofs of the great love for art and perfection of workmanship which prevailed during the rule of this great king. No wonder that the Turks during their occupation of Buda attached such importance to the possession of this valuable collection, which consisted of 5,000 volumes.

The Hungarians will always be grateful to the present Sultan for having recently restored to the Hungarian nation a portion of this library, which had been scattered about his dominions and sacredly guarded there for centuries. The volumes were brought back to Hungary in a special train, and the occasion was marked by the greatest national rejoicing. The thanks of Hungary in this respect are due to that eminent Hungarian scholar, Professor Vambéry, who, with the consent of the Sultan, was entrusted with the task of searching throughout Turkey for these valuable volumes. I understand from my friend, Mr. Joseph Offord, the well-known Egyptologist, that one of the MSS. belonging to this library is in the actual possession of Lord Leicester at Holkham Hall, and it is sincerely to be hoped that this will be restored in the near future to the Hungarian nation, the natural custodian of such a priceless document.

In a country like Hungary, where patriotism is as sacred as religion, it is quite natural that the artists of the Middle Ages should have paid equal attention to the execution of

* From a paper by Louis Felberman, read before the Society of Arts.

subjects relating to national and historical life, and these are represented by the frescoes at the Gisella Chapel in Veszprém and the church of Turnicze, the latter of which shows an episode in the legend of St. Ladislaus. The fresco to be found at the cathedral of Szepesváralja displays an ecclesiastical subject with a political background.

Of the monuments and public buildings of the fifteenth century, the cathedral of Kassa and a few other village churches in Upper Hungary, as well as the beautiful town hall of Bártfa, in the same district, are the only relics of that period.

Amongst other architectural relics of the Middle Ages no doubt the most perfect specimen of the kind preserved is that of the castle of Vajda-Hunyad, formerly the city and stronghold of that immortal Hungarian hero Hunyadi-János (father of King Matthias). A replica in plaster of this building was exhibited at the Hungarian Millennial Exhibition and also at the Paris Exhibition, where it commanded the general admiration of all, and was considered as the finest specimen of architecture preserved from Mediæval times. The Hungarian Government have lately raised a beautiful palace for the Royal Agricultural Museum in the town park of Budapest, after the pattern of this castle.

Amongst the artists belonging to the Middle Ages hardly any names of importance have been handed down to us, but Hungary is proud to be able to claim the famous Albert Dürer as one of her sons, for although Dürer was born at Nuremberg he was of Hungarian parentage. His father, whose name was Ajtós, was born in the town of Cyula, in the county of Békes, and resided there until he migrated to Germany, where he took the name of Dürer, the German for the Hungarian name of Ajtós.

For over a century and a half, whilst the Turks were either knocking at the gates of Hungary or had practically become its masters, the Hungarians had no time to devote to art, for, to use the words of a famous poet, "They had to guard the country with their sword in one hand and to plough the land with the other."

With the final expulsion of the Turks (1699) the innate love of art made itself again potent, and two artists of great fame appeared on the scene in the persons of John Kupeczky (1676-1740) and Adam Mányoky (1673-1757), both of whom established a world-wide reputation, John Kupeczky having lived for many years in Rome and finally settled in Nuremberg, which at the time was the city of art and culture; whilst Adam Mányoky, who lived for many years and studied art in Hanover, Paris and Holland, became the favourite painter of the King of Poland, Frederic Augustus II., also Elector of Saxony. Both these artists cultivated the art of portrait-painting, and followed the style and tendency of the Rembrandt and Vandyke schools, of which they were most able exponents. It may be of interest to know that both of these painters are represented in the gallery of the Marquis of Bath and likewise in the leading collections of Europe.

The frescoes of the Budapest University Church date from the eighteenth century, and although they have been hardly dealt with by time, nevertheless they may be regarded as fine specimens of the Rococo style.

During the reign of the famous queen Maria Theresa (1740-80) art and science received great support and encouragement, and this was partly the case during the rule of her son, Joseph II. (1780-90), but unfortunately the kings that followed them have shown no desire, nor did they have any inclination, to encourage Hungarian art, science and literature; besides, their time had been otherwise taken up with continual wars, which was especially the case with Francis I. (1792-1835).

Under such conditions art again lay dormant, and the few who made it their profession could barely make a living, and some of the most celebrated portrait-painters had to take to painting signboards, or to adorn with pictures the household furniture of the peasants, while the sculptors had to work in the potteries. In the Koronaherzeg Street of Budapest there is a signboard which was painted by one of the most famous Hungarian artists, Barabás.

Towards the middle of the last century that great Hungarian patriot, Count Stephen Széchenyi, to whom Hungary owes so much for its resuscitation in many directions, had also seriously occupied himself with the promotion of the arts, and his activity in this direction was followed up with the greatest zeal and energy by the late Minister of Education, H. Auguste Trefort. With a view of attaining his object the late lamented Minister founded an art union, which had for its object the exhibition from time to time of pictures presented by Hungarian and foreign artists, which

were disposed of by means of a lottery amongst its members. The stormy period of 1848 and the sad days which followed put an end again for some time to the development of Hungary in general, and with it its arts and industries suffered; as soon, however, as peace was restored in the country, and by the treaty of 1866 Hungary had a free hand in the management of its affairs, the people settled down to work, and art and science commenced to prosper once more.

In the year 1870 the first school of fine arts was opened under the direction of the famous painter Gustavus Keleti, and later the school of painting began its activity under that illustrious painter Julius Benczur. The Government took the matter seriously in hand. A fine art society and other institutions were formed under their auspices, scholarships were granted to deserving art students, and in many cases the entire expense of their education was defrayed both at home and abroad by the Government. The result of this was that the country became possessed of some of the foremost artists in Europe, men whose names will be handed down to posterity.

Few nations indeed can boast of artists who rival Maurice Than and Charles Lotz. The gigantic ceiling painting of Lotz in the Budapest Opera House will for all time be the wonder and admiration of those who are privileged to set eyes upon this marvellous work of art, and the frescoes in the great vestibule of the central railway station at Budapest painted by Than are works of no less merit.

The historical painting by Julius Benczur representing the baptism of St. Stephen and the famous picture of Bartholomew Székely depicting the finding of the body of King Louis II. after the battle of Mohács, will be monuments of true artistic value for all time. To the same school as the former also belong the painters Alexander Wagner and Alexander Lietzenmayer.

Another Hungarian artist of universal fame was the late Michael Zichy, who, by wonderful and life-like subjects, familiarised the world with the great beauty and charm of the national ballads of that immortal Hungarian poet, John Arany.

And who does not know and honour the name of Michael Munkácsy who, by the aid of Professor Szamosi, and the landscape-painter, Ligeti, rose from the position of a carpenter's apprentice to the rank of the greatest of living artists? His large pictures of "Christ before Pilate," "Golgotha" and "Ecce Homo" have been exhibited and admired in London, whilst his numerous national pictures and other subjects have all attained universal fame. His pictures of Hungarian types and scenery which have brought to life some of the first poems written by Petöfi, the greatest of Hungarian poets, will live for ever in the history of Hungarian art. Munkácsy, prior to being a painter, worked as a carpenter in the town of Nagy Várad, where M. Szamosi, professor of painting at the college, discovered his talent and gave him his first lessons in art. It was my privilege to be a student of this professor many years afterwards, and this led to an intimate friendship between myself and the great painter in later years. I have seen many of his original drawings there, and a tailor of the town got one of his sketches for a pair of trousers, whilst my barber had his signboard painted by this future famous artist for 3s. 6d.

Árpád Festzi is another artist of great fame, and his picture "Mary and Magdalen at the Grave of Christ," and his frescoes in the Palace of Justice, as well as his colossal panorama representing "The Entry of the Hungarians under Árpád," are all triumphs; the last-named picture was exhibited some years ago in London.

Genre subjects are represented by numerous distinguished Hungarian painters. The religious pictures of Roskovics are as famed as the portraits of Vastagh, Horowicz, Balló, Parlaghy, Karlovsky, Bruck-Lajos, Fülep László, &c. The two last named are well known in this country, and those who may have the opportunity of visiting the exhibition of Fülep László's works in June next at the Fine Art Society in Bond Street will be convinced of the great merits of this Hungarian portrait-painter.

Unfortunately time will not permit me even to enumerate the host of distinguished artists in all branches that Hungary can boast of. I should, however, be doing an injustice to them were I not at least to mention their names in a casual way. They include Bihari, distinguished for gipsy and national life; Vágó, popular subjects; Margitay, humorous and modern social life; Lajos Ebner and Jankó, famed for their genre subjects; Markó, celebrated for his

landscapes; Telepy, mountain scenery; Ligeti Eisenhut and Tornai, for their Oriental subjects. A large collection of paintings by Tornai, representing life in India, China, &c., will shortly be seen at the Goupil Gallery, Regent Street.

In the plastic art and sculpture Hungary can claim to rank amongst the first countries in Europe; indeed, few nations can boast of so many famous sculptors as Hungary.

Stephen Ferenczy in the year 1840 was the first to pave the way. Then came Joseph Engel, whose mythological and genre style showed great merit. The monument of Széchenyi, by this artist, which was erected in the year 1880 in front of the Academy of Science, is a wonderful artistic work. Nicholas Izsó is rightly famed for national subjects, and his monument of the poet Michael Csokonai Vitéz, in Dereczen, is a masterpiece. The beautiful statues along the Danube quay at Budapest of Baron Eötvös and the statue of the great Hungarian poet, Petöfi, by the sculptor Huszar, are admired by all who visit the Hungarian capital.

Alois Strobl and George Zala are each deservedly famed, the first as the wonderful creator of that lovely monument representing the poet Arany, whilst Zala distinguished himself in the monument representing the Arad Martyrs and the recently unveiled statue of the late Count Julius Andrássy.

Fadrusi will rank for all time as one of the best sculptors, and his monuments of Maria Theresa and King Matthias will always be works of the highest merit.

Hungary boasts of a great number of highly-talented architects, and it is owing to them that the public buildings of the city of Budapest are considered among the finest in Europe.

Nicholas Ybl was the first to distinguish himself with his beautiful designs of the Royal Opera House, the Customs House, and the bazaar of the fortress of Buda. Nothing can excel in style and beauty the Houses of Parliament which were recently erected along the Danube quay, at a cost of nearly 3,000,000*l.*, after the designs of the architect, Emerich Steindl. The beautiful Gothic structure is a real triumph of art, and it is a worthy rival of the Palace of Westminster, which inspired the great artist.

The imposing new buildings of the Palace of Justice, close by, which were recently erected at enormous expense after the designs of Alois Hauszmann, likewise the new Palace of Buda, commenced by Ybl, and completed by Hauszmann, may be regarded as the pride of Hungarian architecture.

Altogether Budapest may be termed a city of art. There are two beautiful palaces of fine arts and a national picture gallery filled with the most precious treasures that money could purchase at home and abroad.

In addition to this there are numerous private collections both in Budapest and in the country. There is a museum of fine arts which will bear comparison with any of its kind, and everything is done by the King and the Government to encourage native artists and to induce them to live at home for the good of the country. It is fortunate that the country possesses such a gifted and esteemed nobleman as Count Albert Apponyi as its Minister of Arts and Culture. Doubtless under his able direction the arts of the country will flourish more than ever.

ORIENTATION OF BUILDINGS.

THE following interesting article appeared in the *Morning Post* on Tuesday:—

Although the subject is one which has occupied the attention of mankind since prehistoric times, the title of this article is no doubt somewhat of a mystery to the general reader. And yet all of us are, whether wittingly or not, greatly interested in the orientation of our own dwellings. It is the generally accepted belief that the ideal building for residential purposes is one which has its length placed due east and west, so that its front should face due south in the Northern and due north in the Southern Hemisphere. Whether in town or in the open country, people have a decided preference for houses so constructed. There is not a London house agent who does not include "a south aspect" as a special recommendation for many houses, whether the buildings are in a great fashionable square or in a more modest side street occupied by the working-classes. Of course, the real explanation of this universal desire to face south is that which was asserted in a very old play of the Red Indians of North America—

They worship the Sun for his great Light,
For that doth them great pleasure.

In this country, with its fickle climate and often gloomy skies, we smile at and pity the poor sun worshippers of the East, but in practice our own beliefs are not so very different from those of the Persians. We all recognise the beneficent influence of days of glorious sunshine, and to indulge in as much of it as possible we endeavour to make our houses brighter and more cheerful by so constructing them facing southward that they have shed upon them the greatest amount of sunshine during the day. Unfortunately, in towns the exigencies of space render it impossible to erect all houses with a south aspect, and many of us, therefore, have to be content with our best rooms facing the chilly east or the dull and dark north. The ancients were very particular in fixing the position of their dwellings, for there were no windows, and they had to consider how to secure a maximum of daylight indoors. It is beyond question that the marvellous temples and monuments of Egypt and other countries first inhabited by man were most carefully oriented. A temple would be erected in honour of some deity, which the ancients represented by a star or other heavenly body, and the building consequently was so planned that its main entrance faced the particular star on a certain festival day dedicated to the Deity—the patron saint's day, as it were. Even in this country we have in the arrangement of what is left of Stonehenge proof of an elaborate plan by the Old World architects on religious lines very similar to those adopted by Eastern people. As Mr. Penrose says:—"The object the ancients had in using the stars was to employ their rising and setting as a clock to give warning of the sunrise, so that on the special feast days the priests should have timely notice for preparing the sacrifice or ceremonial, whatever it may have been."

The Eastward Position.

This pagan idea of orienting temples was to a very great extent adopted by Christians in various countries. Practically all the older churches in the British Isles were built with their length from west to east, the chancel being at the eastern end, and the idea was carried even further, for many graveyards show that the dead were invariably buried in line with the church, with their feet towards the east. This burial practice goes back many hundreds of years, for it was observable in the discovery of human remains on Dover Hill, near Folkestone, last winter, the bodies having fifteen centuries ago been buried carefully with their feet pointing to the east. With the primitive Christians we may be certain that the method of orienting their churches was by direct observation of the sun, the root idea being, of course, that the sun rises in the east and sets in the west, so that by taking a bearing at sunrise or at sunset the building was supposed to be on an east and west line. As a matter of fact, however, it is only at the spring and autumn equinoxes that the sun rises and sets true east and west, as he then crosses the line, coming north for our summer and again crossing it going south for the southern summer, and as the year progresses the points of sunrise and sunset at the summer solstice are respectively east-north-east and west-north-west, and at the winter solstice east-south-east and west-south-west. Unless, therefore, architects and builders were possessed of a little astronomical knowledge there was a possibility of the line they adopted being appreciably in error. And this appears to have been the case, for churches dedicated to saints whose festivals are at about Midsummer and Christmas differed considerably in their orientation. Old churches whose patron saints were David, Gregory or Benedict—near the spring equinox—and Matthew and Michael and All Angels—near the autumn equinox—were placed practically true, but those whose patron saints were John the Baptist, Peter, &c.—at the summer solstice—and Holy Innocents, Thomas and John the Evangelist—at the winter solstice—were apt to be a couple of points, one side or the other, from the truth, as the sun's rising or setting was supposed to be observed on the patron saint's day, and, as we have seen, the sun's position varies according to the time of year. If this fact was not taken into account it was obviously impossible to insure that all churches should be built true east and west. To the devoutly religious members of the community it is, on many occasions, a matter of supreme importance that in their devotions they should be facing true east—not north-east or south-east—and it is for ecclesiastical lawyers to argue the question and decide what latitude should be permitted in these matters. The "eastward position" in the church service is admittedly a burning question, the occasion of much acrimonious discussion from time to time; but so little do the parties concerned trouble themselves about the actual facts that it is

quite possible, in some cases at least, that the celebrant whose actions are called in question actually faces west instead of east.

The Bearing of the Sun.

However, other times require other methods. From the long ago past, when our forefathers had to get up at about three o'clock in the morning to ascertain what they considered to be the eastern point of the horizon, we have advanced to the discovery of the compass, or, as it is generally known, the mariner's compass, which most of us imagine renders us quite independent of the sun, whose position, at any rate in this country, is only too often a matter of conjecture rather than certainty. But while the bearing of the sun changes day by day all the year round, and is therefore unreliable unless we make the necessary allowances according to the season, the compass on which we rely is also subject to more or less considerable errors—errors which architects generally ought to be perfectly familiar with, but which we should not, in the ordinary course of things, expect builders to have studied, although it is often very important that their handiwork should stand certain tests. It may be objected by architects that London is not a place in which to study the orientation of buildings erected by the aid of the compass, and that it is a perfectly reasonable objection in so far as the actual buildings go, for the line of frontage is not determined by the compass but by totally different considerations which we can all understand. Most of the modern London churches are built square with the street in which they stand, when the streets run nearly north and south, but in Queen's Gate, South Kensington, there is a church which presents a lopsided appearance, as it is at an angle with the pavement instead of being square with it. To be correct, however, the angle with the pavement should have been reversed. As it is the church stands east-north-east to west-south-west. Only a little further westward we find the church of St. Mary Boltons violating the popular belief in the east and west line. The mistake could not have arisen through observing sunrise or sunset on the patron saint's day, which is near the autumnal equinox, nor by an observation of the compass, for the church stands due north-east and south-west, and the east point of the orient on the spire has been set at north-east, so that when the wind brings the vane into north-west, for instance, the true wind is west. In Westbourne Park we find the church of St. Stephen turned completely to the rightabout, the entrance door being at the east end and the chancel at the west end. The services here are supposed to be of the Low Church type, and it would therefore shock the ideas of the worshippers if the vicar should be charged with practising the "eastward position." Yet it must be obvious from the construction of the building that if he faces his congregation when performing the offices of the Church he is always adopting the eastward position—when ever he turns to the altar he faces due west.

The Compass.

But it is not in church architecture only that the compass has led architects and builders astray. The compass has not only an error which is known as variation, due to magnetic attraction—which in our country draws it about a couple of points away from the truth—but it is also affected by the presence of iron and other objects in its immediate vicinity, which may correct the variation or largely increase it. To shipmasters these differences are well known and are allowed for, every ship being "swung for deviation" before going on an ocean voyage, the very nature of the cargo having to be taken into account. On shore anything seems to be good enough, and the variation and the deviation (two totally different things) of the compass are too often ignored. At the Army and Navy Stores, in Victoria Street, Westminster, we can purchase the best compasses on the market, and every information is afforded as to the errors of the instruments, yet on the roof immediately above an orient is fixed square with the building itself instead of due north and south. The architect's plan of a public institution in Berkshire shows by the orient that the building faces south-west, but in reality it faces due south, and a dial fixed above the southern entrance shows the correct time by the sun, which is sufficient proof that the architect had erred. But one of the most singular architectural mistakes in this respect is found in a well-known establishment in Ireland, where the architect's plan of each floor is exhibited for the information of visitors. The building really has its entrance facing north, the Polar

star being right opposite the door, while the dining-room faces the midday sun. Yet the architect's orients on the plans represent the entrance door to be facing south-west and the dining-room north-east. On pointing out this singular anomaly to one of the Irish attendants the reply was characteristic. "Och, sorr! it's all done with the Irish compass, which is different from all other compasses. Have you not seen the picture postcards in the shop windows showing how Pat is smashing up the London clock because he cannot admit there is any other time than Dublin time? Well, sorr! it's the same with the compass, and if our architect says we face north towards the sun you may be shure he is right—by the Irish compass."

GENERAL.

An Exhibition of primitive Umbrian art was opened on Sunday in the Palazzo dei Priori, Perugia, and will continue till November. The exhibition will comprise paintings, sculptures, miniatures, old brocades, church ornaments, woodwork, lace and embroidery—in short, every form of art which was practised in the fourteenth and fifteenth centuries.

The Plans for the new Technical Institute, Dundee, by Mr. Langlands, have been approved. The building will cost 40,000*l*.

Mr. George Hodson, a well-known civil engineer, water-works and sewage works specialist and mining engineer, and head of the firm of George & F. W. Hodson, of Loughborough and Westminster, died at Loughborough last week from acute pneumonia. The deceased gentleman was a native of Staffordshire, and was educated at Wolverhampton. He was a member of the Institution of Civil Engineers and the Association of Municipal and Counties Engineers, a fellow of the Sanitary Institute, the Geological Society and the Association of Water Engineers. He designed water and sewage works for more than sixty towns and districts in the country, and was consulting engineer to the Duke of Portland, Lord Savile, the late Hon. Mark Rolle, the Midland Railway Company, and Leeds, Leicester, Nottingham, Stockport and other corporations.

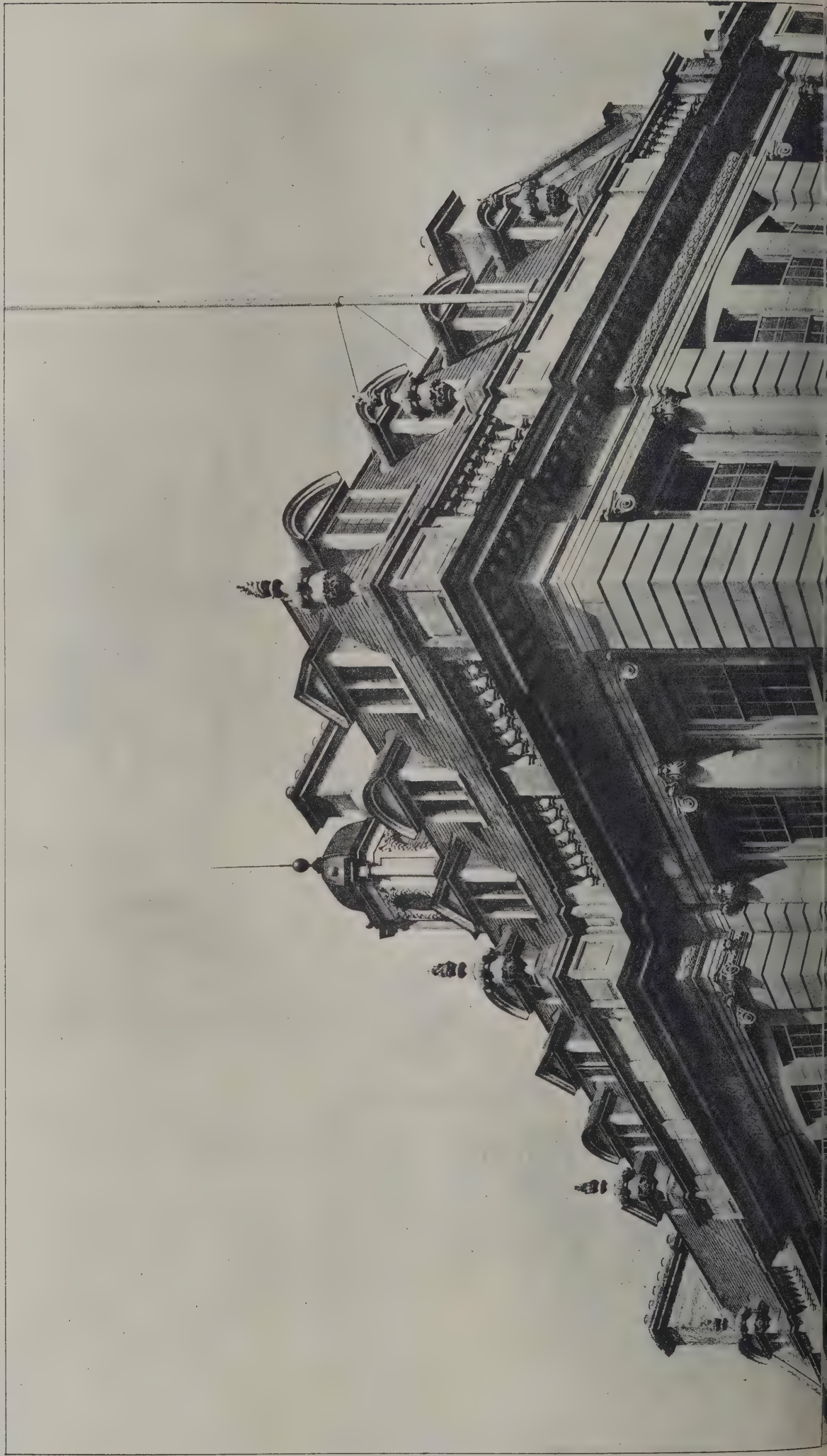
The Surveyors' Institution have accepted an invitation from the Scottish committee of the Institution to hold the next country meeting at Glasgow on May 23 and 24. Visits have been organised to various works and places of interest in Glasgow, and the Clyde trustees have allowed the use of a steamer for viewing the harbour and shipping yards.

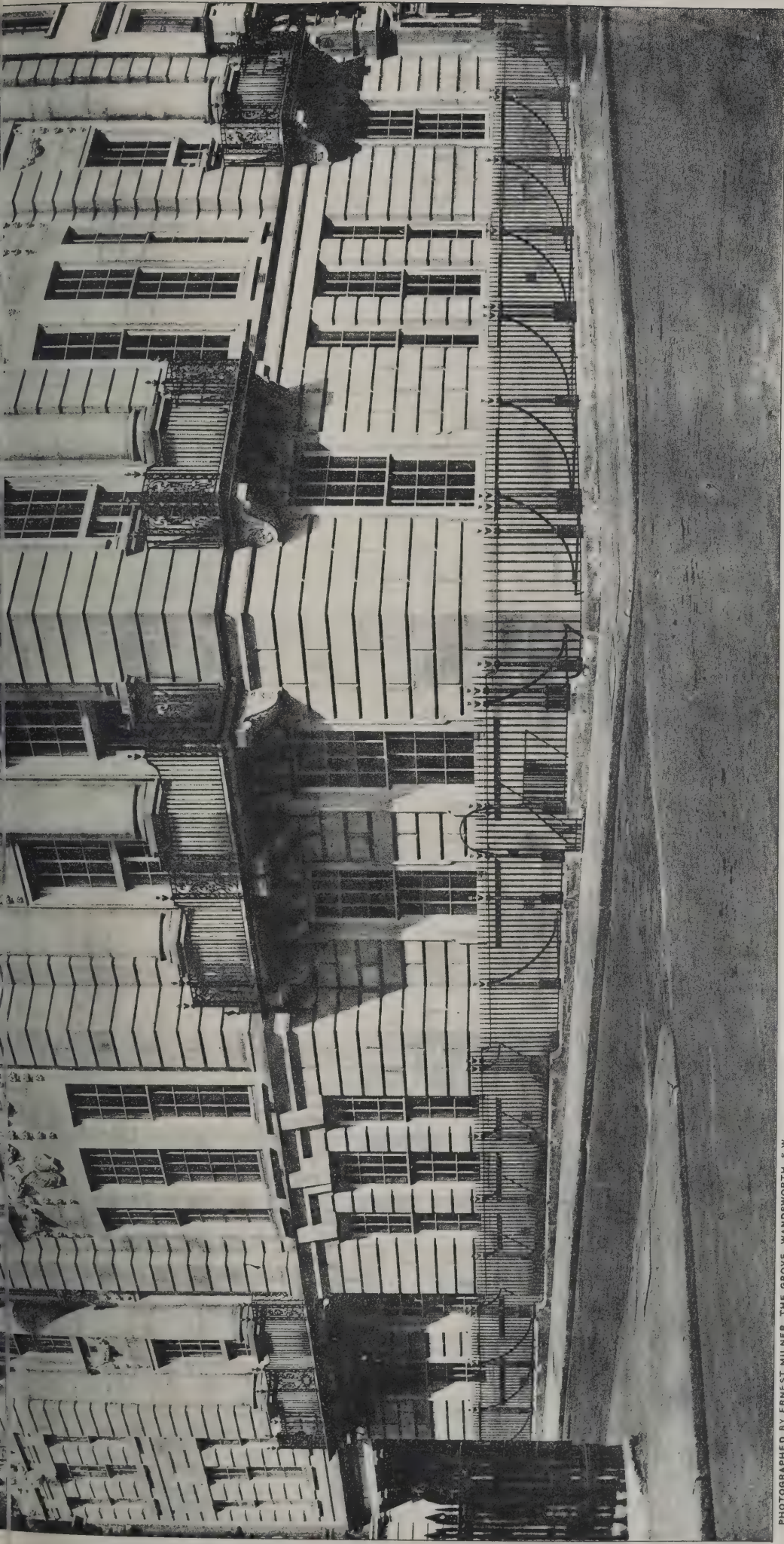
At a Meeting of the Rugby Board of Guardians on Monday the building committee reported that the total cost of erecting and furnishing the new infirmary was 5,377*l*. The work should have been completed within twenty weeks of its commencement under a penalty of 10*l*. for each week's delay, but whereas it should have been finished at the beginning of last July, the contractor did not complete it till the end of November, and the committee recommended that penalties be enforced to the extent of 50*l*., because all the delay was not the fault of the contractor. It was moved that 100*l*. be deducted, as the board had to pay a clerk of the works 2*l*. 10*s*. a week for twenty-three extra weeks, and they were put to other cost besides, owing to the delay. It was decided to deduct 100*l*.

The York Consistory Court have granted the following faculty to the executive committee appointed to carry out the restoration of Selby Abbey:—"To reinstate the fabric of the abbey church at Selby after the fire in October 1906, and to build a new gable to the north transept thereof, and if any coffins or human remains should be exposed in the course of the underpinning of the central tower or otherwise in the course of the execution of the works, the same are to be taken up and reinterred with all decency in the churchyard surrounding the church, as near their present situation as circumstances will permit, and under the direction of the vicar and churchwardens, and to remove any tombstones or monumental stones or slabs in the church or yard which may interfere with the progress of the works, and to refix or relay the same as near their present situation as possible, the greatest care and decency being used in so doing."

A Conversazione of the Royal Society of Antiquaries of Ireland will be held in the Dublin Museum of Science and Art on the 15th inst. The Lord Lieutenant of Ireland will attend.

The Architect, May 3rd 1907.





PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

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REGINALD BLOMFIELD, A.R.A., Architect.

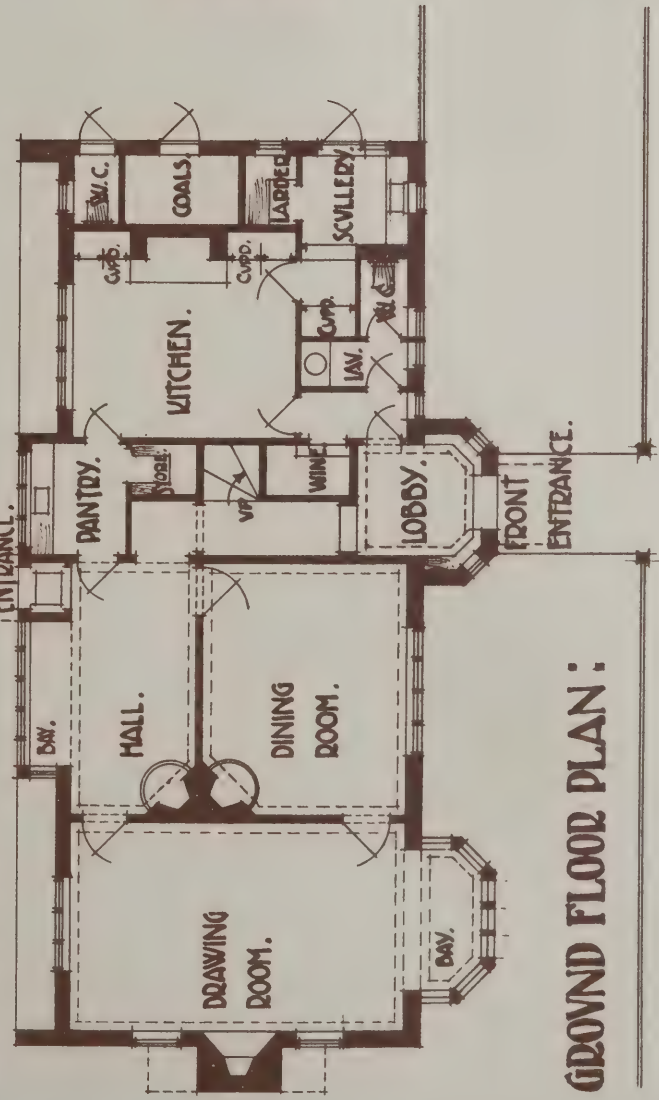
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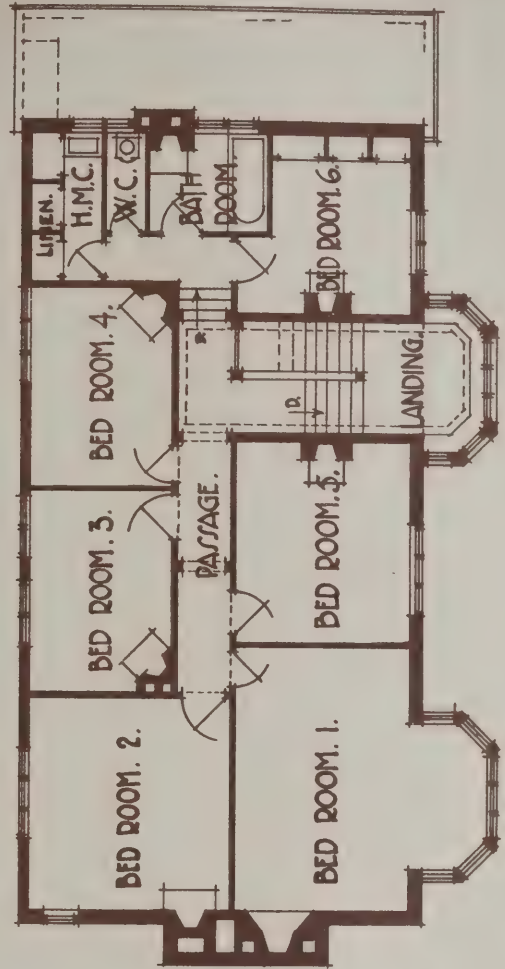
THE COMMON HOUSE WIMBLEDON

GARDEN
ENTRANCE.



GROUND FLOOR PLAN :

SCALE OF FEET.



FIRST FLOOR PLAN :

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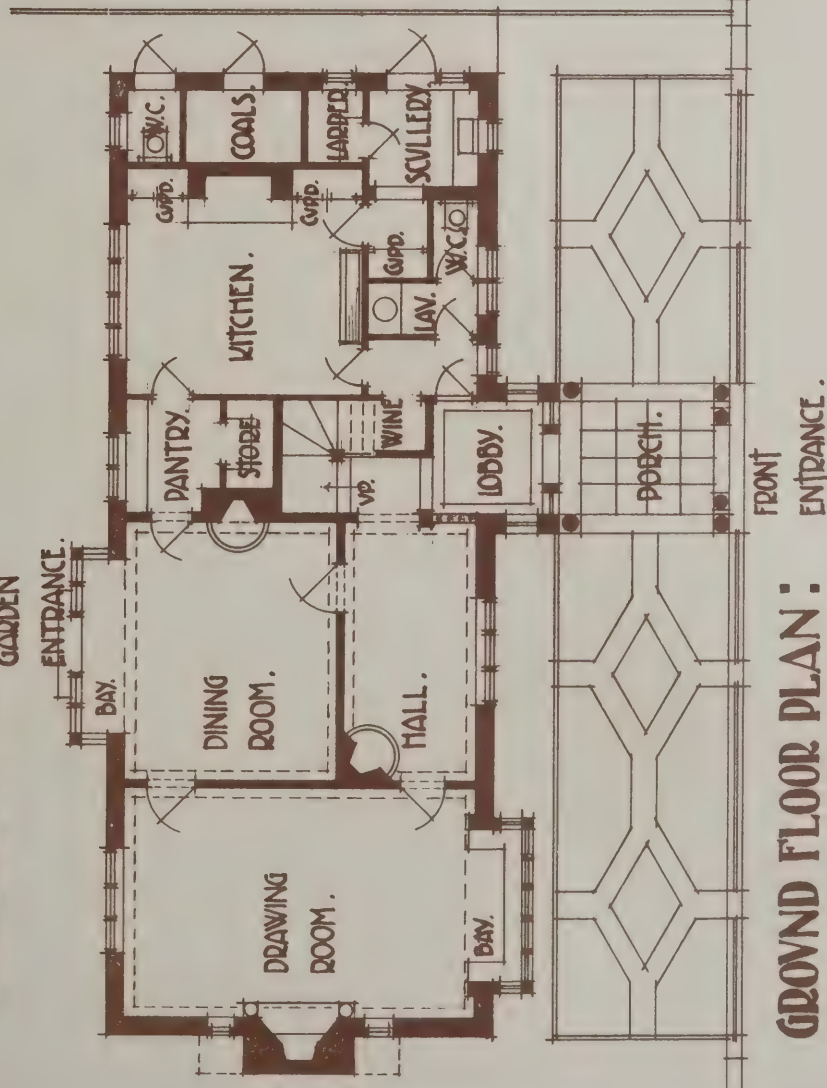
The Architect, May 3rd 1907.



PARKSIDE HOUSE WIMBLEDON

GARDEN

ENTRANCE.



SCALE OF FEET.



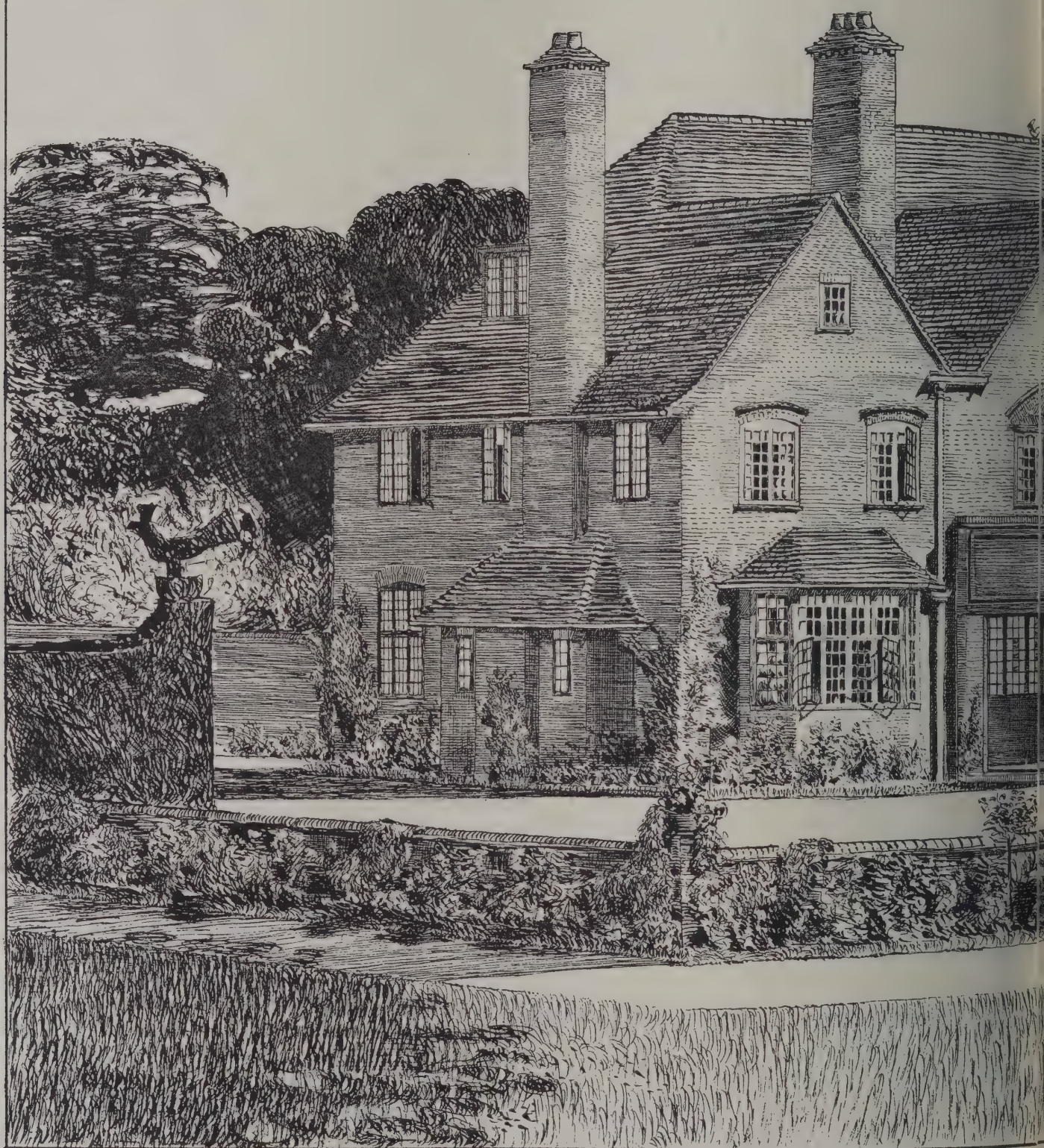
FRONT

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E. Hewitt: Architect.

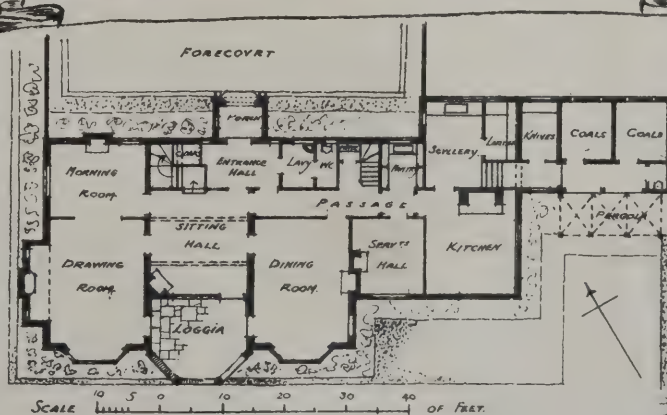


PHOTO-LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

The Architect.

THE WEEK.

It is proposed to enlarge Horsell Church in Surrey, and for that purpose the north wall would have to be moved. An appeal was made by the Society for the Protection of Ancient Buildings to have the enlargement accomplished by extending the church eastwards. Mr. THACKERAY TURNER in his letter says:—"As the church stands, the chancel and its aisle and the vestries are modern, the western tower and the south aisle have been so thoroughly 'restored' that most of what meets the eye is modern work, and only the north wall remains to show what manner of building the original church must have been. With the exception of one modern window and two which have been a little modernised, this wall is an unspoilt example of an old building. The buttresses are very fine and the two-light fourteenth-century window is a most perfect example of Mediæval work. The committee cannot but feel that to pull down this north wall for the purpose of enlargement would indeed be very wrong if there were any other way of effecting the enlargement." The building committee, after a consideration of the report, have stated that they are unable to adopt the Society's suggestion.

A CASE was decided last week at the Wystrad Police Court which shows that the Merchandise Marks Act is applicable to slates. The Oakeley Slate Quarries Co., Ltd., of Portmadoc, were the complainants, and the defendants were a builders' supply company. A traveller representing the latter called on a builder and stated that as he wished to complete a truck he would like an order for about 800 slates. Accordingly an order was given for 800 Oakeley's old blue medium slates, 24 by 14, at 12½ per thousand, plus 2½ per cent. When the invoice came it was seen that Portmadoc slates were entered on to it. Then when the error was pointed out a second invoice was sent corresponding with the order. But when the slates arrived it was found they were not Oakeley's. The defendants offered to pay a fine of 40s. and tender an apology, but MESSRS. OAKELEY demanded the payment of a fine of 25% to a local hospital and an apology to be inserted in a number of trade journals, to which the defendants would not assent. Counsel for the defendants argued that they were not criminally responsible for the unauthorised act of one of their servants. The Bench came to the conclusion that the traveller had authority to deal with the matter, and that the plea of innocence which had been set up could not avail. A fine of 5% with costs was imposed.

WE hear so much of late about the advantage of having an authority to regulate the character of buildings in cities and towns, it might easily be imagined that the subject is not difficult to settle. The obstacles which arise in such cases were exemplified last week in Liverpool. The Dock Board has lately erected offices having a frontage of 265 feet and a height to the summit of the dome of 215 feet. A new building was proposed to be erected by the Royal Liver Friendly Society, which would have a total height of 295 feet with a frontage of 188 feet. Mr. ROBERT GLADSTONE, chairman of the Dock Board, and who is known to possess good taste, wrote to the Lord Mayor on the subject. In the course of his letter, he said:—"Unless a very considerable reduction is made, and the river brought into line with the new Dock Board offices, the fine architectural effect of the latter will be completely spoiled. Without questioning the fitness of the proposed building for business purposes, and the good

appearance which it might present in some other place, it is, I venture to think, quite unsuited to the George's Dock site, and if erected will prevent the realisation of a beautiful combination of buildings on a site which offers peculiar facilities for adding a magnificent architectural feature to the attractions of Liverpool. I earnestly hope that the present opportunity for beautifying our city may not be lost, to the profound regret of all lovers of Liverpool and of art." After the letter was read it was proposed that the subject should be referred to a committee, and that a model should be made to enable the members to judge of the effect of the two buildings. It was also proposed that the committee should have authority to engage any expert assistance which might be considered desirable. If there was ever a case relating to amenity in which deliberation would be advantageous it was that of the two buildings. But the jealousy of rival authorities could not be overcome. Some members of the Council believed that it was impertinence on the part of the Dock Board to interfere with plans which had been approved. Others considered that if the new building was not carried out the rates would suffer to the extent of 7,000£ or 8,000£ a year. Eventually the proposal for further consideration was defeated by sixty-two votes to nineteen. Liverpool is not the only place where there are rival authorities, and it is difficult to see how they can be controlled or coerced in matters of building.

FOR some time a committee of the Sussex Archaeological Society have been endeavouring to obtain suitable premises for a museum and library at Lewes. An old house known as St. Swithun's House was selected, but there was some difficulty in discovering the conditions under which it would be sold. A second house called the Barbican House was next brought under the notice of the committee. Its position is more suitable, as it stands near the castle, but the accommodation is less ample, and the price is likely to be 500£ higher than St. Swithun's. Moreover, possession cannot be obtained prior to next year. Mr. C. E. CLAYTON, architect, argued that the financial difficulties were likely to be overcome, and the following resolution proposed by him was unanimously adopted:—"That it be an instruction to the Council, through its sites committee, or otherwise, to negotiate for the purchase of and to purchase on behalf of the Society the house and premises known as Barbican House, Lewes; also in confirmation of the resolution passed on March 23, 1894, that the Council be requested and empowered to raise the necessary funds by the sale of the Society's Consols, subscriptions, mortgage, issue of debentures, or by such other means as may appear to them to be expedient."

PEOPLE must have wondered when they saw the announcement about the reopening of Selby Abbey on October 19 in the present year. If that statement were true the restoration would have been accomplished with more than American expedition. All that is contemplated is the reopening of the nave alone, and there is little doubt of its realisation. The other parts are not neglected. The choir pillars are almost complete. The pitched outer roof of the choir will, it is hoped, be completed in about three months' time. The underpinning of the tower piers is slow work. The two western piers are to be underpinned this summer, but the two eastern piers will not be attempted till the summer of 1908. The restoration of the north transept and Latham chapel is still more remote, so that probably two years may elapse between the reopening of the nave and that of the complete church. Although the subscriptions were liberal, it is believed additional contributions will be needed if the work is to be continued with energy.

ARCHITECTURE AT THE ROYAL ACADEMY.

II.

AN architect is fortunate who is able to introduce INIGO JONES'S Water-Gate in the foreground of a view of a building. This unique opportunity falls to Mr. PAUL WATERHOUSE in his "Offices for the Royal National Pension Fund for Nurses, Buckingham Street, Strand," which is in the Italian style, and in the shadowing at least bears some resemblance to the older work. Mr. F. L. PEARSON has a view of "St. Helen's School, Abingdon," a large suitable block. Another panelled dining-room in the Georgian period is by Mr. TEMPLE MUIR. "All Saints Church and Vicarage, Tooting Graveney," is shown by Mr. TEMPLE MOORE on a drawing which has a right to be called brilliant, for the sun shines on the roofs. It is a picturesque Gothic group, and suggests an arrangement which is not always obtainable. "Nos. 20 and 22 Hill Road, N.W.," by Mr. S. J. TATCHELL, are two houses of the local type, approached by many steps. "Design for Church Extension, Manchester," is rather indefinite. What Mr. EDGAR WOOD shows are very large buttresses, which appear to belong to a round building. The drawing is too small for the subject. "Premises, Warwick Street, Regent Street," by Mr. J. N. R. VINING, is a satisfactory effort to utilise a narrow site. The convex storey and the upper balcony have a pleasing effect. A small sketch of a garden front is shown by Mr. J. N. JOHNSTON. MESSRS. TREADWELL & MARTIN, from their experience, should know the architectural possibilities of London streets. "No. 3 Woodstock Street, W.," is an effective example of business premises.

The new building for Balliol College, Oxford, by Mr. E. P. WARREN, does not denote much respect for the *genus loci*, for it might be a Bayswater mansion with the large vases which once were signs of respectability. Mr. BERESFORD PITE, on the contrary, when designing his "Assurance Office, Euston Square," has remembered the Classicism of HARDWICK and the INWOODS in the vicinity, for the building is severe throughout, the principal storey having Ionic columns. The two designs for the "Law Courts, Bloemfontein," and the "University College, Transvaal," by Mr. E. J. WELLMAN, of Johannesburg, are both equal to the average English projects for similar buildings. There is a large dome in the former, while the college, if it should fail, could readily be utilised for offices, whether for Government or for commercial tenants. European precedents have been set aside in the extent of the accommodation provided. The "Clark Memorial Screen, Egguckland Church," by Mr. T. R. KITSELL, is rather novel, for musical instruments are the elements of the ornament. "Public Baths, Library and Fire Station, Reddish, Stockport," are an odd combination. MESSRS. DIXON & POTTER have successfully treated them in a low group. Mr. D. JOSEPH'S "Fitzgeorge Avenue" is another of the drawings which are too small to render justice to the subject. From the end view we see the flats are more suggestive of decorative treatment than is customary. The "City Hall, Belfast," by Sir BRUMWELL THOMAS, shows the entrance front, with the dome, &c., a view which suggests the unity of the different parts. Mr. JOHN BELCHER'S "Franco-British Exhibition, 1908," is Renaissance, but liberty has been exercised to introduce details which, if not warranted by ancient examples, are adapted to a building which is intended to afford entertainment. On the walls are drawings of houses by MESSRS. E. A. ALLFREY, W. A. AICKMAN, R. G. HAMMOND, H. INIGO TRIGGS and W. R. DAVIDSON. Mr. B. H. COLLCUTT has a design for a museum and art gallery, a design for a church in Cumberland is by Mr. J. E. DIXON SPAIN, and Mr. J. W. RHODES sends a clock tower. Mr. A. E. RICHARDSON'S "Suggested Architectural Treatment for Waterloo Place, S.W.," is more persuasive than a long essay, and suggests that if other improvements were indicated in a similar way there would be some chance of having better streets.

The "Lancaster Town Hall," by Mr. E. W. MOUNFORD, can be described as an example of the old-fashioned Classic which in England was adopted for various sorts of buildings. The front is surmounted with a pediment duly filled with sculpture, and there are the regulating number of columns of approved dimensions. It is no doubt appropriate in a town which claims to have had a Roman origin. MESSRS. RODWAY & DENNIS, in "St. Alban's, Bristol," apparently have not omitted a tower and spire temporarily; the building can disappear with them. The style is Perpendicular, with side chapels as well as transepts, and the whole forms a very careful group. The choir and transepts of the parish church Eccleshall, by Mr. TEMPLE MOORE, are in a very severe type of Gothic, and it is to be hoped the iron bars outside the windows are not a necessity on account of local roughs. Irish country houses, although they may bear resounding names, are generally commonplace buildings. MESSRS. WARWICK & HALL propose to reconstruct Killyon Manor, and, while it remains suggestive of many other residences near it, the large windows and the balconies extending along the front are improvements. It seems well adapted for "a meet." Mr. F. L. PEARSON'S "New Buildings, Wardour Street" have been already shown in the Academy. This year a staircase and gallery, and one of the rooms which appears like a library and waiting room combined, further suggest the great change made in the street. "St. Andrew's and St. Patrick's Church at Elveden" has a detached tower and a noble porch; the design is treated with much vigour by Mr. CAROE. The "House in Kensington Palace Gardens," by Mr. E. J. MANNING, suggests a much earlier period than Queen ANNE'S. The hall is of greater height, and has a far taller window than is usual in London houses. Although some years have passed since the first competition for Liverpool Cathedral, the design by Mr. W. J. JEWITT was worth exhibiting. It is a fine composition in the Italian style in which colour is lavishly employed in the window and roof, and sculpture is introduced without any regard for the edicts of the ecclesiastical court. Mr. T. G. JACKSON has two views of a mission church at Aldershot. Economy prevails, and in consequence all is simple. In the interior timber uprights are used to support the roof. The windows are small, and apparently there is a sculptured reredos. In his new chapel at Hertford College, Oxford, the style adopted is Italian. Columns serve for mullions in the windows, and columns also divide the sedilia. But at a distance the effect recalls a Gothic church. In the enlargement of Aldershot Church the stern tower remains as it was. The nave is widened, a vestry and gallery are added, and for these Perpendicular is adopted by Mr. JACKSON.

The noble group of the "Royal Infirmary, Manchester," by MESSRS. E. T. HALL & J. BROOKE, has not been fairly treated by having so lofty a position, through which the careful drawing cannot be appreciated. The latest example of a great building which is a realisation of the most advanced theories, it is one of the works which has exceptional interest at the present time. The divisions have specified purposes, they are connected by arches, and although repetition was inevitable the infirmary has the character of an unified composition. The "Church of St. Hilda, Croft Park," by MESSRS. GREENAWAY & NEWBERRY, departs from the old custom of keeping the roof of the chancel on a lower level than that of the nave. The drawing suggests that the nave has been overbalanced by the large chancel. There are not many memorials of architects, and the mausoleum to the late Professor BANISTER FLETCHER at Hampstead Cemetery, designed by his sons, possesses much interest. There is a portrait bust, and the canopy is supported by Ionic columns and is surmounted by a vase. At the angles of the pedestal are seated figures. The surrounding trees enhance the effect. The "Front of Shop and Office, Catherine Street," by Mr. H. H. STATHAM, is an effort to overcome some of the objections to similar buildings.

lower part, which is in masonry, seems capable of supporting the superstructure in brickwork, which in upper portion is made to appear lighter by the introduction of courses of bricks of a lighter colour. Alterations at Crawley Grange, which include a very large room, appear in a drawing by Mr. H. TANNER, jun. We suppose Mr. A. DUNN's "Design for Mednal Church, Westminster," expresses what was proposed by him when the project for the building was mooted. It is a Gothic interior, which appears more of a dream than a possibility. The church seems to be seen through a haze of a kind which cannot be taken to incense, and which may come from above. Though it we see gorgeous, gilded shrines unlike any which are now to be found in European churches. The Gothic ambition to attain height is allowed to play itself, and the fan-vaulting of the roof is at least equal to that at Cambridge. The "Students' Union, University of Liverpool," by Mr. C. H. REILLY, is not without originality. There are three or four varieties of windows, the piers are large, and the front seems as if parts had been reserved for decoration after. It is satisfactory to find that Mr. T. H. WILSON's ability has been recognised in America. The "Lodge Entrance, Brookland Wood House, Baltimore," with the cottages, large gate and screen, will serve to suggest an English origin to all who see it. The "Churchill Homes, Somerset," by Messrs. SILCOCK & REAY, form a terrace of cottages with red roofs, and are likely to form a pleasing feature on the landscape. The interior of "St. Chad's Church, Burton-on-Trent," by Mr. BODLEY appears to have used sandstone for the columns, and the style is therefore severe, but of fine proportions. There is a very light screen at the entrance to the chancel. The "Interior of English Church, Florence," offers a problem in architectural details. To most people an English church is expected to recall an English style and English ritual. But in Mr. BODLEY's drawing we see a body of monks resembling those of Italy. We see Italian altars, an Italian screen and crucifix, paintings, &c., all of which are adapted to compel an ignorant Catholic to imagine himself in a Roman Catholic church. That mode of concession is not adapted to the straightforwardness of English character, although a similar experiment was made in the Italian quarter of London. The "Memorial Fountain," by Mr. J. H. MORTON, consists of a basin with a wall fountain, a few Tuscan columns, the whole being enhanced by colour used with much discretion. "Conkwell Grange, Wilts," is a large house by Mr. E. GUY DAWBER. The windows are well emphasised and the occasional stone quoins in the chimney-shafts impart variety to them. The "Business premises, Lincoln's Inn Fields," by Mr. EUSTACE C. WARE, is for several storeys as plain a building as an economical manufacturer could desire. But we might say figuratively that the top storey blossoms into Gothic and in that way the building becomes architectural. In "St. John's House, Queen Square," the same architect attempts to impart, without much expense, a stateliness to an ordinary front.

The "Suggestion for Street Bridges Across the Thames," by Messrs. COLLCUTT & HAMP, is not a revival of the ponderous structures which at one time spanned Old London Bridge. A house on the bridge should consist of a shop and a storey over. The weight of the piers would consequently not exceed what has been sustained at the present time by the railway bridges over the river, and there need be no apprehension of the failure of foundations. It is remarkable, however, that in only a very few cases in Europe are buildings tolerated on bridges. The approach to the Thames bridge would be through a fine piazza. The plans of the new War Office are shown in two drawings by Mr. CLYDE YOUNG. The small drawing of "Sanctuary Fittings and Screens" for the church at Latchford, by Messrs. DOUGLAS & SHULL, suggests how delicate tracery can be enhanced

by an inscription and armorial bearings in colour and gold. The chapel to Colston School, Bristol, by Messrs. PAUL & JAMES, is Italian in treatment, the material being mainly red brick. The two large drawings of a church and country house by Mr. M. H. Pocock are very striking. The buildings are boldly sketched with a pen in ink, and a wash of yellow is laid over the sheet. The "Bishop's Throne, St. Anne's Cathedral, Leeds," by Mr. J. H. EASTWOOD, is not detached, but is set up on a Gothic arch having figures of prelates in the spandrels. Mr. R. A. BRIGGS contributes a view of the interior of a church on Sunbury Common, in which a round-arched arrangement is adopted, the walls of nave as well as chancel being panelled. Mr. COLLCUTT in his "House at Totteridge" avoids a symmetrical arrangement of windows, thus recognising one of the Mediæval principles which time has endorsed although it is not always acted on. Glasgow architecture is well represented in the Academy by the drawing of the "Engineers, and Shipbuilders' Institute," by Mr. J. B. WILSON, of which we publish a reproduction. The boldness of the treatment is evident, and the sculpture serves to suggest the purpose of the building.

The "Great Hall, University College School, Hampstead," of which Mr. ARNOLD MITCHELL is the architect, is dignified, capacious, well-lighted and well-adapted for assemblies. The two drawings of a hall and chimney as examples of Spanish Renaissance, by Mr. P. T. HILDESLEY, are attractive examples of a style that lends itself beyond most others to magnificence. The two drawings of the University of Birmingham, by Sir ASTON WEBB & E. INGRESS BELL, show the general view, and the detailed treatment may be inferred from the principal entrance. The large drawing of the entrance to the Victoria and Albert Museum, by Sir ASTON WEBB, should be acquired as national property as evidence of the superior draughtsmanship of our time. Another fine drawing, although not geometrical, is Mr. C. E. MALLOW'S "House and Garden, Tirleigh Court, Cheshire." It is boldly drawn in pencil, and centre lines and extensions of other lines are allowed to remain. It has, therefore, the character of being fresh from the designer's hand. The architecture has all the appearance of Early English Renaissance, on which it is a pleasure to look. Messrs. GROOME & BETTINGTON, in the "Restoration of Kinnersley Castle, Herefordshire," have respected the historical associations. Practically the buildings on plan form three planes, a tower serving as a connection between the first and third. The picturesqueness is undeniable, and the owners should be proud of such a building.

The "Proposed Building, Oxford Street," by Messrs. R. F. ATKINSON & BURNHAM, should, if the County Council will allow the architects fair play, become an interesting study, as it will combine in its planning English and American skill. To a large extent it is suggestive of Messrs. WARING'S building, although there is an absence not only of circular lights but of curved lines. It will be an imposing structure. Mr. A. N. PRENTICE'S "House at Willersey" is on plan, and recalls one of those spacious English mansions where height was not deemed desirable. The "Section of the English Church, Mauritius," by Mr. ERNEST SHORT, suggests that iron is to be used in the construction. Messrs. HUBBARD & MOORE in their "Proposed City Building" have succeeded in giving some novelty to the two ends by stopping the continuance of the cornice and introducing an arrangement of columns and consoles. The effect will, of course, be more impressive in reality than it appears on paper. Mr. HALSEY RICARDO'S "Station at Howrah, Calcutta," stands near the river. Boldness of treatment is as necessary for a railway building in India as in England, and is here adopted; colour is employed and the different departments are skilfully suggested.

At the east end of the room the competition for the Palace of Peace is represented. At the west end it is the competition for the extension of the Birmingham

Council House. The drawings are well worth study, for the conditions were restricted. Messrs. MALLOWS & CROSS might be supposed to have become *hors de combat* by their extensive use of sculpture. The building was separated from YEOWILLE THOMASON'S Council House by a street which has to be kept open, but over which a connecting bridge between the two buildings was placed. Some of the competitors, such as Mr. HARE and Mr. A. G. LATHAM, used the arch as a support for offices, while others used it simply as a passage. The arrangement in the different designs corresponds to an unusual extent, *i.e.* the centre and the ends project. It might even be said that the competition narrowed itself to a question of domes. Messrs. ASHLEY & NEWMAN, whose design was accepted, placed the dome over the centre. Messrs. TREADWELL & MARTIN, who received one of the prizes, had three domes. Messrs. MANSELL & DIXON had one at each end. Mr. HARE avoided domes. Mr. LATHAM seems to have had several. "A Bridge at Lisbon," by Mr. E. G. PAGE, is to be constructed of granite and ferro-concrete; the piers have sculptured groups. There are several other meritorious designs, and there can be no question that a close examination of the contents of the Architectural Room this year will be advantageous to the student, for both design and draughtsmanship are beyond the average in merit.

PAINTINGS AT THE ROYAL ACADEMY.

ANYONE who has attempted to describe the pictures seen in an exhibition soon becomes aware how much easier it is to deal with some classes of them than with others. Representations of remarkable events and pictures which are puzzles lend themselves to descriptions, while fine landscapes or scenes from human life which are delicately treated possess qualities which require subtle analysis. There is a temptation in England which compels artists to produce paintings which will immediately strike a spectator, and which can afterwards be talked about without difficulty. They manage such things far better in France. The French painter does not mind taking up a simple or commonplace subject, trusting in the competency of those who look upon his work to appreciate his skill in imparting interest to what did not originally possess it. There are two French pictures in the Royal Academy which will exemplify what we have said. One is *Cinq heures chez Paquin*, by M. HENRI GERVEX, whose works are admired by Parisians. The representation of a dressmaker's show-room containing a crowd of ladies would with us be considered merely as an advertisement and unworthy of the powers of an able artist. But the composition and colouring of the numerous figures have so much style that the picture pleases, in spite of prejudice. Another picture is *The Admiralty, Port of Algiers*, by Mr. F. A. BRIDGMAN, an American painter who has lived so long in Paris that he is as much a representative of French art as any native. We see a building stained by time, or, as SHAKESPEARE says, "blasted with antiquity." A few people are about. A Moorish rider with a scarlet cloak, which strikes everyone with surprise, is seen waiting near a white horse with a bright green saddle and accoutrements. There is a charm about the work which will bear study. It can be interpreted in several ways if desired, and yet the painting is no more than the representation of what could be seen during every hour of the day. It is a triumph of style, but it would tax a conversationalist to explain how so much success was obtained.

It seems to us that among the nine hundred oil-paintings which constitute the exhibition, there is a larger number than usual of works which more or less correspond to the two French examples. In consequence, people who will not take the trouble to consider qualities of execution, but rush from picture to picture, are likely to regard the exhibition as unimpressive.

The comparatively few paintings which attract and seize attention, either by the novelty of subject or treatment, are in consequence likely to be overpraised with the possibility that subsequently they may be victims of reaction. Anyone who is patient and capable to understand what is estimable in painting can, we think, discover a sufficient number of works in the rooms which will afford gratification.

If we look on the walls for works which seem to be adapted for architectural decoration, it is impossible to escape from disappointment. The time has not yet arrived for the revival of mural painting. The President, wisely referred at the banquet on Saturday to the proceedings of the Committee of the House of Lords respecting the decoration of the Houses of Parliament, where, as he said, there is room enough for every variety of treatment whether architectural, sculptural or pictorial. It was pointed out how many advantages would result from the encouragement of decorative art, a historical painting, besides elevating exhibitions of the Academy, where portraiture and studies from nature form the staple of the exhibitions almost to the exclusion of imaginative works. It may be long before the Treasury will be willing to repeat the experiments of fifty years ago at Westminster, and meanwhile painters must comply with the requirements of the market. But wealthy people would do well to remember that in Greece a great work of art was considered to be public property, and by giving commissions for the decoration of town halls and other buildings, they would be rendering a service not only to art but to the nation.

If few of the paintings in the rooms are adapted for mural decoration, there is enough to suggest how easy it would be for some of the artists to comply with the requirements of that class of art. If Mr. FRANK CRAIG's *The Maid* were produced in France it would probably be considered as suited for reproduction in tapestry. The great charge of cavalry, in which the long array of red spears becomes as suggestive as the armour of the force which was impelled against the English bowmen, some of them mere boys, could be as easily rendered as many other battle scenes which the Gobelins have executed. Mr. DRAPER's *Pearls of Aphrodite* would quickly be seen in the Hôtel de Ville or one of the mairies of Paris if it had been a French work. White and brown were favourite colours with the late PUVIS DE CHAVANNES, and he would certainly approve of the adoption of such a scene as *The Landing of the Pilgrim Fathers*, by Mr. C. PADDAY, if his advice were asked concerning the decoration of an English municipal building. The height of snow, the number of preachers and women, the general bareness, are quite enough to explain the seriousness, not unmixed with Mark Tapleyism, which we see in the countenance of the secular leader, who is not altogether satisfied, if amused, at the prospect of a land of promise. If one of their lordships who are considering the question of decoration were to purchase Mr. PADDAY's work, it would not be difficult to find space for it and an impetus would be given to historical art. Mr. VON GLEHN's *Diana* is professedly designed as an architectural feature, and the numerous nude figures are adapted with skill to a semicircular panel. *The Golden Youth*, by Mr. T. GOTCH, is as near an approach to decorative work as is to be found in the exhibition. Here we have a simple processional dance of boys and girls, with spectators who are a little older. The long lines of the dresses of the maidens in the background, the upright trunks of the trees and the sympathy expressed by the figures all assist in one purpose, which is the production of a work that would be agreeable to look on at all times. It is to be regretted that so much skill is exercised on a single picture which may pass from one gallery to another *via* CHRISTIE'S rooms. It should have a permanent home. The license taken by Mr. SIMS in his *Island Festival* suggests that he has studied the laws of decoration, and since they possess little

marketable value has boldly defied them. We have the elements of a Greek festival, probably one deemed to be religious; but BACCHUS, and not the law-loving ATHENÉ, seems to be the ruler of the occasion. Mr. VAL HAVERS'S *The Joy of Youth* is to some extent decorative in arrangement. But would not a work executed in so tight a manner be lost to sight on a dull day in England? Sir W. B. RICHMOND'S *Demeter at Eleusis* has a curious affinity with it, and, of course, is open to the same objection regarding invisibility. We need not, however, continue to speculate about decoration when the public continue to be indifferent to that form of art.

In some late exhibitions there appeared to be indications that scriptural and ecclesiastical scenes were coming into favour. There is a general absence of them this year. The only example we remember was *First Easter Dawn* by Mr. J. DOYLE PENROSE, which is a graceful interpretation of the morning visit of holy women. But antiquity is not neglected. Sir L. ALMA-TADEMA has followed the example of other painters, and will exhibit his elaborate Roman scene in one of the Bond Street galleries. But Sir E. J. POYNTER recalls ancient Rome by his *Lesbia and her Sparrow*, with its background of Roman architecture and sculpture. Work of that kind, however, requires research, which means loss of time, and Greek legends or guesses at Greek life are therefore preferred. Mr. R. W. MACBETH'S *Diana and Actæon* is well grouped and brilliant in colour. But he gives us merely suggestions of figures. Mr. J. W. WATERHOUSE'S *Jason and Medea* shows his usual care, for the embroidery of serpents on the crimson robe of the Princess is suggestive. He has also another classic pair, *Phyllis and Demophoon*; but we suppose the majority of visitors will prefer his *Isabella*. The famous pot of basil is placed on a pedestal in a garden, and that seems a more likely position than in her chamber. Mr. G. P. ACOMB HOOD recalls the syrens who appear on the rocks without any remnants of victims. Mr. HAROLD SPEED, in his *Love leaving Psyche*, has adopted a most difficult subject; but by making the departure at night and suggesting the upward motion of the god, probability is given to the legend. *Tithonus and Aurora* is well rendered by Mr. SPENCER WATSON.

Later history has inspired more examples, but they are still few in number. In addition to Mr. CRAIG'S large work, there are two other paintings devoted to ROAN OF ARC. *The Funeral of Charles I.* has been depicted by Mr. ERNEST CROFTS in a manner which exactly adheres to the description given by WOOD. The falling snow serves as a contrast to the mourning of the Cavaliers, and the scene is rendered with a simple pathos that is suitable. Mr. GOW in his *Cromwell* represents the closing of the doors of the House of Commons when the General ordered the bauble to be removed. It is assumed that the door was approached by a flight of steps. CROMWELL stands on the top waiting until the door is locked. In that way his supremacy is suggested; one trooper carries the mace and a few others close the approach to the members. In representing them Mr. GOW has shown more characterisation than is usual with him, and the scene has more reality than the burial of the king. Mr. EDGAR BUNDY has often shown he is a humorist, but *The Day of Sedgemoor* proves he has also a command over pathos. A young soldier who is wounded is seen lying on the straw in the loft of a barn, where he is attended by two women who apparently are forgetful of the risks attached to such exercises of humanity. The Arthurian legends have again furnished subjects. The Devil singing as a troubadour in a convent before the nuns is unquestionably a success if regarded merely as a combination of figures in black and red robes, fruit, stained glass, symbols. It might have been suggested by a scene in a low London public-house on a Saturday night, where a performance on a banjo excites the emotions of half-

drunken women. But who can care to see the degradation of his fellow mortals? BACON tells the story of a cat who became a princess, and who upheld the dignity of the position until a mouse happened to run across the table, and we suppose there is something of an objectionable sort latent in most human beings. But there must be a peculiar sort of sympathy with what is unpleasant whenever a pseudo-realism is allowed to reveal what had better be concealed. Infinitely preferable is Mr. DENIS EDEN'S *Peire of Valeria*. He is described as a "jongleur," and was likely to be akin to the Pied Piper of famous Hamelin city. We see him in his strange and cross-barred robe, with a high hat covered with peacock feathers, lying stretched on the ground with a few leaves in one hand and a little field-mouse on the forefinger of the other, with which he is holding colloquy. Although he may be considered as only a mountebank, he suggests the true poet's love of living things, and the artist is to be thanked for revealing him.

Scenes from modern life have evidently most attraction for buyers, and consequently they are abundant. *Our Golden Argosies*, by Mr. BERNARD GRIBBLE, which is in the first room, is a cluster of great ships, enough to indicate that commerce has not altogether come to an end with us. It is preferable to most of the pirate scenes which the artist has painted. Mr. STOTT'S *Cottage Madonna*, a woman with a child seated near a window, might pass for a work by G. F. WATTS. *The Town Mouse and the Country Mouse*, by Mr. G. D. LESLIE, are two children represented with the artist's customary scheme of colours. Mr. H. H. LA THANGUE has a couple of Sussex scenes under a flickering light, which makes fruit appear richer and ground more fertile. Two Ligurian scenes are enough to suggest that both districts are much alike in colour and in favour with the sun.

It is almost unnecessary to say the portraits are numerous. Mr. COPE'S *His Majesty the King* is curious, for the face seems to have been produced by a different process to the robes, or, in other words, different classes of colours and brushes were used for the head. Great care has been taken with the details of the robes, but without any loss of breadth. Another example of Mr. COPE'S art is *Sir William Perkin, F.R.S.*, who is seen lecturing on a skein of thread dyed with one of the coal-tar colours and surrounded by bottles containing others as crude. The inventor appears to be unconscious of their defects. There is a very important portrait—*Mrs. Henry van der Bergh*, by Mr. S. J. SOLOMON—which has the great merit of expressing a figure in repose. Mr. SARGENT has no less than five, of which *Lady Sassoon* is considered to be the most successful. It looks as if it were produced at terrific speed, and is unquestionably most vivid. But it does not suggest the endurance which should belong to a family portrait, although it is not impossible that it may long outlast works which appear to be more elaborated and slowly executed. *The Mrs. A. Langman* suggests a very delicate and refined lady, and the *Countess of Essex*, which is a bust in an oval frame, might have been painted for hanging in a room where there were some eighteenth-century portraits by French artists; it would sustain comparison with the best of them. *Sir Donald Currie*, by Mr. OULESS, is admirably painted, but the blue in the official robe would diminish the effect of any work in which it was found. *The Harvey Family*, by Mr. J. H. F. BACON, forms a group which gains by the adoption of white as the principal colour for the dresses: it deserves to be considered as one of the successes of the year. Mr. JOHN COLLIER, who as usual presents his annual puzzle in the *Mariage de Convenance*, has a fine portrait of Lord Justice BUCKLEY, which is really suggestive of a great lawyer.

Many of the landscapes this year are delightful. Mr. DAVID MURRAY shows his versatility as well as his vigorous handling. We have an autumn scene and the cutting-down of trees in *Across the River*; one of the

most remarkable views of Windsor in *The Duet*; an immense building in *The Windmill*, and a scenic landscape called *Wisteria*. Another painstaking landscape is the *View from the Battlements of Windsor Castle*, by Mr. W. DONNE. There are not many places which would bear representation from a similar height. Mr. EAST has a capital view of *Durham Cathedral* with the trees beneath waving their autumn foliage, while in the foreground there is a procession of monks. His *Storm in the Midlands* has novelty, and there is much solemnity about the *Nuns' Garden*. It is difficult to say whether Mr. G. WETHERBEE is a painter of figures with landscape or landscape with figures. He is sparing in the number he introduces, but they are never puppets as in most landscapes. *For Ever wilt Thou Love, and She be Fair!* is an Italian scene of great beauty in which the sun falls on the shepherd and his lass. Mr. FRIEDENSON'S *Runswick Bay* in the Front Room might be described as a landscape in olive green, for that is the prevailing colour, owing partly to a peculiar haze on the northern bay with its great cliffs and houses. Mr. NORTH has, as usual, only one example, which is described by a couple of lines from MILTON. It presents the usual tangle of vegetation in a green of which we never grow tired. But the appearance of a couple of children in the upper part without visible means of standing appears strange although affording a little variety of colour. Mr. HEMY will please Londoners by his view of one of the lower reaches of the Thames entitled *Bound for London*, in which the river, gulls, boats, and the border of old-fashioned public-houses, are satisfactorily combined. *Caught Out* shows a fisher-boat with three men preparing to meet a sudden gale. The *Deep Sea Rain* is somewhat daring, for a purplish tone is imparted to the waves which is sometimes seen in deep water but which few care to record. In the *Off-Shore Wind* the sea assumes an almost brilliant blue.

The room with cabinet paintings was never more interesting. There we can see an attempt by Mr. OULESS in landscapework, depicting a hill nearly bare of vegetation, with a lonely tramp ascending it. Mr. LEADER, as becomes the son of an engineer, is systematically constructive in his landscapes; but in *A Circus by the Sea* he has been fascinated by a circus, a windmill and a couple of lighthouses which were found together on a rough common. It is interesting in itself, but more so coming from such a hand. St. George's Hall, Liverpool, is made to lend itself to tragedy by Mr. DAWBARN, for it becomes *The Dooms-gate*, and we see it on a very gloomy day with a crowd outside, awaiting, no doubt, the result of a trial for murder. Mr. MACBETH has a brilliant *Market in Normandy*, and Mr. ALBERT GOODWIN shows Benares under a green light. There are over two hundred drawings in the Water-Colour Room and two hundred miniatures, besides the varied contents of the Black and White Room. People should be satisfied with so varied a show, in the production of which so many artists have co-operated.

THE ARCHITECTURAL ASSOCIATION.

THE annual members' dinner of the Association was held on Friday evening last at the Gaiety Restaurant, Strand, Mr. Walter Cave, vice-president, in the chair.

Among those present were Sir Aston Webb, R.A.; Mr. E. A. Abbey, R.A.; Mr. G. Frampton, R.A.; Mr. Alfred East, A.R.A.; Mr. H. Greville Montgomery, M.P.; Mr. Leonard Stokes, Mr. W. H. Jamieson, Mr. W. J. Locke, Mr. A. H. Hodge, Mr. Edwin T. Hall, Mr. H. Stannus, Mr. Francis Hooper, Mr. J. D. Crace, Mr. W. A. Pite, Mr. John Murray, Messrs. Louis Ambler, H. P. G. Maule, Stanley Hamp, Raffles Davison, A. H. Ryan-Tenison, Curtis Green, Theodore Fyfe, George Hubbard, A. W. Moore, J. A. Bessant, A. Huntley, Sidney Leaning, F. Frank Green, J. Peascod, Sutton Wood, Geoffrey Lucas, C. Butt, F. H. Atkinson, C. W. Bowles, H. B. Elkington, C. W. Beaumont, A. Welford, W. Stewart, F. C. Simpson, E. G. Simpson, W. G. B. Lewis, G. H.

Jenkins, G. H. Lovegrove, J. H. Squire, Alan Potter, R. F. Chisholm, T. O. Foster, H. L. Samson, S. J. Tatchell, A. L. Snow, L. M. Gotch, H. A. Douglass, H. G. Tayler, H. Saffery, Chas. Tanner, W. H. Burt, C. E. Hutchinson, Baxter Greig, J. Naylor, S. H. Goodwin, S. Warwick, Arthur Keen, W. T. Plume, E. Harvey Piper, E. Harding Payne, F. R. Betenson, W. R. Davidson, Stanley Towse, R. Dircks, Herbert A. Hall, H. Sandberg, H. J. Worrow, P. J. Westwood, Chas. E. Varndell, Guy Church, T. L. Dale, J. S. Cable, H. J. Wyeth, S. R. C. C. Buss, W. Paul, W. Wonnacott, H. C. Pride, Donald A. Stephens, H. C. Willis, Chas. Buck, F. Yerbury, E. B. Claypole, W. A. Hodges, B. F. Matthews, W. O. Langlein, A. H. Belcher, T. C. Yates, G. Northover, A. F. Spencer, Gordon Hake, Philip E. Webb, E. Gunn, Maurice E. Webb, M. W. Zambra, C. Wontner Smith, Philip Cart, G. C. Wilson, C. Whitby, A. Womersley, Clough Williams Ellis, J. B. Scott, C. R. Davy, Percy W. Lovell, S. Clapham, F. Dare Clapham, Hy. Tanner, jun., and D. G. Driver, secretary.

The following letter from the President was read:—

My dear Cave,—It is with many feelings of deep regret that I find myself unable to be present to-night.

I returned last Monday from the south-west of England intent on making my reappearance, after my long and dangerous illness. But, alas! my doctors emphatically and absolutely forbid me from undertaking the strain of presiding at the dinner, nor will they sanction my public appearance among my many friends who will be assembled at the festive gathering to-night.

This harsh verdict is, I need not say, a keen disappointment to me. I am deprived thereby of the opportunity of expressing my very sincere regret that I have been unable, almost from the commencement of the session, to undertake the duties which devolve upon the President for the time being, and that the culminating honour which practically brings my active career in the executive body to a close should have coincided so unfortunately with many months of suffering, and found me incapacitated from the pleasant enjoyment of activities and laudable aspirations to which I had looked forward.

To-night I hoped to have found a suitable opportunity of expressing my thanks for all the innumerable kind and sympathetic messages and letters which I have received, and, further, for the acknowledgment (with profound gratitude) of my indebtedness to the two vice-presidents, who fulfilled so zealously and admirably the duties which should have fallen to my lot.

I feel that the circumstances of the case may render pardonable the personal nature of this letter, but you must allow me, as President of the Architectural Association, to offer you, as my successor-elect to the chair, the truest and most hearty welcome, and the good wishes of all the members, for your term of office.—Very sincerely yours,

(Signed) R. S. BALFOUR.

Walter Cave, Esq.

After the toast of "The King," Mr. ARTHUR KEEN proposed "The Royal Institute of British Architects," and referred to the close and intimate relations which existed between the Institute and the Association. Owing to the important educational work undertaken by the Association, Mr. Keen thought it became increasingly necessary that they should have the recognition and help of the Institute. They were all grateful for the support that had been ungrudgingly given in the past by members of the Institute. In addition the Council made an annual substantial grant to the funds of the Association. They were not, however, concerned with Institute politics, nor even with the recognition by the State of its authority. If the project was successful they would be pleased, but their concern was with the advancement of the art of architecture, and it was in such matters that they looked to the Institute for help.

Mr. LEONARD STOKES responded to the toast, though he felt, he said, quite out of place in doing so. The duty of replying for the Institute, he felt, should devolve upon an old fogey. He always tried to feel he was an active member of the Association, and yet he was called upon to play the heavy father for the Institute. The relations between the two bodies were most cordial, but while the Institute was ever ready to help the Association he believed that perhaps after all the latter did more for the Institute. The Association was their recruiting ground for members, and if the recruits were good the Institute would continue to be a useful body to the profession. Their future, therefore, was largely in the hands of the members of the Association.

Mr. W. J. LOCKE proposed the toast of "The Association." He regretted the absence of the president, Mr.

halfour, and hoped that at no distant date he would be able to again exercise an active part in his profession. The Association was a league of youth, and should be distinguished by its vitality and enthusiasm. The Institute should exemplify the grand manner, and be concerned with greater issues. There should be a difference between the two bodies in order that each might fulfil its proper functions. The great mission of the Association was to uplift the architecture of the future.

The CHAIRMAN in reply said it was a matter for congratulation that the membership of the Association increased year by year and that 100 new members were elected within the last twelve months, making a total of 1,764. The figures were a sure sign of the vitality of the Association. During the past year an athletic club had been started and the results in the various sections were highly satisfactory.

Mr. H. TANNER, jun., proposed "The Guests" in a humorous speech, to which Mr. E. A. ABBEY, R.A., responded. Mr. RAFFLES DAVISON submitted the toast of Mr. D. G. Driver, the Secretary, which was very heartily received.

The Architectural Association Choral Society and Quartet contributed to a programme of music, arranged between the casts.

CREATION OF "ANTIQUES."

IN a report to the Washington Bureau of Manufactures, Mr. M'Nally, the United States Consul at Liège, describes some of the methods adopted by dealers in "antiques." He says that, in anticipation of a good season, the European manufacturers of "antiques" have been kept busy. The "ageing" season is now on, and when the time comes for placing the articles on sale the ancient appearance will be perfect. The deception of the expert collector is by no means rare, and yet one hears of Americans returning with antiques which cost considerable sums bought solely upon the lavish representations of the dealer. It should be remembered that the dealers pick up their stock in out-of-the-way places, usually in the interior of the country, and this should be a hint to other purchasers who in looking for particular articles should stop in places outside the well-beaten path. The chances of getting the veritable article are good, while the price will ordinarily be 100 per cent. less. To purchase from the dealers in the large cities is to pay excessive prices for questionable goods.

The Mecca of the curio-seeker is Bruges, which is noted for its valuable finds. The buyer does not stop to consider that the dealers for years past have swept every corner of anything savouring of antiquity, but continues to pick up at cheap prices whatever is offered. The American traveller (always reputed a millionaire) is considered the prey of these designing dealers. A visit to the workshop of antique dealers will show them pounding modern brass to represent the old-time article, and worm-eaten and decayed furniture is made over into pieces representing the old Flemish type that would deceive the ordinary collector. The dealers carrying the greatest assortment of valuable articles and well housed on a principal street should be as carefully investigated before buying as the small dealer in the back street. Even these small one-room dealers are supplied by the larger ones with articles that will catch the eye. It is from just such shops that the reports come of some "valuable original articles purchased for a song," small cigar shops, cafés and other unpretentious business places are usually provided with an old painting (made to order), a copy of some well-known work, which will at once excite the curiosity of the customer, who is particularly influenced by the surroundings. A good price is paid, and the buyer writes his friends that he picked up a "great find."

DECAY OF STONE IN GLASGOW.

AT last week's meeting of the Royal Philosophical Society of Glasgow, Mr. David Ellis, Ph.D., D.Sc., Lecturer in Botany and Bacteriology at the Glasgow Technical College, read a paper on "The Iron-Bacteria and their Connection with Stone Decay." He said every substance not specifically sterilised contained bacteria on its surface, and stone was no exception. Hence no argument based on the presence of bacteria had any weight unless a casual relationship could be established. So far this had not been done. From his own researches he was able to emphatically deny that iron-bacteria were present in any stone surface. He did not think that any change in the iron

constituent of the stone was effected by bacteria, in view of the ease with which this oxidation could be effected by the atmosphere. Nor did he think that any change was effected by bacteria, because under exceptional circumstances decay was observed by him in places where no bacteria of any kind were present. If antiseptics were used as preventives of decay the good they did was due to chance. Personally, he believed that the mechanical processes taking place in stone were sufficient to explain the causes of decay. There were as factors, first, the disintegrating effect of water with carbon dioxide in solution dissolving out the calcium carbonate; second, the disintegrating effect of water in places like Glasgow with a small amount of sulphuric acid in solution, which must enter as a factor, as the decayed stone had been shown to contain more than the normal amount of sulphates. To this he would like to add, in the third place, oxidation of the ferrous carbonate by the atmosphere of the hydroxide. When once the thin end of the wedge had been driven in there were the changes of volume due to the changes of temperature and the disastrous effect of the increase of volume of water when it changed into ice. All these required that the stone be moist, and the segregation of moisture on certain spots explained why decay took place in certain parts only. To those who maintained that the action of micro-organisms played a rôle in this decay he could only say that the onus of proof lay with them.

THE BRITISH ASSOCIATION.

THE seventy-seventh annual meeting of the British Association will be held at Leicester from Wednesday, July 31, to Wednesday, August 7. The president-elect is Sir David Gill, formerly His Majesty's astronomer at the Cape, and the vice-presidents are Sir Edward Wood (mayor of Leicester), the Duke of Rutland (Lord Lieutenant of the county), Mr. R. Dalglish (High Sheriff), the Earl of Dysart, Earl Howe, the Bishop of Peterborough, the Bishop of Leicester, Sir Oliver Lodge, and Mr. Herbert Ellis, president of the Leicester Literary and Philosophical Society. The reception-room at Leicester will be opened on Monday, July 29, for the issue of tickets to members, associates and ladies, and for supplying lists and prices of lodgings to strangers on their arrival. The inaugural meeting will be held on Wednesday evening, when Sir David Gill will assume the presidency and deliver an address. On the following day the Mayor will hold a reception at a fête to be given by him in the Abbey Park. On Friday a discourse on "The Arc and Spark in Radio Telegraphy" will be delivered by Mr. W. Duddell. On the Monday a discourse on "Recent Developments in the Theory of Mimicry" will be delivered by Dr. F. A. Dixey; on the Tuesday there will be a *soirée* in the Museum buildings, and the concluding meeting will be held on the Wednesday at half-past two o'clock. Excursions will be made on Saturday, August 3, to places of interest in the district, such as Chatsworth, Haddon Hall, Belvoir Castle, Warwick, Kenilworth, Stamford and Peterborough. A special excursion will be made to the Charnwood Forest.

The following are the presidents of the various sections:—Mathematical and physical science, Professor A. E. H. Love; chemistry, Professor A. Smithells; geology, Professor J. W. Gregory; zoology, Dr. William E. Hoyle; geography, Mr. George G. Chisholm; economic science and statistics, Professor W. J. Ashley; engineering, Professor Silvanus P. Thompson; anthropology, Mr. D. G. Hogarth; physiology, Dr. A. D. Waller; botany, Professor J. B. Farmer; and educational science, Sir Philip Magnus, M.P.

Architects who are Liverymen intend to support Mr. C. Cheers Wakefield, C.C., in his candidature for the office of Sheriff for 1907-8. He has various claims on them, and they have also the confidence that he will uphold the position with dignity, attention and impartiality.

The Fine Art Society, of 148 New Bond Street, have acquired the copyright of Mr. F. Cadogan Cowper's picture at the Royal Academy, "How the Devil, disguised as a vagrant troubadour, having been entertained by some charitable nuns, sang to them a song of love," and will publish an important engraving of it in the course of the autumn.

NOTES AND COMMENTS.

WHEN the International Sanitary Convention was held in Paris in 1903, a resolution was passed in favour of the creation of an International Health Office in Paris. It was to be established on the lines followed in the institution and conduct of the International Office of Weights and Measures. The International Office was to collect information as to the progress of infectious diseases. To this end information was to be given to it by the chief health authorities of the States that are parties to the resolution. The office was periodically to set out the results of these labours in official reports which were to be communicated to the contracting Governments, and which were to be made public. The office was to be supported by contributions from the contracting Governments. Time has been allowed to make all the arrangements, but apparently the French Ministers have been too engrossed in other affairs to take any trouble about international sanitation. Such an office is a necessity, and if France declines the privilege it should be offered to another country.

It consoles the thrifty spirit of Frenchmen and atones for much official extravagance when they learn that the new Cour des Comptes consists of masonry which was prepared nearly a century ago. The large building, of which M. MOYAUX is the architect, is erected with stones which were intended for the palace of the King of Rome, the son of NAPOLEON I. As the child was born in 1811 and the Empire came to an end in 1815, it seemed to be somewhat precipitate to make provision for a palace which he was not likely to use for several years. But NAPOLEON was desirous to convince Frenchmen of the duration of his dynasty. Accordingly a site was selected where the Trocadéro now stands, and PERCIER and FONTAINE were commissioned to prepare plans of the palace, which still exist. A start was made in cutting stone, but the downfall of the Emperor prevented the realisation of the project.

In New South Wales an Act for the official examination of scaffolding and lifts has been in operation since 1902. It is reported that there is a marked improvement in the class of scaffolding used in the proclaimed districts, and that contractors generally are anxious to comply with the provisions of the Act, and also with the requirements and directions of the inspectors. Amendments have been submitted with a view to giving more effect to the spirit of the Act, especially with regard to steam cranes, hoists for building purposes, lift enclosures and lift attendants. About 6,700 inspections have been made during the past year. The Scaffolding and Lifts Act provides that notices must be given for scaffolds over 8 feet in height; but power is vested in the inspector to give directions where considered necessary to persons erecting or using scaffolding or gear under that height. This power is fully taken advantage of. There have been recorded six fatal accidents and eighteen casualties upon buildings in course of erection or repair, but in no instance was any accident attributed to defective scaffolding or gear. No appeals have been made with respect to scaffolding. This is, no doubt, due to the amended regulations, which allow contractors certain alternatives in the erection of particular classes of such structures. Twelve steam gantry cranes and twenty-three steam hoists have been used in the metropolitan area and in connection with building operations. These have been inspected with varying results. An innovation in machinery for building purposes is the use of hydraulic lifts, two of which being at present in use. The number of lifts recorded as in commission is 765. The amended lift regulations provide that "goods" lifts must have almost the same precautions for the safety of those working them or using them as passenger lifts. These requirements have necessitated the outlay of large sums upon structural alterations to enclosures; but the users of the lifts are more than satisfied by the additional safety.

ILLUSTRATIONS.

CRATHORNE HALL, YORKSHIRE.—GARDEN FRONT, GENERAL VIEW.

WELLINGTON HOUSE RESIDENTIAL HOTEL, BUCKINGHAM GATE, S.W.—MAIN ENTRANCE.

THIS building, of which two illustrations—a perspective view and detail drawing of a portion of the front—appear in the present issue, will, when completed, be one of the most important of the series of magnificent residential hotel buildings recently erected in the West End of London. The building will be called the "Wellington House," and is erected upon the site of what was known as "Petty France," in the centre of historic associations connected with the period of the Peninsular War. The block, which has frontages to York Street and Buckingham Gate, will comprise about thirty-seven luxurious suites of rooms and chambers, to which will be attached upon the ground floor and basement handsomely appointed and fully-equipped reception, dining, drawing and billiard-rooms (with well-appointed kitchens, &c., in connection), the use of which will be placed at the disposal of tenants generally. A portion of the frontage to James Street, Buckingham Gate, will be occupied by several handsome and valuable shop premises. The elevations are carried out in red brick and terra-cotta, the latter by DENNIS, of Ruabon, and the internal appointments will be upon the most lavish scale. The amount of the contract is 64,704*l*. The architects are Messrs. PALGRAVE & Co., of 28 Victoria Street, Westminster; the contractor, Mr. C. GRAY, of Acton and Shepherd's Bush.

ENGINEERS AND SHIPBUILDERS' INSTITUTE, GLASGOW.

THIS illustration is a reproduction of a drawing in the Royal Academy. The building stands at the corner of Elmbank Street and Elmbank Crescent, nearly facing the High School of Glasgow. Architects practising in Glasgow were invited to prepare plans for the new buildings, and fifty-one responded to the invitation. After receiving the report of the assessor, Mr. G. WASHINGTON BROWNE, of Edinburgh, the plans of Mr. J. B. WILSON, A.R.I.B.A., Bath Street, Glasgow, were accepted as best fulfilling the requirements of the Institution. Internally the building will be arranged on three floors and basement, with lecture halls, ante-rooms, council and committee-rooms, library, reading and secretarial rooms, on a scale adequate to the demands. The accommodation provided also will partake somewhat of the character of a club where members may meet and confer in a social as well as a business and professional way. A large lecture hall, 72 feet by 40 feet, and with comfortable seating accommodation for between 450 and 500, will be provided on the upper floor; a lesser lecture hall, 40 feet by 22 feet, being also arranged on the first floor. On the street floor there will be a library 46 feet by 40 feet, and a reading-room adjoining, 40 feet by 25 feet, and on the same floor—convenient both to the street and to the inner parts of the building—council-rooms, secretary's office, &c. The basement will be devoted to stores for books and documents, with special access from the library and reading-rooms, and to accommodation for heating and lighting plant. Besides rooms for committee meetings, &c., the first floor will have a spacious and cheerful smoking-room, as well as a coffee-room in which members may confer and meditate in "lighter vein" than in the lecture halls and committee-rooms. Cloak-rooms and lavatory accommodation will be ample on all floors. The entrance hall and the corridors throughout will be spacious, while the wide double flight of stairs leading to all floors will be copiously lighted from a handsome dome roof. The external walls are built of cream-white sandstone from Blackpasture quarry. Marble and mosaic is proposed to be freely used in interior. Heating by low-pressure steam or "Reck" system. Ventilation by electric fans.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE annual general meeting of the Royal Institute of British Architects was held on Monday last, with Mr. H. T. Hare, vice-president, in the chair. The report adopted stated that the Council have held twenty meetings, of which the Council elected in June last have held fifteen. Reports were received from the following committees:—Charter revision, competitions, prizes and studentships, Finance, sessional papers, professional questions, fellowship drawings, fellowship election procedure, London County Council.

The losses by death have been as follows:—*Fellows*: George Murray Alexander, Thomas Barnes-Williams, Roger Thomas Conder, Colonel Joseph Gale, William John Gant, George W. Hamilton-Gordon, Richard Creese Harrison, John Nixon Horsfield, David Jenkins, William Alfred Large, George Low, William Mackison, Frank Barlow Osborn, Henry Allen Prothero, Edward Salomons, Henry William Lock, William Angelo Waddington, Philip Wilkinson, Edmund Woodthorpe. *Retired Fellows*: Henry Simpson Legge, Andrew Moseley. *Associates*: Lewis Eric George Collins, John Wardle Donald, Sydney Fowler, Frederick William Ledger, Charles Long, Arthur Maryon Watson. *Hon. Associates*: Lord Montagu of Beaulieu, Colonel Lenox Prendergast. *Hon. Corr. Members*: Albert Thomas, Johan Louis Essing.

The present subscribing membership, compared with that of the previous year, is as follows:—

Year.	Fellows.	Associates.	Hon. Associates.	Total.
1906 . . .	749	1,177	46	1,972
1907 . . .	862	1,254	46	2,162

Since the last annual general meeting 136 Fellows have been elected, 112 Associates and one Honorary Associate.

Progressive examinations were held in June and November 1906. The preliminary was held in London, Belfast, Birmingham, Bristol, Cardiff, Dublin, Glasgow, Leeds, Liverpool, Manchester and Newcastle-on-Tyne; the intermediate in London, Belfast, Bristol, Glasgow, Leeds, Manchester and Newcastle-on-Tyne. The Council desire to record their thanks for the valuable services rendered by the hon. secretaries and examination committees of the various allied societies. The final and special examinations were held in London, and special examinations for colonial candidates were held in Toronto and Melbourne, when four candidates were examined and two passed. The results are:—

	Number Admitted.	Ex-empted.	Ex-aminated.	Passed.	Rejected.
Preliminary examination . . .	450	124	326	221	105
Intermediate examination . . .	309	9	300	141	159
Final and special examinations . . .	202	—	202	111	91

The total number of candidates was 961. The number probationers now stands at 2,707 and of students at 879. The Council again have occasion to regret that so large a number of students remain on the list without proceeding to the final examination.

The statutory examinations, qualifying for candidature as district surveyor in London and for candidature as building surveyor under local authorities, were held in London in October, when eighteen candidates presented themselves. Certificates of competency to act as district surveyors in London have been granted to Horace William Lubitt [A.], William Robert Davidge [A.], Percie Ion Elton, Herbert Kenchington, Gilbert Henry Lovegrove, William Herbert Rogers, Herbert Shepherd [A.], William George Hipwright and Collings Beatson Young; and a certificate of competency to act as building surveyor under local authorities to Harry Prince Healy.

It having been considered that the silver medals awarded by the Institute for the essay and the measured drawings were out of date, the reverse still bearing the title "Institute of British Architects," the Council approached Mr. George Frampton, R.A., with a view to his making a new design. Mr. Frampton has generously responded by presenting the Institute with a charming design for the obverse, and has superintended the striking of the dies, the reverse now, according to his suggestion, bearing the Institute seal. The portrait of Sir Aston Webb, R.A., by Mr. Solomon J. Solomon, R.A., was duly presented to the Institute in the name of the subscribers by Sir William Emerson at the general meeting on December 17 last. Mr. Frank Dicksee, R.A., has kindly accepted the commission for the portrait of Mr. John Belcher, A.R.A. The Council, at the request of the Mayor of Venice, have lent the International Exhibition of Fine Art at Venice Mr. J. Sargent's portrait of the late Mr. Penrose for a period of six months.

The Council have had correspondence with the First Commissioner of Works with regard to the completion of the towers, shown in the late J. M. Brydon's design, in the new Government buildings facing Great George Street, with the result that the First Commissioner has acceded to the views of the Council, and given instructions that the single tower of the building now in course of construction shall be continued and completed on the lines laid down by Mr. Brydon. The First Commissioner, in the course of a reply to a question in the House, read the letter he had addressed to the Institute.

The instructions to competitors for the London County Hall having now been issued, the Council can do no more than note briefly the following facts:—The London County Council drew up the conditions on the lines indicated in the original suggestions of the Institute Council referred to in the last annual report, but several important modifications were made and the details embodied in the conditions which were finally issued were not submitted to the Institute Council. In these original suggestions the Institute Council did not contemplate the international character of the competition, but acting on the advice of the competitions committee, refrained from making any representations on the subject when the intention of the London County Council became known. The Institute Council were not consulted in any way as to the selection of the eight architects invited to take part in the final stage of the competition. At the suggestion of the Institute the London County Council has extended the whole time required for the preparation of drawings to nine months, of which six are to be devoted to the preliminary stage. The Institute Council have also addressed a communication to the London County Council protesting against the appointment of their official architect in the dual capacity of assessor in the competition and joint architect to the building.

It is to be regretted that the repeated submission to the London County Council of the views of the Institute Council referred to in the last annual report resulted in a final communication from the London County Council declining to reconsider their decision as to the line of frontage on the north side of the Strand between the churches of St. Mary-le-Strand and St. Clement Danes.

On April 22 a deputation from the Institute Council laid before the Building Act committee of the London County Council their views as to the status of district surveyors, urging a return to the practice of appointing practising architects of established reputation. The Council have taken counsel's opinion as to the operation of the Workmen's Compensation Act, 1906, as between (1) architects and clerks of works, (2) architects and assistants, (3) architects and pupils, (4) building owners and architects. Their opinion will be published in the Journal.

The Ulster Society of Architects, having severed its alliance with the Royal Institute of the Architects of Ireland, applied for alliance with the Institute. In view, however, of the protests raised by the Irish Institute, the Council deemed it advisable to defer consideration of the application until such time as the Irish Institute and the Ulster Society might come to an amicable understanding.

Since the issue of the last annual report the awards in the Palace of Peace at The Hague international competition have been made. Mr. T. E. Colcutt, the British member of the jury, read a confidential report to the Council criticising the awards. The Council had before them an invitation from a Dutch committee to co-operate in a movement of protest, but declined.

The seventh International Congress of Architects was successfully held during the week from July 16 to 21. It was attended by foreign members from every country in Europe and from America and Japan, and the Council have been much gratified by the courteous expressions of appreciation they have received from all quarters at home and abroad. The Congress was financially successful, and the executive committee have a balance of nearly 600*l.* in hand for the printing, &c., of the *Compte Rendu*, or volume of Transactions of the Congress. This will be issued shortly to members of the Congress.

The Council entrusted to a special committee the consideration of the resolutions with regard to the question of registration passed at the general meeting on April 3, 1906. The committee held many meetings during the Session and finally reported to the Council. The Council's report came before the General Body on the evening of March 3, when with an amendment the report was adopted and the Council were authorised to prepare a revised Charter and a Bill for

Parliament for submission to the General Body. The Council have entrusted the task to the same special committee, who are now in the midst of their labours.

The following resolutions were carried at the general meeting of January 7 :—

1. Resolved, that in view of the fact that limited competitions for public buildings erected with public moneys are a great injustice to the young and unknown members of the profession struggling for recognition, and also not in the best interests of the promoters, this Institute declares that such competitions should not be limited, and should take such steps as may be deemed advisable to discourage public bodies from instituting such competitions. 2. Resolved, that this Institute exert its influence in obtaining the abolition of the growing custom of penalising non-competing architects by retaining their deposit. 3. Resolved, that this meeting considers that the assessor in a competition should refrain from any expression of doubt as to the relative merits of the designs placed in his award, such expression of doubt being calculated to weaken the effect of his award and to lead the promoters to override it, to the great detriment of the object aimed at, viz. the adoption of the best design.

The Board of Architectural Education report as follows :—Since their last report the Board, in response to a request from the Victoria University, Manchester, have appointed visitors to report on the work of the students at the School of Architecture. The University of Liverpool, after conferring with representatives of the Board, have arranged to confer a degree in architecture, to be entitled "B.Arch." The Board also call attention to the fact that the University of London has instituted a B.A. degree in architecture. A syndicate for the consideration of a school in architecture and a diploma was appointed by the University of Cambridge, and invited the Council of the R.I.B.A. to nominate delegates. Sir Aston Webb, Messrs. Reginald Blomfield, Cross and Slater were nominated, and attended a meeting of the syndicate at Cambridge, where they expressed their views as to the proposals submitted. In view of the discrepancy that appears between the R.I.B.A. examination papers and the syllabus of the Board, the Board have requested the Council of the R.I.B.A. to appoint a joint committee of the Board of Architectural Education and the Board of Examiners to consider their relations and the nature of the examination papers.

During the past year the visitors appointed by the Board have attended periodically the Architectural Association day schools, the Architectural Association continuation schools, the Architectural Schools of Liverpool University, University College, London, King's College, London, and Victoria University, Manchester, and have reported to the Board making suggestions with regard to the work, which have been duly forwarded to the authorities. A sub-committee of the Board has been appointed with a view to obtaining diagrams of standard examples of doors, windows, domes, vaults, &c., for use in the various schools. A form of certificate has been approved by the Board, and is now granted to students. The Council have the pleasure to report the continued financial prosperity of the Institute, and to point to the balance of 1,435*l.* 16*s.* 9*d.* of income over expenditure, which is gratifying in view of the extraordinary expenditure of 631*l.* in connection with the International Congress. It is due in great measure to the increase in membership. The sum of 3,000*l.* has been invested this year, thus bringing up the invested capital of the Institute to 21,000*l.*

PREHISTORIC CISSBURY.

A PARTY of the members of the Brighton and Hove Archaeological Club visited Cissbury, under the guidance of the hon. secretary, Mr. H. S. Toms. Situated on the top of a high hill about four miles to the north of Worthing, Cissbury is, says the *Sussex Daily News*, the site of two of the most important evidences of the occupation of Sussex by very early man. The most striking of these is the formidable hill-fort, which consists of a deep ditch and high rampart, running round the top of the hill and forming an elliptical enclosure of nearly seventy acres. The strength of the earthwork can be realised when it is stated that the outline of the ditch and rampart is, on a clear day, plainly visible from the Dyke Road, ten miles away.

Outside the camp, near the southern entrance, and occupying the greater part of its western interior as well, are a large number of basin-shaped depressions from 20 to 70 feet in diameter. These, it was mentioned, were of even

more interest than the entrenchment itself, for about thirty years ago they were subjected to a thorough investigation by General Pitt-Rivers, Mr. Ernest Willett and others, who decided that they were filled-in shafts of pits dug into the hill.

The whole of the material with which they were filled was taken out, and when the bottoms were reached, sometimes 30 feet deep, tunnels were found branching out in every direction, and following up the veins or layers of black flint in the chalk. Sometimes these tunnels intersected those of the adjoining pits, and so literally honey-combed the hillside.

Lying on the bottom and among the material which filled the pits and tunnels quantities of broken and perfect flint axes were discovered, together with other implements of thousands of artificial flint chips and the flint nodules from which they had been struck. No trace of metal was discovered, and the evidence of the relics conclusively proved that these pits were dug by neolithic man with the object of obtaining flint from which to fabricate his tools, and that the pits themselves were the workshops in which he made them. Other interesting relics discovered were the horns of the large red deer converted into primitive picks, chisels, and wedges evidently employed by prehistoric men in digging the shafts and tunnels of the mines. After the revelation of the evidence of the mines, the problem presented to the excavators at Cissbury was the period of the entrenchment. This was successfully demonstrated by General Pitt-Rivers, to whose scientific investigations much of what is known of the archæology of the county is due. He observed that the southernmost angle of Cissbury Camp broke the line connecting the mines inside and outside the entrenchment. Digging sections through the ditch and rampart, he exposed the mouths of several of shafts through which the ditch had been cut, or over which the rampart had been thrown. This showed beyond doubt that the hill was used by the miners before it was occupied for defence, and that some at least of the shafts and galleries were made before the entrenchment.

Remains showing that the camp was occupied by a different race in far later prehistoric times were afterwards discovered in shallow pits in another part of the camp. Fortunately these, together with a large number of implements from the flint mines, are now in the Brighton Museum, and consist of pottery urns, bone combs employed in weaving, spindle-whorls, a chalk loom-weight, a peculiar looking hook and other iron objects. The latter are similar to the remains of the Early Iron Age found in Sussex and elsewhere, notably at the prehistoric Lake Village at Glastonbury in Somerset, and their discovery by Mr. Park Harrison forms an important contribution to the study of the archæology of this district. The interest of Saturday excursion was considerably enhanced by the discovery of several flint axes in the rabbit holes in the mouths of the pits and ramparts. Hundreds of the old artificial chips were seen on the surface, and Mr. Toms gave actual demonstrations as to how they were made.

ST. PAUL'S CATHEDRAL.

THE main drainage committee of the London County Council have prepared the following report :—

On February 5, 1907, we submitted a report with reference to the construction of the third section of the northern low-level sewer No. 2, and we then stated that "as the sewer will in its course pass to the south side of St. Paul's Cathedral, we have been in communication with the representatives of the Dean and Chapter with regard to the manner in which the construction is to be carried out at this point, and they are satisfied with the proposed arrangements." We now have to report the receipt of a memorial on the subject, signed by the trustees and the Dean and Chapter of the cathedral as follows :—

The Chapter House,
St. Paul's Cathedral, E.C.

To the London County Council—

The memorial of the undersigned, being the trustees and the Dean and Chapter of St. Paul's Cathedral, sheweth—

That grave doubts have recently arisen as to the consequences of the new sewer which it is proposed to construct under St. Paul's Churchyard, on the south side of St. Paul's Cathedral;

That the consideration of this question has for some time past engaged the most serious attention of the Dean and Chapter and their advisers;

That, since the last communication which passed between the London County Council and the representative of the Dean and Chapter, more facts have come to light and new measurements have been taken ;

That the Dean and Chapter and their surveyor have had advantage of the careful advice of three architects of the best experience and reputation, Mr. T. E. Collcutt (president of the Royal Institute of British Architects), Sir Aston Webb, R.A. (past president), and Mr. John Belcher (past president), and that they have furnished them with a report ;

That your memorialists have the honour to submit this report, and ask for its due consideration at the hands of the London County Council ;

That they are aware that the Bill for the proposed line of the sewer has received Parliamentary sanction, but that they consider that the gravity and urgency of the matter compel them to ask for a reconsideration of the case ;

And that your memorialists are strengthened by the belief that there is no question of serious public advantage involved which would cause the proposed line to be adopted rather than any other line between St. Paul's Churchyard and the river.

And your memorialists will ever pray, &c.

(Sgd.) RANDALL CANTUAR.

(Sgd.) W. P. TRELOAR, Lord Mayor.

(Sgd.) A. F. LONDON.

(Sgd.) ROBT. GREGORY, Dean.

(Sgd.) HENRY SCOTT HOLLAND.

(Sgd.) WILLIAM SINCLAIR.

(Sgd.) W. C. E. NEWBOLT.

The architects' report referred to is as follows :—
The Very Reverend the Dean and Chapter of St. Paul's Cathedral—

Gentlemen,—In accordance with your instructions we undersigned have made a very careful examination of the present structural condition of the cathedral, and the elements that have taken place from time to time, and we have been assisted by the reports of former surveyors and engineers, and we hope shortly to be able to make a full and detailed report on the subject. But in view of the imminent construction of a sewer by the London County Council within 45 feet of the south-west tower of the cathedral, we feel it our duty to furnish an interim report on this particular point, which has become so urgent and pressing.

We may premise by pointing out that the three portions of the building that have from time to time shown the most significant points of weakness are the south-west tower and south-west and south-east piers of the support to the dome. We find that there have been several proposals to construct a sewer on the south side of the cathedral in St. Paul's Churchyard. One commenced by the City Corporation in 1843 was abandoned on the danger to the structure being pointed out by the surveyor (Mr. Cockerell), though a sewer was actually constructed on this line in 1843 at a depth below the surface of 16 feet 3 inches (but a smaller one). A tube railway has recently been proposed, but this, for the present, has also been abandoned.

The present proposal of the London County Council is to construct a sewer running along the south side of the cathedral, and only 45 feet from the south-west tower at a depth of about 52 feet from the surface, and only 16 feet below the assumed surface of the London clay, and it is attended by very eminent engineers that if the sewer, which we understand will be nearly the size of a tube railway, is constructed in the clay with a shield, and protected by proper precautions and inspection no harm can come to the cathedral.

It is with great diffidence that we feel compelled to come to a different conclusion. But bearing in mind the great difficulty if not impossibility of complete and adequate supervision of a work of this character, and the disturbance it has undoubtedly been caused to surrounding buildings by works of a similar character in London, we are of opinion that the construction of such a sewer so near St. Paul's, after taking into consideration the present sensitive condition of the structure, might very possibly become a very serious danger to the cathedral fabric, and should therefore be opposed by the authorities by every means in their power, in order to secure another route for this sewer which would be free from any possible risk to the building.

We remain, gentlemen, yours faithfully,

(Sgd.) THOMAS E. COLLCUTT.

(Sgd.) ASTON WEBB.

(Sgd.) JOHN BELCHER.

(Sgd.) MERVYN E. MACARTNEY.

In order that the Council may be in possession of all the facts, we think it well to state what action we had taken to insure that the construction of the sewer should not endanger the fabric of the cathedral.

In 1904, when the route of the sewer was under consideration, it was found that the most satisfactory course which could be adopted would bring the sewer near the south side of St. Paul's Cathedral. Having regard to the importance of the building, we considered it advisable to communicate with Mr. Somers Clarke, the architect to the Dean and Chapter, on the proposal, and at his request, three trial borings were made in the vicinity of the cathedral for the purpose of ascertaining the nature of the strata, the sites for the borings being fixed by Mr. Clarke himself. Mr. Clarke then asked whether the Council would consent to submit the plan for the construction of the sewer at this point to an independent engineer acting for the cathedral authorities, and whether the works could be inspected during execution. This was agreed to, and the expense involved was borne by the Council.

As a result of the negotiations, a letter was received in May 1905 from Mr. Somers Clarke stating that he was authorised to say that, "advised by their engineers, Messrs. Barry Leslie & Co., the Chapter of St. Paul's does not regard with apprehension the proposed low-level sewer passing under the south side of St. Paul's Churchyard." Mr. Clarke also asked that certain suggestions made by Messrs. Barry Leslie & Co. as to the method of constructing the sewer near the cathedral should be adopted, and these proposals were agreed to. As we had already received a communication from the solicitor to the cathedral authorities assuring us that Mr. Somers Clarke had full authority to settle the matter on behalf of the Dean and Chapter, we felt satisfied that no further objection would be raised.

No further communication on the subject was sent to the Council until April 2, 1907, when the memorial above referred to was received. When we recommended that the work should be put in hand, therefore, we had every reason to believe that the Dean and Chapter had not altered their opinion in the matter, but in order that we might be confirmed in our assurance that no damage to the cathedral could result from the construction of the sewer at this point, we thought it advisable to consult an independent engineer, and we therefore asked Sir Benjamin Baker to advise us in the matter. Sir Benjamin Baker reported that, provided certain precautions were adopted, which precautions we had already arranged to take, there would be no danger in constructing the sewer in the manner proposed. As it appeared from the memorial, however, that the trustees of the cathedral, after considering the report made by the committee of architects, viewed with anxiety the proposal to construct the sewer under St. Paul's Churchyard, we at once acceded to their request that the matter might be reconsidered. We have had under consideration an alternative route by which the sewer would take a course longer than was originally proposed, at a greater distance from the cathedral, and as it appears that the adoption of this alternative would not detract from the efficiency of the sewer, but would obviate all question of damage to the cathedral fabric, we think that any additional expenditure which might be incurred would be justified, and we have therefore given instructions for the plans and specification for the construction of the sewer to be amended accordingly.

PROFESSIONAL IDEALS.*

A BUILDING like this is the best monument of what the twentieth century has accomplished. The really important part of the history of a nation is the development of its ideals and standards. The specific things that it does are important not so much for their own sake, but for the sake of the evidence they give as to the trend of a nation's thought. It is not the magnitude of the individual battles which makes a war worth reading about. It is the ideas under which the war is conducted and the constitutional principles for which it is fought. It is not the census figures which decide whether a nation is great or small. It is the industrial methods and educational ideals which these census figures indicate. And in like manner it is not the buildings and machines and railroads and mines which constitute the important part of the history of the engineer-

* An address delivered by President Hadley, of Yale University, at the opening of the Engineering Societies Building erected by Mr. Carnegie in New York.

ing profession. A book might give a good description of a thousand of these great engineering works, and yet fail of being in any sense a true history of engineering progress. The thought of the successive builders and the influence of that thought upon the conduct and ideals of other men are the things that we really care about. The story of the concrete achievements that have dazzled the eye of the world is but the unimportant and superficial part of the history. The real thing for which we care, the thing that helps us to understand the past and inspires us with hope for the future, is the story of the men who did the things, their struggles and their discoveries, their trials and their successes.

The men who did more than anything else to make the nineteenth century different from the other centuries that went before it were its engineers. Down to the close of the eighteenth century the thinking of the country was dominated by its theologians, its jurists and its physicians. These were by tradition the learned professions; the callings in which profound thought was needed; the occupations where successful men were venerated for their brains. It was reserved for the nineteenth century to recognise the dominance of abstract thought in a new field—the field of constructive effort—and to revere the trained scientific expert for what he had done in these lines. Engineering, which a hundred years ago was but a subordinate branch of the military art, has become in the years which have since elapsed a dominant factor in the intelligent practice of every art where power is to be applied with economy and intelligence.

A building like this is, therefore, the symbol of all that is most distinctive in the thought of the century that has gone by. A hundred years ago we might have had a building in honour of theologians or of lawyers or of physicians, but one that symbolised the achievements of the engineer was beyond man's dreams, because the world at large had neither felt the need of his work nor dreamed how soon it should be seeking his leadership.

I have spoken of this building as a monument, but that is, after all, not the proper word. A monument implies that a man is dead, or, at any rate, that he has so nearly reached the limit of his growth that he might just as well be dead. Looked at in this way, the engineering profession wants no monument. It has not yet reached the limit of its growth. It has not come to the time when a complacent survey of the past will take the place of toilsome planning for the future. Not a headstone do we want, but a milestone—a point at which our measurement of what has been already done serves as an inspiration for the journey yet to be traversed. We may take this opportunity for a brief review of what has been done in engineering and other allied professions, but the engineer who is worthy of his calling will value that review most highly if it is made a means of calling his attention to that which yet remains to be done.

A hundred years ago there was a sharp separation between scientific theory and commercial practice. There was not a great deal of science anyway outside of mathematics and astronomy, and what there was was underrated by men of affairs. In those days when a man said he was practical it meant that he was not theoretical, that he didn't know science, and didn't want to know it, and didn't want to have any man around that did know it. The men of that day trusted to two guides: inherited prejudice and individual experience. The more enlightened among them used experience to correct prejudice; the rank and file of them used experience to reinforce prejudice, and that was about all the difference. The value of generalisations, except in religion and in statecraft and in some few branches of medicine, was not recognised by anybody.

The great element of progress in the nineteenth century has been the recognition on the part of mankind in general of the value of scientific generalisations in every department of human conduct. Our science has become sounder, our understanding of its applications clearer; and the public has recognised that scientific conduct of a business means the substitution of universal experience, learned with difficulty and applied with toil, for the narrower range of individual experience which was at the disposal of the so-called practical men of fifty or a hundred years ago. Of this change the engineer is the representative and the leader. He it is who makes physical science in its various lines applicable to the complex problems of construction and development. He it is who has paved the way for the recognition of the technologist and the expert in every line of human industry. He it is who has shown how mathematics, instead of being

an abstract discipline, remote from everyday human affairs, may become the means of applying truths for a long time remote and undiscovered to the everyday affairs of the world in which we live. Not the buildings you have built, gentlemen, not the railroads that you have planned, not the machines you have invented, represent your greatest achievement. Yours is the proud boast of having in our brief century established science as the arbiter of the material affairs of mankind, and of having enforced his worship upon a world once reluctant, but now gloriously admiring.

What, then, you will ask, Is there anything which remains to be done comparable in importance to this? Yes, there is. An equally large part—perhaps in one sense a much larger part—of your professional duty yet remains to be accomplished. It is not enough to have technical training. It is not enough to know the special sciences on which the practice of a profession is based. A man ought to have clear conceptions of the public service which his profession can render and the public duty which its members owe. Thus, and thus only, can the engineer, the lawyer, the physician, or a member of any other learned profession, rise to the full dignity of his calling.

For there are two quite distinct qualities which must be combined in order to secure the best professional service. There are two quite distinct tests which work must meet in order to be pronounced first-class. One of these is the technical standard; the other, for want of a better word, may be called the ethical standard. The man who wishes to build a good railroad must not only lay it out according to the rules of the surveyor's art, with proper curves and grades and bridges which will not fall, but he must also have some intelligent regard to the needs of the population, the safety of travel and the many other factors which determine whether a railroad shall be a work of public use or a source of industrial bickering and financial disaster. This combination of public and private demands is not peculiar to engineering. It can be illustrated in every other profession of importance. It is not enough for the lawyer to give advice which shall be technically sound and which shall enable his clients to keep out of gaol. He must learn to take a large view of the law as a means of public service instead of private gain. It is not enough for the physician to know how to cure specific diseases. He must know how to care for the large problems of public health, and to use the resources of the community in a way to meet as fully as possible its sanitary needs.

This larger view of professional obligations is not so fully recognised as it should be. We have in the nineteenth century made so much progress in the technical training of doctors and lawyers and engineers that we sometimes forget that there is need of anything more than technical training. We have let the old idea of public leadership, which was prominent in the minds of the great professional men of past centuries, give place to another and narrower ideal which is fully satisfied when a man has made himself a technical expert. Many a man of real eminence in his calling deliberately rejects the wider conception of professional duty which I have here indicated. Perhaps he recognises the claims of public service, perhaps he does not; but in any event he believes that these claims rest upon him as a man rather than as an engineer or a lawyer. In his professional capacity he says he is hired not to tell what the law ought to be, but what it is; not to advise how a railroad can do the most public service, but how certain men with certain ideas of their own can best use the differential calculus to get those ideas carried out. This is perhaps the prevalent view of professional ethics to-day. I believe that it is a wrong view, which must menace not only the influence and standing of the professions themselves, but the general interests of the republic.

In the first place, a man who believes that he is hired to carry out another man's ideas can never claim a position of actual leadership. He remains a paid servant—high paid doubtless, because he is possessed of a kind of skill which is very unusual, but nevertheless a servant, bound to carry out the wishes of his master. A group of professional men which regards this as a proper view thereof forfeits the claim to stand in the first rank socially and politically, and voluntarily accepts a position of the second rank. I do not believe that the engineers of America want to do this. It has been said that engineering is the handmaiden of commerce; but I do not believe that the men who have planned and dedicated this building will be satisfied with any handmaidenly conceptions of what the

successors ought to do. If for a moment in our zeal for new technical developments we have let our responsibilities as public servants fall out of our hands, I feel sure that we shall be ready to take them up again as soon as our eyes are opened up to the real situation.

For mere technical achievement is not the thing that endures. Among the peoples of the ancient world I suppose that there were no engineers equal to those of Egypt. Considering the means at their command, the things that they did were absolutely extraordinary. They did some things which, even with the means at our command, we can hardly duplicate. But they used their abilities in the service of a dominant priestly caste, and therefore, while their work fills us with admiration, it does not appeal to us as does the work of the Roman engineers a few centuries later, who built roads and aqueducts and bridges, and thus took the lead side by side with the Roman lawyers in establishing the basis of modern civilisation. The roads and bridges of Rome, simple and straightforward as they are, constitute a more enduring monument to the Roman engineers than all the obelisks and pyramids that were ever erected.

For their own sake, then, and for the sake of the enduring quality of their work, we can appeal to the engineers and lawyers and physicians to see that it is adapted to public ends. We can reinforce this appeal by a yet stronger one on behalf of the American commonwealth as a whole, for the development of technical ideals and standards in our various professions during the last few centuries, to the neglect or exclusion of ethical ones, is constituting a very serious public danger.

A commonwealth like that of the United States is necessarily governed by public opinion. Courts may formulate this opinion, legislatures may pass rules to give effect to it, police may enforce its demands against the recalcitrant, but the governing power rests in the intelligent public opinion itself. When that opinion ceases to be intelligent and powerful, freedom becomes a mere name. Now a serviceable public opinion of this kind can only be formed when intelligent people technically trained for different lines of life seriously try to find out how their work can be made to meet the public needs. They are the only ones who can do this well. If it is done by anybody else it will be done badly. If the lawyers as a class try to keep the law in line with the demands of intelligent public opinion, we can get good law. But if lawyers are content to see the law perverted to private ends, and judges take refuge in technical construction of precedents without full regard to the needs of the existing situation, legislatures will step in to create a chaos of conflicting laws which are worse than no law at all. In like manner, if our engineers get their own minds clear, and get the public mind clear, as to the political economy of the properties entrusted to their charge and the ethics of their management, they can forestall those conflicts which now threaten to break out at every moment. But if the members of a profession whose advice is necessary in order to a clear understanding and wise settlement of these problems retire from the field of action, the matter will be settled by those whose interests are more selfish and less far-sighted. There are three professions to-day which do not regard themselves as servants, but as masters—the financier, the journalist and the politician. If the engineer and the lawyer accept positions as servants, simply putting their technical knowledge at the disposal of merchant, journalist or politician, who will pay the highest price for it, it is not simply a confession of inferiority, it is a dereliction of public duty.

Do you say that it is impossible for a single man or group of men to remedy these evils? Look at the career of Albert Finck who in 1874, when he was an engineer on the Louisville and Nashville R.R., made a study of the cost of transportation which has been at the basis of all the intelligent management of the traffic departments of railroads from that time to this. Of course Albert Finck was a rare man. He could do things that some of the rest of us cannot. But I verily believe that if our professions could awake to the necessity of broad ideals like those of Finck, the greatest dangers which threaten the American Commonwealth would be fairly met, and the men who met them would be given the positions of power and trust which they had proved themselves worthy to hold. Nobody is satisfied to-day with the struggle between individualism and socialism, between financier and politician, between Wall Street and Washington. The men who are engaged in this conflict are for the most part heartily sick of it. Let a man or group of men arise who add to their technical knowledge a readiness to use that knowledge

in the public service, and people will be ready to put them in charge of affairs and follow where they lead. We have outgrown the day when a little common sense was sufficient for managing the affairs of the nation. They are become too complex, and this complexity gives the engineer, if he will add to his training in mathematics a training in ethics and political economy and the fundamental principles of the law, an opportunity such as never before existed to claim and receive the position which rightfully belongs to him.

There arises now and then among our engineers a man with this quality of looking into the future—call it genius, call it insight, call it imagination. One of your own members said in a memorable speech that the thing that distinguishes a man of the first rank in his profession from a man of the second rank is the possession of this quality of imagination. Unfortunately it is rare. We cannot all of us have it. But we can have more of it than we now have if we will modify our training and widen our standards of professional success. Excellent as is the course in our technical schools, it does tend to have a narrowing effect instead of a broadening one. The ideals of our engineering societies are high, but they are not always as broad as they might be. The widening of the course in the schools and greater readiness in our associations to recognise services which we now call non-professional will, I am convinced, do more for the engineers and more for the community than would be represented by ten years' progress in mining or machinery and the various developments of applied science.

We celebrate to-day, and we are justified in celebrating, the recognition of science as a necessary guide in the conduct of the material affairs of each man's business. Half a century hence, when our descendants shall meet in this building or some greater building, I am confident that they will celebrate a yet greater thing—the recognition of the right of men of science to take the lead in enlightening the thought of the people on public affairs and the responsibility of filling the highest positions in the service of the Commonwealth.

NEW ROME.

IN his last report Mr. Consul Morgan says that after a somewhat protracted period of economic depression Rome was awakened to a new existence. The population of former times, who had never devoted themselves to business pursuits and who had but very imperfectly felt the necessity of doing so, have developed by gradual amalgamation with the new-comers from the rest of the peninsula and from abroad into quite a different race, largely composed of enterprising men, anxious to place Rome on a footing similar to that of other prosperous European capitals. Their first endeavours were directed towards rebuilding and modernising the old city, but at the outset inexperience led them to commit grave errors, with the result that they found themselves involved in a disastrous crisis which was ruinous to a great many people. A period of depression followed, but gradually the position began to improve. The population increased so rapidly that the new houses not only became fully tenanted, but a dearth of apartments is at present keenly felt, especially by the less-favoured classes of society.

Meanwhile the constant number of visitors drawn to Rome, either by reason of their health or for other motives, continued to spend large sums of money in the city, thus substantially contributing to the revival of its financial and economic conditions. The surplus capital of other centres, like Milan and Genoa, was also attracted as a matter of speculation, and with such assistance as the Government and municipal administration have been able to render the future of the capital of Italy was assured. Complaints are heard every now and then that Rome has been spoilt by the obliteration of some of the traces of the past; but it was felt by those who are in a better position to judge that archæology should not stand in the way of Rome's prosperity. All that could be preserved of the past of Rome was most scrupulously saved, and even now important schemes are under official consideration for the protection of the city's monuments.

The pretty small towns and villages near Rome are now served by a regular electric tramway service. The country is being gradually opened up and symptoms of activity are everywhere discernible. The two railway stations in Rome known as Termini and Trastevere are to be shortly connected by means of a direct line, and the workshops, as well as the stores connected with the railway service, will be transferred to the Trastevere station, thus relieving the present con-

gested Termini station. The cost of the undertaking is estimated at 250,000*l*.

The General Direction of the State Railways has purchased the Villa Patrizi, just beyond the Porta Pia, where all the railway business of Italy will be centred and transacted. In that connection it may not be amiss for me to remind travellers that all claims for compensation in respect of loss of property on Italian railways should, under the new arrangements, be addressed to the Chief of the Railway District (Capo del Compartimento Ferroviario) residing in the town from whence the said property was forwarded, provided its value does not exceed 40*l*. Claims for larger amounts should be addressed to the Direzione Generale delle Ferrovie di Stato in Rome. Claimants should not omit to attach to their complaint a list of the missing articles, giving the approximate value of each article.

Within the brief period of thirty-seven years Rome has been almost rebuilt, and by comparing a map of 1870 with one of the present time it can be seen at a glance that its topography has altered considerably. Strenuous efforts are being made to encourage the establishment of manufactories. The possible harnessing of a portion of the Tiber and of the waterfalls near Rome as a motive-power, the recent substantial 50 per cent. reduction on the import duty on petrol, the proposed reorganisation of the electric-supply service and other reforms of a wide public character, will undoubtedly exercise considerable influence in the attainment of the desired end.

Another important scheme which is receiving serious attention, and in respect of which a convention between the Government and the local municipal administration now awaits Parliamentary sanction, is the one relating to a new road to the sea almost parallel to the course of the Tiber. A small harbour is to be built on the left side of the river's outlet into the sea. Besides facilitating the conveyance of goods to Rome by means of the proposed approach to the capital from the sea, it is intended to convert the new harbour into a summer resort readily and quickly accessible from the capital by means of a regular electric-tram service.

PROTECTION OF SHORES FROM EROSION.*

THE constructive works which a foreshore engineer has to devise are groynes and sea-walls, or other fore-and-aft defences, where the land in rear of the foreshore does not afford the support necessary to hold up the bank of shingle or other drift. One most important matter to consider is that of the drainage of the land contiguous to the sea front. It is perfectly clear that with a foreshore such as that near Herne Bay, where tertiary clays and gravels are combined in varying layers, a wet season will work havoc with the line of cliffs. The water accumulates and lodges in the natural basin formed by the clay, and oozing through some fissure or vein of porous material, brings down great masses, especially after frost. Meantime, the fret of the waves at the foot of the cliffs tends to cut away the support for the cliff and accelerate land-slides. No measures of coast protection will prevent such weathering from above.

Along the East Anglian coast, where land-slides are disastrous in extent, a slipshod way of draining lands abutting on the sea prevails and materially assists the work of destruction. There is no inducement to a landowner to spend money on land which next year, or next month, may tumble into the sea.

Some coast lines are peculiarly liable to be disintegrated by frost. Chalk cliffs, provided they are nearly vertical, will resist this action for a long period. Moisture falling upon chalk land gets away quickly, chalk being a most absorbent material. The worst that happens generally, if the cliffs are vertical or nearly so, is a slight weathering of the skin of the face of the cliffs. Where, however, chalk headlands stand at a moderate slope, they are more likely to give trouble, owing to the percolation of the water into the fissures in them.

The sandstones do not come off so well. Many of the loosely-knit sandstones are liable to be split by water penetrating into veins, freezing, and thus wedging off great masses. This question, however, is rather alien to the immediate matter I am endeavouring to deal with, viz. coast defence.

At Bridlington, in Yorkshire, five "A" groynes were built in 1868, and two of them still exist.

At the top or sea-wall end the groynes were built 12 feet above the level of the foreshore, and at the bottom end 4 feet. The frames are 12-inch by 6-inch timbers filled with block chalk, and the sides are inclined to 35 degs. The piles are 12 inches by 12 inches and the planking 9 inches by 4 inches. This type of groyne embodies almost every principle to be avoided. Being built to an arbitrary level above beach level, such groynes accumulate drift on the windward side and cause deep steps in the foreshore, which are unsightly, inconvenient and dangerous. Being built almost broadside to the sea, they set up scouring forces of the most formidable nature, forces not of conservation, but of destruction. Lastly, the cost of a groyne of this type is of necessity heavy. Groynes of a somewhat similar type have been constructed at Trusthorpe and Ingoldmells, on the Lincolnshire coast. In that case the transverse section of the groyne showed five rows of piles each 7 inches square spaced 5 feet apart. The centre portion of the groyne rose about 3 feet above the sides, and the slope of the sides was 22½ degs. These latter groynes have retained the drifting sand, but on this part of the coast the sea is receding, and the problem is rather that of preventing inundation than of stopping erosion.

I remember an instance under which promenade works were built under these conditions. A contractor friend of mine who attended the inaugural luncheon of the sea wall from which the sea was withdrawing summarised the situation by saying that it appeared to be a case in which "the sea saw it and fled."

The type of groyne which, under normal conditions, I find most effective is that now to be shown. I have recently carried out the defences of a corporation in which the ravages of the sea were extreme, by building a series of groynes of this type. The piles are 10½ inches by 10½ inches, driven in pairs, 8 feet centre to centre, leaving a space for 4-inch planks to be bolted between. Owing to extreme severity of the conditions, the piles had to be about 21 feet long. The planks bolted between the piles are arranged to break joint. By carefully watching the accumulation or depletion of moving shingle and sand, and by taking off or adding planks, as the state of the foreshore indicates the necessity for doing, an effective sea beach can by groynes of this type be coaxed into existence. A few tides' neglect may, however, undo the accumulation of weeks.

These groynes have cost about 28*s*. per lineal foot to construct.

On less exposed coasts in which the piles need only be say 14 feet long, the cost of similar groynes is about 18*s*. per lineal foot.

Taking fifteen groynes to the mile and assuming each groyne to be 100 yards long, the cost per mile for groynes such as those at Hove and Hastings, which are massive and high and have oak ties, would be about 10,000*l*. Somewhat similar groynes, but with struts instead of oak ties, such as may be seen on the Cromer coast, cost about 8,500*l*. per mile.

Low groynes of the single pile type, like those at Felixstowe and Worthing, cost about 1,250*l*. per mile; and similar groynes, but with double piling, vary from about 1,500*l*. to 2,000*l*. per mile according to the length of piling necessary.

I may perhaps, in passing, mention that there have been several patent claims for groyning, notably that of the late Mr. E. Case, who was the engineer of the Romney sea defences, which are secured by the Dymchurch wall. His patent (1896) was, however, upset in the Court of Appeal. His method of constructing groynes was to fix uprights in pairs. They were of a light character and held in position in the beach by being concreted into excavated pits. The planking was bolted between the pairs of uprights. In the coast protection works at Dymchurch Mr. Case was undoubtedly highly successful. He advocated building groynes from the lower part of the foreshore upwards, but did not carry the groynes so far as the top end of the sea-wall, or other fore-and-aft protection work. This latter arrangement often results in dangerous scour round the head of the groynes, and, in my view, is undoubtedly a mistake. On exposed frontages the Case system has been of doubtful utility, as the concrete bases, into which the uprights are bedded, are liable to be scoured out. In this case the entire groyne comes to grief.

The effect of successful groyning on a steep foreshore is that the slope of the shingle forming the foreshore is flattened, and, in order to produce a satisfactory contour, it

* From the paper by A. E. Carey, M.Inst.C.E., read before the Society of Arts.

is therefore obviously necessary that shoaling should take place beyond the original line of low water. It is, therefore, necessary that the groynes should be carried below low-water mark, and this extension (when deep water originally existed close inshore) is the measure of the efficiency of the groyne. To extend groynes below low water it is either necessary to drive close sheet piling or to take every opportunity as the beach increases to add planking, and thus to push the structure seawards by degrees.

The advantage of the expedient of spur groynes (*i.e.* groynes running from a given structure parallel with the coast line) is one of which an instance may be seen immediately to the south of the entrance to Lowestoft harbour. A spur groyne is local in its effect. Its object is to afford protection to a short length of frontage, generally to some extent at the expense of the frontage to leeward of it. Where, for instance, entrance piers run out into the sea, on the windward side of which the travelling shingle is arrested, scour on the leeward side is a natural consequence. By means of a spur groyne the root of a leeward pier may be protected, as behind it shingle sooner or later gets driven and permanently lodges, being sheltered from scour by the spur groyne.

Turning now to the question of sea-walls, it is hardly needful to say that they vary in type within wide limits. As a rule, sea-walls are built fair on the face with a batter of 1 in 6 or 1 in 7. At Scarborough the sea face of the wall is curved to a radius of 17 feet, and the toe projects 15 feet beyond the bottom of the curve.

There are many other instances of sea-walls with curved fronts. I may mention that of Scheveningen, on a sandy coast. The apron of this wall is 20 feet long, it batters 1 in 4, and rests upon mattresswork and clay 18 inches thick.

Another common expedient, which has been adopted at Hastings and Blackpool, is that of having a projecting bull-head at the top of the wall. The idea of this design is that a column of water shot upwards under a wave stroke will be driven off at a tangent, away from the esplanade. So, to a large extent, it will, but the strain thrown on the wall is proportionately severe. Then there have been numerous designs for walls with stepped fronts, such as that for Bridlington and Margate. The Margate wall has a most elaborate contour consisting of a series of steps, each with rounded copes.

The idea embodied in the design of these various structures is that of breaking up the forces acting upon the wall and making the details of these forces mutually destructive. The forces operating upon a sea-wall consist of horizontal direct blows of the waves; these, by deflection, set up vertical forces acting upwards and similarly vertical forces acting downwards. The effect of the last is to excavate and tear out the root of the wall. The upward vertical force is one of the most fruitful sources of destruction, by reason of the cascade of water which thus passes over the sea-wall and scours out the filling behind it. It thus sometimes digs a trench into which the wall is capsized inwards.

The conclusions which I personally have arrived at are that to build sea-walling, unless under conditions which will result in its being well clothed with shingle or drift in front, is merely to court disaster. Such structures form admirable excavators. The weight of water rushing up the face of the wall will on recoil set up dangerous scour at the root of the wall. Many such a structure has come to grief in this way. It cannot be too much emphasised that the object of a sea-wall is that of forming a barrier for the travel of shingle inwards, rather than constituting a barrier for the wave stroke itself. Considered from this standpoint, it seems to me obvious that sea-walls of elaborate section involve a wasteful expenditure of money. The simplest and cheapest type appears to me the best. Such a structure is an ordinary wall of concrete, if necessary faced with granite, vertical on the front and stepped at the back. The best sea-walling, I may repeat, is a massed sea beach, and if sea-coast towns would be content not to push their building line so far forward, but to let nature build them a protection with the aid of a suitable system of groynes, they would, in nine cases out of ten, be in a far better position than they are when endeavouring to build sea-walls so as to encroach on the natural frontage of protection.

The latest practice in coast defence is that of dumping shingle artificially on a beach which has been depleted. The effect of this is often to restore efficiency and recreate a protective barrier. Some twenty years ago the sea-

wall at Hove, immediately after construction, was seriously endangered by underscour. Twenty-seven thousand cubic yards of shingle were brought from Shoreham by barge and deposited as close inshore as possible, groynes were constructed and the wall thus saved.

Similarly, between Newhaven and Seaford about 71,000 cubic yards of shingle were brought in railway waggons and tipped on to the beach between the groynes, and the result has been the successful protection of a length of low, exposed coast.

The question of coast erosion is one of urgency and of increasing urgency. The situation in many districts is so intolerable that some comprehensive national scheme must be evolved without delay. There are tracts of coast-line on which the invasion of the sea is a contingency continually present to the landowner and occupier. Slipshod agriculture is the natural consequence. The individual landowner may spend freely on defence works and find himself outflanked by the neglect—or more probably by the excess of zeal—of his neighbour. The principal areas of erosion are as follows:—

On the East Coast.—The Lias cliffs between Scarborough and Whitby, the coast line between Bridlington and Spurn Point (glacial drift), the East Anglian coast-line from Cromer to Clacton (glacial drift), the Kentish coast from Herne Bay to Ramsgate (mostly tertiary).

On the South Coast.—The Hastings sand cliffs near that town, the chalk cliffs between Newhaven and Brighton, points at the east and west ends of the Isle of Wight, the Oolite coast line between Swanage and Weymouth, the Lias cliffs near Lyme Regis.

On the West Coast.—Points in Bridgwater Bay, Somersetshire, in Cardigan Bay, on the North Wales coast near Colwyn, the Lancashire coast near Blackpool, and other localities.

A Royal Commission is now sitting to take evidence upon the entire matter, and is investigating the subject with admirable thoroughness. I have, at the request of this body, furnished a memorandum of the legislative measures which the present situation seems to me to call for.

My proposal is for the creation of two central bodies to deal specifically with the problem, one taking charge of the entire coast of England and Wales, the other of the entire Irish coast. Such bodies should act with much greater economy and efficiency than now obtain. The present *régime* of local control is often wasteful and sometimes actually pernicious. I suggest that the Coast Commissioners should take over the powers and functions of the various bodies now controlling sections of the coast under statute, and also the rights and powers of the Government departments affected. The body of Commissioners in each case should not, I think, exceed five, as any large representative body would only perpetuate the evils of the present lack of system. The Commissioners, I suggest, should be appointed respectively by the President of the Board of Trade and the Chief Secretary for Ireland. The Coast Commissioners would nominate and appoint district engineers or coast wardens, whose functions would be to advise the Coast Commissioners as to the measures necessary for the maintenance of their respective coastal frontages, and the execution of such works as might be ordered by the Coast Commissions.

I further suggest that the coast line of Great Britain might be conveniently divided into the following districts:—

1. Berwick-on-Tweed to the north shore of the Humber.
2. The south shore of the Humber to the Essex shore of the Thames.
3. The Kent shore of the Thames to Poole Harbour.
4. Poole Harbour to the Severn.
5. The Welsh coast.
6. The Dee to the Scottish border.

The Irish coast might be divided into three or four sections.

The administrative functions of the new bodies would be the investigation of the titles, rights and obligations of the various authorities, landowners and others claiming jurisdiction or rights over lands contiguous to high-water line and between high and low-water levels. They would have authority to stop the removal of shingle or sand from a foreshore; and I have suggested that, should it not be provable that such right had been exercised within twenty-one years, no compensation should be payable.

For the purposes of coastal defence my suggestion is that the Commissions should be the sole authority, with the proviso that their functions should be restricted to works

intended and designed primarily for the defence of lands and towns against sea erosion.

With regard to the thorny question of how the bill for the works carried out is to be met, my suggestion is that the salaries and expenses of the Coast Commissions and of their executive officers should be defrayed by an annual Treasury grant, and that the Treasury should further provide a capital sum to cover the plant necessary for the operations of the Commissions. This would be all that the Treasury would be called upon to find. The actual cost of works carried out by order of the Coast Commissions should, I think, be defrayed in respect of two-thirds by the County Council or Councils of the locality which includes the site or sites of the respective works, and one-third should be borne by the Corporations or local Councils whose frontages would be immediately affected. Public inquiries in every case would be held before any scheme of works was determined upon, and local views would thus be considered.

The main argument in favour of the suggestion which I have ventured to put forward is that a policy of prevision would take the place of the present lack of policy and of mere hand-to-mouth expenditure under panic.

The Coast Commissions would be able to utilise the surplus deposits of shingle and sand in one locality to make good the deficiency in another. It is on the maintenance of the circulating medium of defence provided by nature, either thus or by natural travel, that the security of the entire coast line depends.

There are various precedents for the formation of bodies such as I suggest, and the broad conclusions which I have arrived at are the results of long experience.

In conclusion, I desire to express my thanks for the attention which you have been good enough to give to my imperfect development of a wide subject.

One often hears it said, "Sea defence works are generally expensive; coast land is often cheap. Let the cheap land go." It seems to me that, from a national standpoint, such a creed is unworthy of the people whose race-character springs from the mastery of the seas.

GENERAL.

The Emperor of Russia has given a commission to M. Bernstamm, the sculptor, to execute in bronze his group of "Peter the Great Saving two Sailors," which appeared in the Salon of 1905. It is to be set up in the garden of the Peterhof Palace.

The Chantrey Trustees have purchased the following works of art from the Royal Academy's exhibition:—"The Rehearsal," by Mr. L. Campbell Taylor; "Runswick Bay" (landscape), by Mr. A. Friedenson; "The Seeds of Love" (water-colour), by Mr. W. G. Simmonds; and a small group in marble, "Earth and the Elements," by Mr. Bertram Mackennal.

The Design by Mr. Percy D. Lodge and Mr. Albert E. Dixon, both of Manchester, has been adopted in the competition for the Thornwood Avenue schools, Gorton.

The Belfast Quantity Surveyors' Society at their last meeting decided to reduce their fees for warehouse work from $1\frac{1}{2}$ per cent. to 1 per cent. The change has been approved of by the Ulster Society of Architects.

A Paper on "Two Benedictine Minsters" will be read by Mr. E. W. Harvey Piper at the meeting of the Society of Architects on Thursday next.

A Visit to "The Peel," Clovenfords, Selkirkshire, is organised for to-morrow (Saturday) by the Edinburgh Architectural Association.

The Worshipful Company of Makers of Playing-cards offer two prizes for the best designs for the backs of playing-cards, the first being 15*l.* 15*s.*, known as the Company's prize, the subject of the design to be "Imperial Unity," the second being 10*l.* 10*s.*, known as the H. D. Phillips prize, the competitor being at liberty to choose his own subject.

The Education Committee of the Durham County Council report that they have appointed architects to prepare plans for the following schools:—Blackhill, Chilton Buildings, Chilton Ferryhill, Chopwell, Cleadon, Cornforth, Fulwell, Hartburn, Silksworth, South Hetton, Willington and Witton Park. They invited seven architects to submit competitive plans for the new school at Blaydon, and received plans from six of them. Subject to the conditions relating to the competition being fulfilled, they have selected the design of Mr. J. Morson, of Durham.

The Prix Allier de Hauteroche, of the value of 1,000 francs, which is awarded at stated intervals by the French Académie des Inscriptions et Belles-Lettres, has on the present occasion been divided equally between Dr. H. Gæbler, of Berlin, and Dr. George Macdonald, assistant secretary in Edinburgh to the Scottish Education Department. Dr. Macdonald, who was Rhind lecturer in archæology for 1904, is honorary curator of coins to the Society of Antiquaries of Scotland. He has written extensively on numismatic subjects, but the particular work which the Académie des Inscriptions has selected for "crowning" is his "Catalogue of Greek Coins in the Hunterian Collection, University of Glasgow."

At the Adjourned quarterly meeting of the Belfast Corporation on May 2 some questions were asked in regard to the issuing of a writ by Sir Brumwell Thomas, the architect of the new city hall, for 13,000*l.* for fees. The Lord Mayor, in replying, said that the matter had been left to a sub-committee to see if an amicable settlement were possible. A writ had been served, and he imagined that in time it would go into the courts of law. So far as the sub-committee was concerned, they had not been able to come to any satisfactory agreement with the architect.

The Manchester Infirmary Board have been informed that the progress at the new Royal Infirmary is sufficient to justify the confident belief that the actual building will be completed by July next year, the date originally arranged for. Roughly speaking, one-half of the new hospital is now roofed in and water-tight, and the windows to some extent are fixed. A large amount of plastering has also been done, and the woodwork in the nurses' home is well advanced. The rate of progress at the work has been increased lately, and the payments to the contractor have gone up to 17,500*l.* per month. It is likely that the speeding up of the work will further increase the amount to 20,000*l.* a month.

The Edinburgh Dean of Guild Court considered last Friday an application from the North British Railway Company for a warrant to erect a water tank at Margaret's Works, Meadow Bank. Lord Dean of Guild Wilson asked if it were not possible to get another site for the tank. It would be a most desirable thing if it could be placed in a less conspicuous position. The representative of the railway company replied that no other site was available at that place. The Lord Dean of Guild said if that were so then warrant would have to be granted. The Court had no power to refuse it, but the tank would look a very hideous thing facing the public road. The tank, it is understood, will be about 90 feet in length and will stand about 15 or 18 feet above the pavement.

The Sheffield Town Clerk has been instructed to inquire from other municipalities what steps are being taken to meet the increased liability thrown upon corporations by the extended Workmen's Compensation Act. The town clerk in his report says, "The exact definition of workmen will probably not be fully known until after considerable litigation." The highway and sewerage committee of the City Council have had before them twenty-seven tenders for the construction of six settling tanks, twenty-four contact beds and other works in connection with the sewage works extension scheme. They recommend the acceptance of the tender of Messrs. Logan & Hemingway, of Nottingham and Sheffield, for 41,046*l.* For the laying-out of Fitzalan Square 11,618*l.* is to be borrowed.

A Course of Lectures, designed to meet the requirements of landowners and others interested in the production of timber and the preservation and extension of woodlands, is being arranged to be held in June and July at the Royal College of Science, Dublin. The lectures, which will be suitably illustrated, will deal with such practical questions as the present condition of Irish woods, the possibilities of extending our forestry operations, the classes of trees suitable for profitable cultivation, the conditions under which the several species should be planted and the treatment they require in order that they may afford an adequate return to the capital and labour invested in their production.

Mr. Thomas Rowbotham, the contractor engaged in the erection of the new Birmingham University buildings on the Bournbrook site, has offered to present to the University the clock, and, if thought desirable, accompanying chimes for the tower. The gift will represent a sum of about 2,000*l.* At the same meeting of the Council Sir John Holder expressed his willingness to contribute a sum of 1,000*l.* for the purpose of filling the large window at the south end of the great hall with stained glass.

WELLINGTON HOUSE
BUCKINGHAM GATE SW.



"WELLINGTON HOUSE," RESIDE

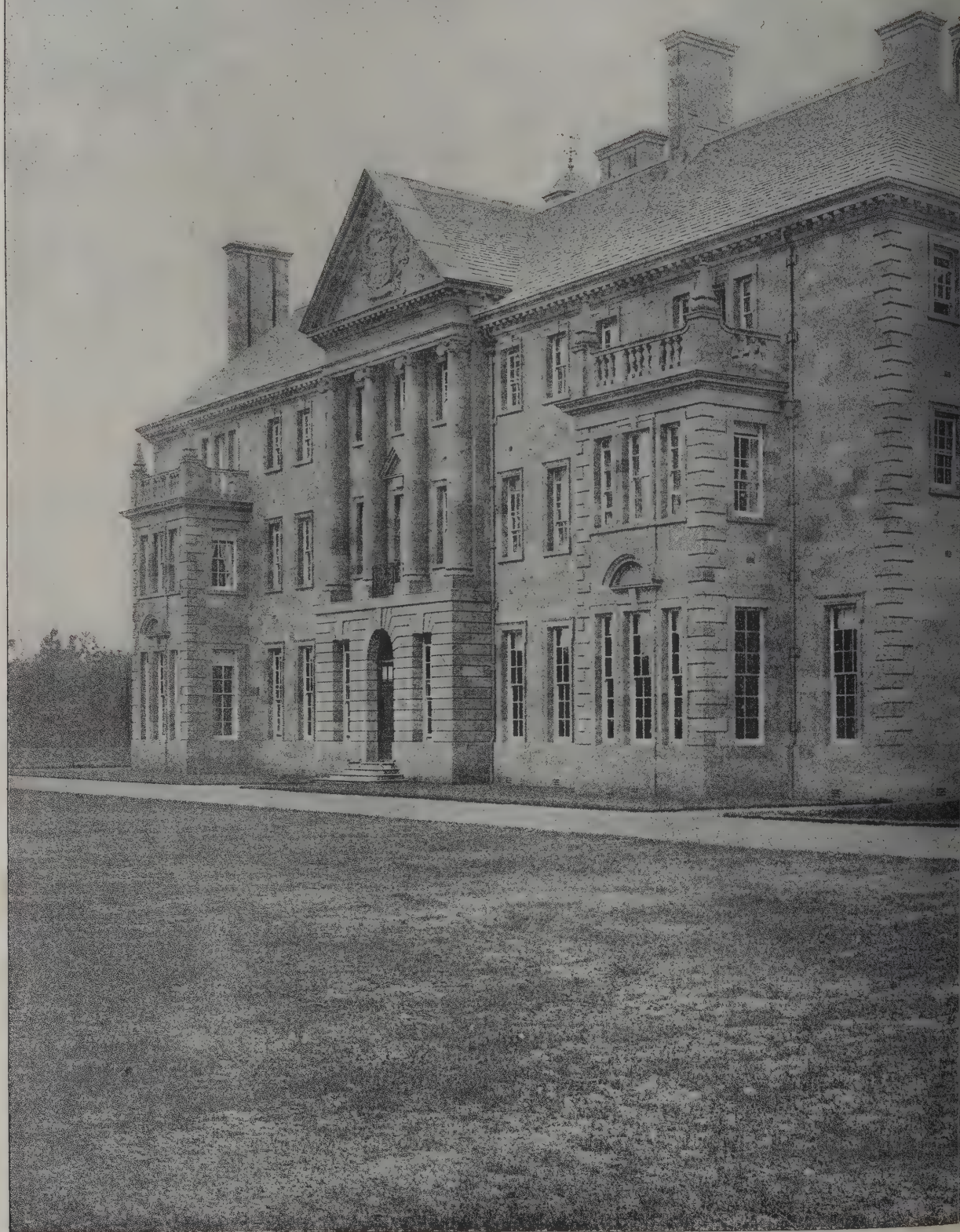
Messrs. F.C.



PALGRAVE & CO.
ARCHITECTS.
28, VICTORIA ST. S.W.

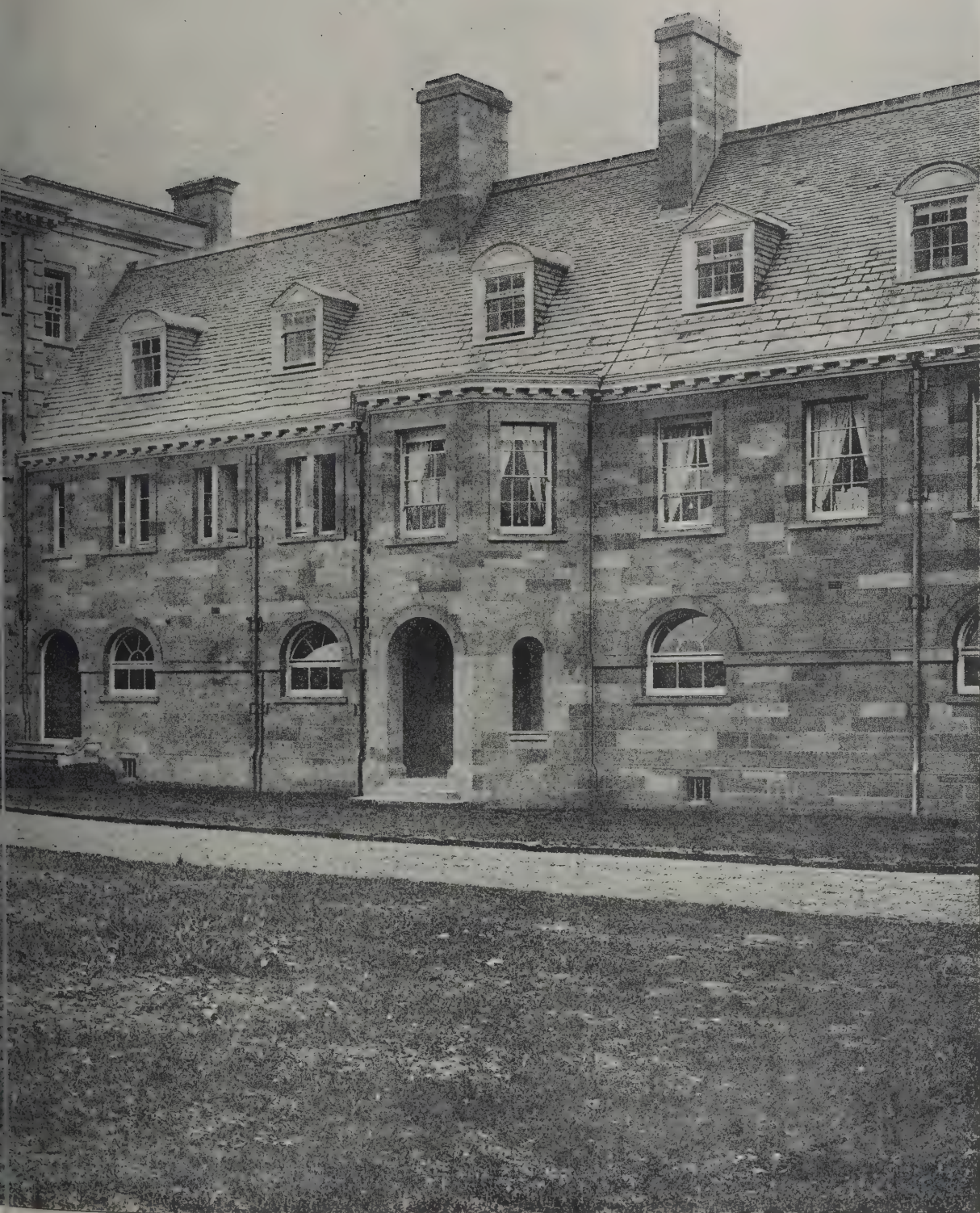
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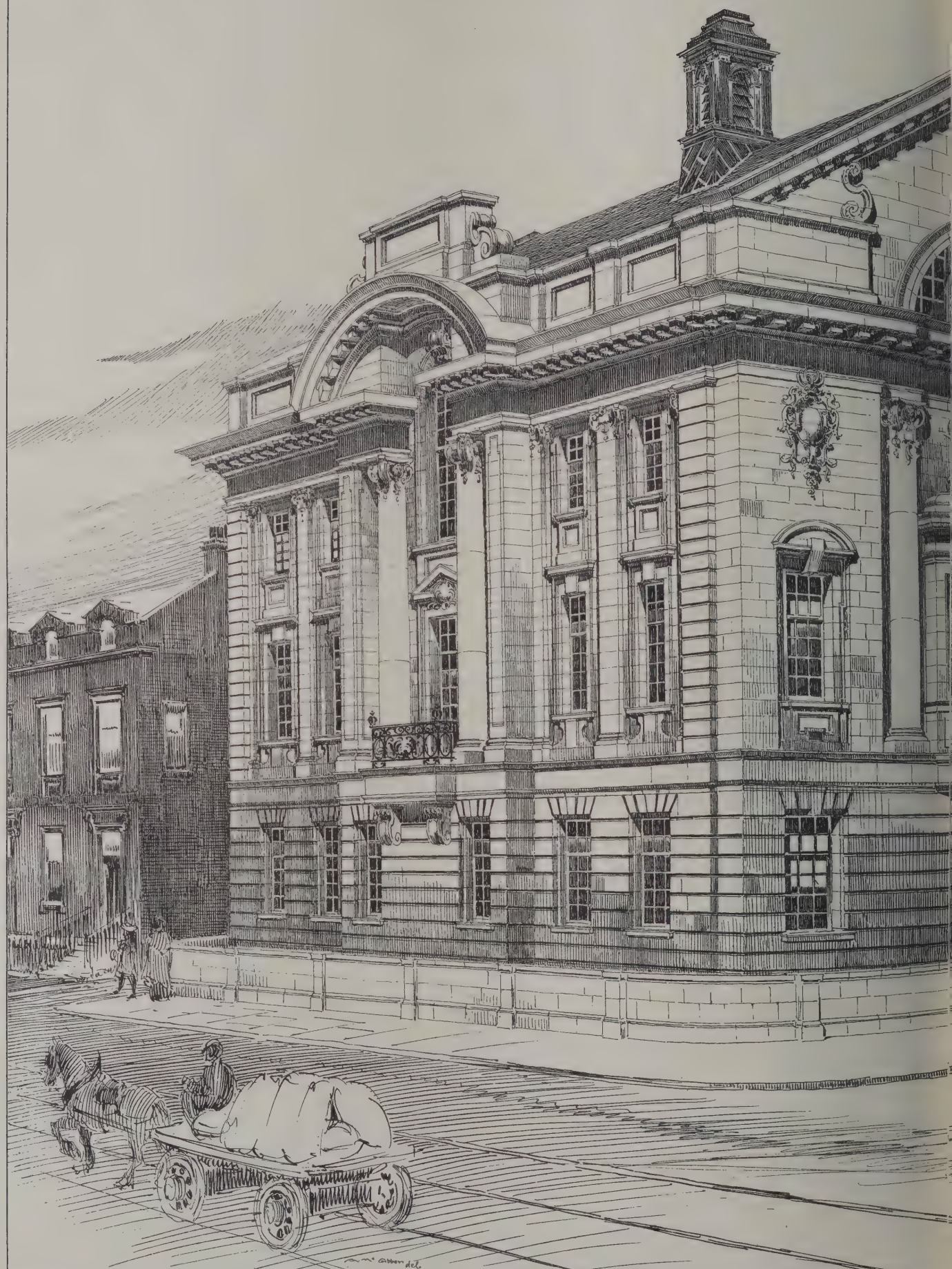


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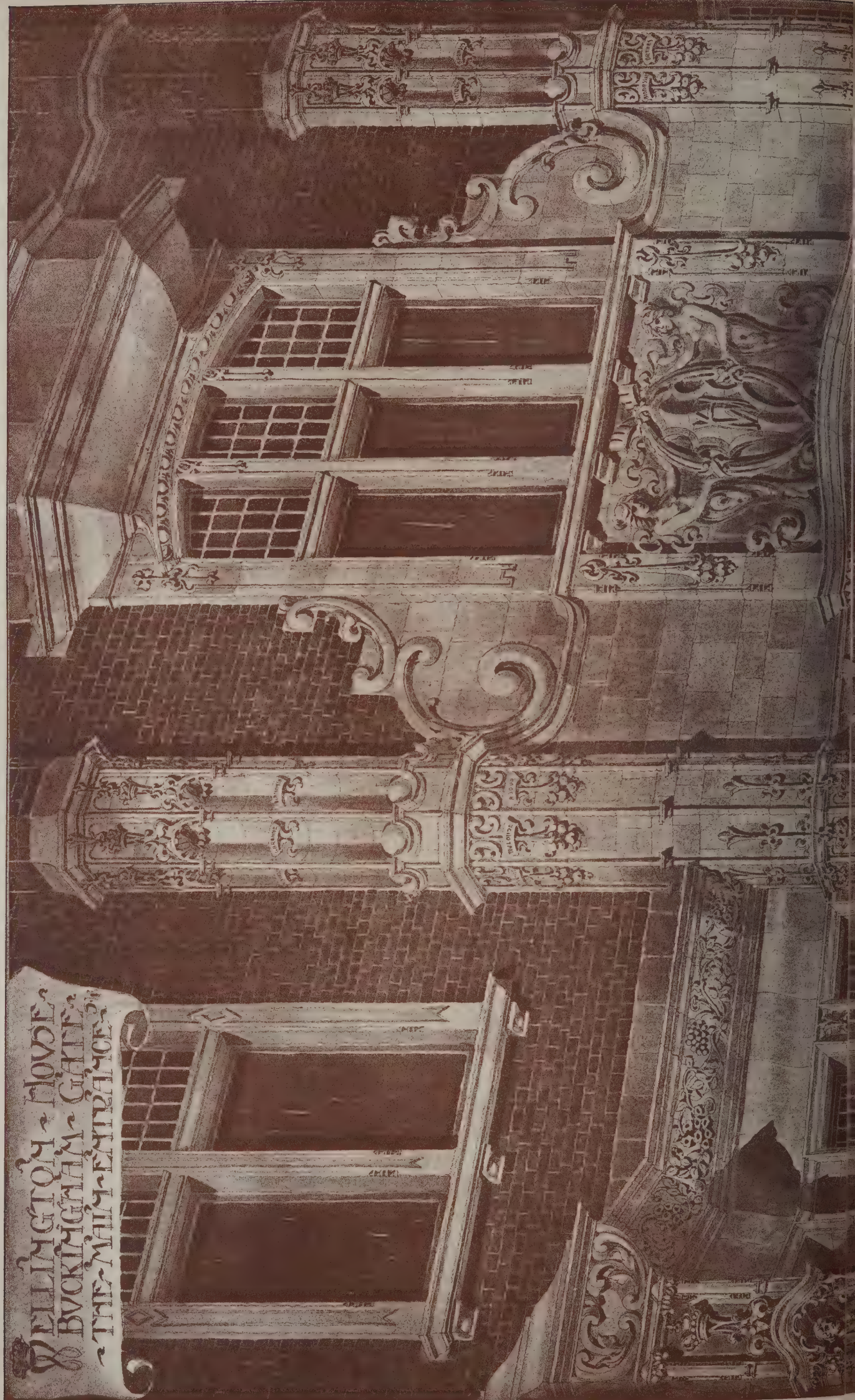


E - GLASGOW

JOHN D. WILSON A.R.I.D.A. ARCHITECT.
GLASGOW

The Architect, May 10th 1907.

WELLINGTON HOUSE
BUCKINGHAM GATE
THE MAJESTIC





"WELLINGTON HOUSE," RESIDENTIAL HOTEL, BUCKINGHAM GATE, S.W.: MAIN ENTRANCE.

Messrs. PALGRAVE & CO., Architects.

The Architect.

THE WEEK.

THE improvements committee of the London County Council have issued a new statement containing the building conditions referred to in contracts for lease of the Council's surplus lands. The following marginal abstracts will suggest their character:—(1) Lessee to maintain support to adjoining land and buildings and to indemnify Council. (2) Lessee to build on lot permanent building and to expend minimum sum specified in particulars of the lot. Buildings to be built to be such as Council shall approve and not to build otherwise. (3) Lessee within calendar months after date of contract to submit to Council plans, &c., for approval. (4) Lessee not to execute any work or excavate until plans, &c., approved. (5) Lessee within two months after plans signed to commence building. Buildings to be built under inspection of Council's architect and in accordance with approved plans, &c., and completed within months after contract. (6) Lessee not to excavate beyond what is necessary for building works or without consent to remove soil, &c. Damages for breach. (7) Architect and others authorised by him to have access to lot for purposes of inspection, &c. Power for Council to require work, &c., not in accordance with approved plans to be removed and in default to remove same and make good at lessee's cost. (8) Lessee to keep buildings insured during erection. Power for Council to do so on default. Lessee to rebuild in case of fire, but architect may extend time for completion of buildings. Rent to be paid as if no fire had happened. (9) Relics, &c., found, to belong to Council. (10) Lessee to pay for use of half party walls. (11) Prohibition of advertisements without written consent of Council. Damages for breach.

THE Severn tunnel is one of the most important engineering works of our time. The plans were prepared by Sir JOHN HAWKSHAW, and the works were commenced in 1873 by the late T. A. WALKER as contractor. Before the works were completed the water on more than one occasion flowed in, and great difficulty was experienced in keeping the tunnel dry. Subsequently other works were undertaken. But at the present time there is water in the outlet shaft to within about 6 feet of the surface. The engineers have given a final certificate, and maintain that the contractor—Mr. DICKSON—has faithfully carried out his contract. Something will have to be done to remedy the defects, which probably are due to unforeseen natural causes. The Worcester City Council appear to be acting with great discretion. They propose that the engineers and contractor should agree to submit the problem to some engineer, to be appointed by the President of the Institution of Civil Engineers, in case they cannot agree upon a selection. The engineer is not to be considered as an arbitrator, but he is to decide whether the works correspond with the letter of the contract, and also to suggest the remedies which are considered to be effectual. He is to decide who is to pay his fees and the expenses which may be necessary in connection with his examination. It is by no means certain that the arrangement can be carried out. It is based on the theory that either the engineers or the contractor have acted erroneously. The City Council will escape all responsibility. But the history of engineering shows that there are contingencies which no foresight could have guarded against, unless by an expenditure which could never be repaid. That, apparently, has occurred at the Severn tunnel, and any liability must in equity fall upon those who are to be considered as the owners.

ON Tuesday there was a further step in the restoration of the west front of Hereford Cathedral, for the corner-stone of the south-west turret was laid by the Earl of WARWICK according to Masonic ritual. The work has been in progress since 1901, under the direction of Mr. J. OLDRID SCOTT. The Rev. Canon CHILDE in his sermon stated that 120 years ago on Easter Monday the western tower fell, and the destruction of the west front and part of the nave was the result. In 1788 JAMES WYATT was called in to carry out the reparation, and in no building in England was his peculiar system more markedly exemplified. It was supposed at the time that he was economically inspired. But it appears that no less than 20,000*l.* was expended on his experiments. His transactions consisted of the total rebuilding of the west front (without a tower), the foundations of which were moved 15 feet inward, and the nave consequently was as much shortened; the arcades and clerestory windows in the upper part of the nave altered from the circular to the pointed form; the vaulting of the nave renewed; the roofs of the nave, choir and transepts flattened; the spire taken down from the central tower; the battlements raised somewhat higher and the pinnacles with crockets placed at the angles. In 1841 another attempt was made at restoration under COTTINGHAM. But his improvements will not sustain modern criticism. In 1857 the work was placed in the hands of Mr. (afterwards Sir) GILBERT SCOTT, and after five or six years the cathedral was reopened. The great work of the west front was, however, as we said, not undertaken until 1896.

It is the fate of VITRUVIUS to be neglected and undervalued during several years, and then there is a sudden discovery by some scholar that his books contain more information than is generally supposed. The latest discovery is that the architect anticipated the modern taximeter, for in the tenth book there is a description of an apparatus which could be used by travellers on land and sea in order to ascertain the distance traversed. The particulars are given in sufficient detail, for a German mechanist has constructed one corresponding with the description of the ancient writer. It has been found to act when applied to the wheels of a carriage. Apparently it bore some resemblance to the hour glass, for there was a relation between the grains which passed from one part of the apparatus to another and the distance traversed. The incident has revived with scholars the circumstance that in the time of the Emperor COMMODUS carriages were in use to which an improved form of the taximeter was attached.

IRISH students of painting have in the International Exhibition such an opportunity as is rarely presented to them of studying modern British art. Pictures like MILLAIS's "The Rescue"; Lady BUTLER's "Roll Call" and "Scotland for Ever"; Mr. G. D. LESLIE's "School Revisited"; Mr. VAN HERKOMER's "Last Muster"; and Sir BURNE JONES's "Depths of the Sea," may all be said to possess historic interest. When they appeared each of them was the subject of much discussion, and in each case the painter triumphed over the critic. There are four paintings by Sir ALMA-TADEMA, "A Roman Family," "God Speed," "A Safe Confidant," and "The Kiss." Works by several other British artists are also to be seen, although they may not possess the peculiar attractions of those we have named. No doubt many lovers of art in Ireland will desire to have a few or more of the pictures retained. But it is difficult to see where the money could come from that would be necessary to buy works of English painters which have received popularity. Students of art will therefore be wise to enjoy the present time to the fullest.

SCULPTURE AT THE ROYAL ACADEMY.

ACCORDING to REYNOLDS, there is, or should be, only one style for sculpture in expressing form and character. The class of painting it resembled was the grand style; and the pleasure it afforded was in many respects incompatible with what is merely addressed to the senses. In other words, the President was opposed to the picturesque in sculpture, as well as to such dramatic expression as is seen in the face of *Laocoon*. Art has changed in several ways since 1780, when REYNOLDS expressed his theories, and he could not fail to be amazed if in vision he saw the variety among the examples of sculpture which appear in the Central Hall and the Lecture Room of Burlington House. Probably still more strange to him would be the number of men and women who follow the art in England.

As we have mentioned the *Laocoon*, we may mention that the group is recalled by Mr. THORNYCROFT'S *Courage*, which is part of a public monument. Instead of a father and two sons we have a mother and one child. She is seated, and while holding the serpent with one arm raises a large scimitar with the other to strike it. Unlike the ancient work, the woman's face is perfectly calm. As an example of courage we consider the group, excellent as it is, somewhat fails, for with such an arm and such a weapon the snake appears to have little chance. As an exhibition of courage, Lord LEIGHTON'S *Athlete* was more expressive, for in this group the woman appears perfectly at ease. Another group is the late *Canon Major Lester*, by Mr. FRAMPTON. It will bear comparison with FRÉMIET'S *St. Vincent de Paul*. The great folds of drapery in the cloak are better adapted for a public statue than the numerous folds which for a time were preferred by sculptors. In the centre of the hall is the seated figure of the *Marquess of Salisbury*, which is to be erected at Hatfield, and which is also by Mr. FRAMPTON. The statesman is represented wearing a chancellor's robe, which is boldly treated, the ornament being in delicate relief; and the peculiarly placid expression of the face was no doubt considered desirable for a statue to be placed so near his home. It is novel to find full-length figures of three Indian princes in the hall. Mr. W. R. COLTON represents *Sir Sheshadri Syes, late Dewan of Mysore*, and *H.H. the late Maharaja of Mysore*, in bronze, and therefore the jewellery, braiding, ornament and feathers are shown with great exactitude. Mr. GOSCOMBE JOHN'S figure of the *Maharaja of Balrampur* is in marble, and therefore a different method of treating the indispensable ornaments is adopted.

Electric-light standards and electroliers have given rise to many experiments. Mr. NICHOLSON BABB'S base of a standard, which is to be executed under the terms of the LEIGHTON bequest, is an interesting example. The cupids which are introduced are modelled in excellent style. Mr. WHITNEY SMITH'S *Drinking Fountain* is novel, for a fine figure of a girl holds aloft the model of a boat, out of which we suppose the streams will run. Immense energy is expressed in *Amor Victor*, a relief by Mr. GILBERT BAYES. If Mr. TAUBMAN'S colossal bust is really representative of Canada, invasion of the colony would be a dangerous game. Mr. DRURY'S *Lieut.-Col. McCarthy O'Leary* is admirable in its energy, and if compared with the Indian princes will suggest the influence of race. REYNOLDS, who disapproved of expression in sculpture, might not approve of Mr. REUBEN SHEPPARD'S *Music of Death*. But the pathos of the group is undeniable. Another group that is particularly expressive of the sculptor's art is *Man and the Ideal* by Mr. RICHARD GARBE. The figure of the woman is charming. A well-modelled figure is the *Wounded Warrior*, by Mr. FLEMING BAXTER, although some may object to the effort of withdrawing the arrow from the foot. As long as sculpture is practised we suppose Greek subjects will be in favour. Mr. TOFT'S *Antigone* is a most interesting attempt to suggest a painful subject—the entombment

alive of the faithful but unhappy daughter of OEDIPUS, and he has treated it in such a way that beauty rather than terror prevails.

In the Lecture Room Mr. BROCK'S *Motherhood*, a half-size model of a portion of the national memorial to Queen VICTORIA, will at once attract. The group is treated with a simplicity and breadth befitting the subject. The children are true to nature, and appear as if they were not posed. Mr. SWAN'S *Orpheus* is a bronze group. He stands on a rock which a pair of leopards are endeavouring to ascend, fascinated by the music. It is one of the important works of the year. *The Elfe's Music*, by Mr. ANDERS OLSEN, shows a figure with the whole weight thrown on one foot in effective style. There cannot fail to be difference of opinion about Mr. DERWENT WOOD'S *Atalanta*. It represents a comely woman, but whether the legs are suggestive of an athletic runner may be doubted. It was generally accepted that memorial figures of bishops of the English Church should simply represent them in the quietude of death. Of late years there appears to be a preference to depict them as living men. Mr. POMEROY'S *Bishop Ridding*, for Southwell Cathedral, shows his Lordship in his cope praying with his arms outstretched. At a distance it might easily be taken to be "St. Francis receiving the Stigmata"—a subject often selected by Italian painters. Demonstrative devotion is not a characteristic of the English clergy any more than of the English laity. And although the figure is ably executed, we trust it will not be taken as a precedent for imitation.

Mr. BASIL GOTTO'S bronze statue of BACCHUS shows not only skill but courage. The "jolly god" does not merely pose with a cup in his hand: he is a beneficent being who is not ashamed to carry the wine-skin, and, judging by the expression of his face, has deigned to share the contents with his votaries. There may not be warrant for the interpretation in Greek figures, but it is expressive of modern ideas, and it is to be hoped Mr. GOTTO will again visit Olympus. All lovers of stately prose must envy the possessor of Mr. H. PEGRAM'S reduction of his large statue of Sir THOMAS BROWNE, M.D., in which the Norwich physician is seen contemplating the fragment of a Roman urn which he was to make immortal. In the relief *Perseus delivering Andromeda* Mr. PEGRAM has attempted a subject over which many artists have failed. We must, however, allow for the limitations of sculpture. ANDROMEDA is supposed to be chained to a rock. But it is not quite clear how the monster could have found its way between the rock and the victim. PERSEUS is also compelled to come so near that one of his feet treads on the monster's neck, and the head of MEDUSA is so close as to form a contrast with that of ANDROMEDA. The sculptor has turned all these difficulties to account, and the scene appears to have as much animation as any painted representation of it. General BADEN-POWELL'S *Captain John Smith* is a bust which is remarkable as coming from an amateur. Mr. ALFRED GILBERT'S *Mors Janua Vitae* might have been inspired by one of the Etruscan terra-cotta tombs, although the beauty of the faces of the man and woman is of a far higher character. A gilded shrine forms part of the composition, and the panels express more of the artist's intention. The *Spirit of Ivy*, by Mr. DAVID BROWN, is interesting, and a figure of *Andromeda*, by Mr. B. CLEMENS, might have been intended to serve as a pendant to it. Some of the largeness of WATTS'S painting will be found in Mr. F. BAXTER'S *The Dray*, a group. The staff of office, Marischal College, Aberdeen, in silver, ivory and lapis lazuli, is an interesting example of applied art. It is executed by Mr. H. WILSON with great delicacy, and has, moreover, the advantage of not being burdensome to an aged principal.

It is needless to say there are numerous busts which are likely to be even less appreciated than the portraits in oils in other rooms. There are also many statuettes, a class of sculpture which deserves ample encouragement—especially if some enterprising trader would undertake reproductions of them as in France and

Germany. And in the Lecture Room there are several well adapted for that purpose. It should also be mentioned that in one of the galleries there is a small group by Mr. BERTRAM MACKENNAI called *The Earth and the Elements* in marble, in which the RODIN system allowing part of the block of marble to remain is adopted. If it is intended to suggest that all things are originally derived from a common material, the treatment is allowable. Otherwise the contrast is too violent for a work of art. Near it is a fine statuette in bronze, ivory and enamels, by that able decorator Mr. REYNOLDS-STEPHENS, called *Guinevere's Redeeming*, in which the queen appears in a robe which bears some resemblance to a nun's, while at the base are minute figures suggestive of her fall.

VERSAILLES.

WE suppose there are few Englishmen who are not disappointed when for the first time they see the Palace of Versailles. And yet during the present holiday season it should not be omitted by anyone who makes a little tour to Paris. So much has been said in histories about negotiations with LOUIS XIV. in the palace, and scenes in it have been so often described by DUMAS, it is quite natural that imagination should create buildings which no masons could construct. It would be difficult to explain all the reasons for the disappointment. Symmetry was a dominant principle with MANSART, and it has been carried to an extent that is remarkable at Versailles. The majority of visitors who go to the palace from Paris see the buildings around a large parade-ground, and there is no sign of that esteem for vegetation which is one of the characteristics of Frenchmen. Compensation for this is no doubt found when the buildings are seen not from the entrance of the Cour de Statues, but from the magnificent gardens which should be regarded as the true foreground for the buildings.

It should also be remembered when criticising the groups that MANSART was not allowed as free a hand as he desired. With all his egotism and his weakness to believe that his flatterers had reason to consider him as more than mortal, there were moments when LOUIS XIV. could not free himself from the influence of ordinary affections. Although he was only fifteen when his father died he held in reverence the buildings which LOUIS XIII. had erected, and all the reasoning of MANSART against their incongruousness was without avail. LOUIS XIV. insisted that the buildings should be preserved. And it must be said that a great many visitors at the present time approve of his resolution.

The site, although adapted for such a château as served for LOUIS XIII., was too low for the assemblage of buildings which became necessary under the new régime. It is generally believed that LOUIS XIV. wished to show his superiority over his Minister, FOUQUET, by the difference between Versailles and Vaux. Land was obtainable by the king. But water was required, not only for the use of the inhabitants, but for the fountains which were to become a feature in the landscape. According to RACINE, who held office under the king, over 30,000 men were employed upon forming conduits from several distant sources. Labour, in fact, seemed to be unlimited. It is recorded officially that at one time 36,000 soldiers were engaged on the earthworks for the terraces, and they were assisted by 6,000 horses. No care was taken about sheltering the labourers, and it is supposed that thousands perished from the hardships which had to be encountered. It may be doubted whether so many men were lost by building operations since the times of the Egyptian kings.

If we recollect the circumstances of the time, the power which LOUIS XIV. possessed over the lives and fortunes of his subjects and the baseness of the courtiers, it is difficult to avoid wondering at the regularity of the plan. Suggestions were always forth-

coming. New requirements were continually arising. Changes were occasionally approved, and yet on the whole the general plan seems to be methodical, as if the king had withdrawn from France and had resolved to avoid seeing Versailles until the works were completed. The explanation of this phenomena must be found mainly in the resolution of JULES MANSART and LENÔTRE. Admiration for their decisive character should, at least with architects, outweigh the monotony which is often thought oppressive.

Versailles when completed became the principal residence of LOUIS XIV. and his court. Indeed, as one wanders through salon after salon bearing strange names, some of which were adopted at a later time, one wonders to what kind of organisation they were adapted. Writers of romances are careful to avoid references to the rooms in which transactions took place, and indeed it would be a superhuman task to try and repeople the palace as it was in the days when the great monarch presided in it. But its completion synchronised with the zenith of his power. Then came a change. LOUIS XIV., or rather his subjects, had to pay the penalty of misgovernment, and in the latter years of his life he had to see many of his treasures in gold and silver carried off to be converted into money, as a small contribution towards the expenses of the wars in which he had engaged. He died in 1715, and it could be said without any exaggeration that never afterwards was the palace more than a costly and useless memorial of the magnificence of one king. LOUIS XV. was only a child of five when he succeeded to the throne. In subsequent years he could not afford the cost of keeping up the palace, although some additions were made by GABRIEL. There was not enough money available to pay for keeping the whole of the buildings in a sound condition. Under LOUIS XVI. the Jeu de Paume or racquet court attached to the palace was the scene of the first important act of the French Revolution. To NAPOLEON when he became emperor Versailles was only a sort of white elephant, which he often cursed, for he preferred to erect his own architectural memorials.

When the Bourbons returned to power it was expected that Versailles would be restored to its pristine splendour. Then as often before the puzzle was to discover money. The sums expended during the reign of CHARLES X. were not sufficient to restore the gilding. Royalist families who had suffered by the Revolution when they came back from exile found a refuge in the palace. To accommodate them the immense rooms which were only adapted for spectacles were divided and subdivided. As sanitary regulations were not adapted for such a multitude, anyone who reads about the occupation of that time must wonder there was not an outbreak of plague which would have decimated the inhabitants of the adjoining town. When LOUIS PHILIPPE in turn ascended the throne it was proposed to make the palace a second Invalides. But the king could not tolerate such a degradation of a royal creation. He thought he would meet the popular demand for utilising the buildings, and at the same time flatter the national spirit, by making of it a museum consecrated to the glory of France. The time of the warriors had passed. It was now the turn of the artists. There is no doubt that a sum of at least a million sterling was expended by the king's order. It is believed that over 4,000 paintings and 1,000 busts and statues were introduced. Then the history of France was illustrated to an extent that was without parallel. Enthusiastic Frenchmen may in their hearts enjoy those pictures, but as far as can be judged by a stranger there is no demonstration of their pleasure. There is an old story of an Italian prisoner having the option of the galleys or reading through the history of Italy by GUICCIARDINI, and he preferred the galleys. We consider that the study of the dullest history of France would be an easier task than the following of the series of historical paintings in Versailles and duly marking them off in a

catalogue. No doubt many of the paintings have become discoloured, and few of them are adapted to the fierce light which shines through the tall windows in the principal rooms. The works are all original, but we doubt if any gallery in Europe where forgeries prevail is so wearisome to the visitor. What appears to make them worse is that the furniture and ornaments in a great many of the rooms are beautiful. But the terrible background of pictures diminishes their interest.

The present Government, although apparently indifferent to ecclesiastical buildings, has in an especial manner taken the palace of Versailles under its protection. Although water appeared to be everywhere in abundance, not a drop could be used without the greatest difficulty for the extinction of fire. A danger of that sort was never contemplated by MANSART, and no provision was made to meet it. A special water supply has now been arranged, and water from a height of about 200 feet above the level of the entrance court can be applied in any emergency. In that way all the attics can be controlled.

Nearly two centuries have elapsed since the death of LOUIS XV., and as we have above suggested, during that time there has been more or less neglect at Versailles. Accidents would occasionally arise to furniture, statues, vases and other embellishments. There was no authority to dispose of such things or to repair them. They were therefore put aside in out-of-the-way rooms which even officials did not care to visit. The present curator, M. DE NOLHAC, is more adventurous. He has investigated the lumber-rooms and, naturally, has concluded that he has discovered treasures. He has obtained the sanction of the Fine Arts Department to form a new museum of those survivals of a former age. No doubt they will excite curiosity for a time. But when one considers the dreariness of Versailles with its multitude of contents in a perfect state, fear and trembling must arise at the thought of an immense collection of fragments. French skill in arrangement may, however, make an attractive show out of them. But the mere idea of such a creation is likely to make a visit to Versailles more embarrassing to the ordinary sightseer. And yet such a collection must seem to point the moral of a building which for the glory of one man entailed misery and destruction on multitudes.

PRECURSORS OF THE ROYAL ACADEMY.*

THERE is evidence enough to suggest that at one time paintings as well as other works of art were sold in fairs and places of public resort. The majority of artists occupied humble dwellings in which their productions could not be seen advantageously. Modern exhibitions are a development of the older system of public exposure. Painters and sculptors send their works to them with the object of attracting purchasers. It happens, however, that this purpose is ignored by a great many. Pictures are treated as if they were challenges to the public demanding admiration. As a consequence, critics endeavour to discover the defects rather than the merits of the works which are to be seen. Very little protection is allowed to the artist. He may be libelled as an impostor who casts a pot of paint in the face of the public, and should he seek redress the Courts will allow a farthing as compensation for the injury. If the same critic were to mention a vendor or manufacturer of colours and allege that his paints were worthless, damages not of a farthing but probably of 1,000*l.* would be awarded. In other words, artists by separating themselves from the old limners and makers of images have attained a position which is not without its disadvantages.

In France a paternal monarch allowed a large number of artists to use the big galleries of the Louvre in order to make a show of their works. To increase the interest in them DIDEROT and some other writers wrote articles about their attractions. In England no care of that kind was displayed. The painters were left to sink or swim like ordinary tradesmen. The value of exhibitions was for long unrecognised either by painters or by the public. Like much else which is important among us, accident had much to do in their creation. Pictures were purchased, but they were private transactions, for a man went to a portrait-painter, sign-painter, or a dealer in the same way as he went to his tailor, without any thought that he was doing more than gratifying himself. The patronage of art at the early part of the eighteenth century was a satire on the education of English gentlemen. In 1737 it was said that shiploads of *Dead Christs*, *Holy Families*, *Madonnas* and the like were imported and purchased at high prices. People looked on pictures as they would on hangings, and yet some were willing to give a year's revenue for a work which was supposed to be valuable because a famous name was inscribed on it.

While art was in so low a condition HOGARTH presented to the Foundling Hospital, which then stood in Hatton Garden, a portrait of the founder and a design for an emblematical decoration which was placed over the entrance. Other artists offered to contribute, and in 1746 nineteen artists were in return for their gifts elected as Governors of the Institution. The pictures consisted of four scenes from sacred history, views of other hospitals in London, the *March to Finchley* and some portraits. The novelty of the spectacle made the hospital attractive to people who had few opportunities to see pictures, and the painters gained a notoriety which it was expected would lead to profitable results to themselves. Having succeeded in benefiting the foundlings it was considered that equally worthy objects of charity could easily be found. It was therefore proposed that an exhibition of the works not only of painters, sculptors and architects, but of engravers, chasers, seal-cutters and medallists should be held once a year. The admission was to be 1*s.*, and the money applied towards the support of artists who through age or infirmity or other lawful hindrance were no longer "candidates for fame." Application was made to the Society of Arts for the use of the great room during a fortnight. But the Society could not approve of the charge of fees for admission. It was therefore decided to allow the public to be admitted gratuitously but to be charged 6*d.* for the catalogue. The exhibition was held in 1760. Sixty-nine artists contributed between them 130 works. Six thousand five hundred and eighty-two catalogues were sold. With the money received, viz. 164*l.* 11*s.*, expenses amounting to 58*l.* 12*s.* 6*d.* were defrayed, 82*l.* 2*s.* 6*d.* purchased 100*l.* in Consols and there was a balance of 23*l.* 16*s.* The exhibition had hardly closed when differences arose about the laying-out of the balance. Some artists wished that it should be applied to the advancement of art rather than to charity. Eventually it was decided to allow the money to accumulate until 500*l.* was acquired through succeeding exhibitions, and then to leave the disposal to the vote of the majority.

It was proposed to hold a second exhibition in June 1761, with the price of the catalogue raised to a shilling, and that no person was to be admitted without one. The Society of Arts would not approve of the alteration, and insisted that the exhibitions should be free and open to the public. Accordingly an agreement was entered into with an auctioneer for the use of a room in Spring Gardens. But before the time of exhibition had arrived the differences between the artists extended so far that two bodies were formed. There were, in consequence, two exhibitions in 1761—one at the rooms of the Society of Arts in the Strand, and the other at the great room in Spring Gardens. In 1762 the exhibitions were again held, and continued until 1768, when

* *The Society of Artists of Great Britain, 1760-91. The Free Society of Artists, 1761-83. A Complete Dictionary of Contributors and their Work from the Foundation of the Societies to 1791.* By Algernon Graves, F.S.A. (London: George Bell & Sons.)

the Royal Academy of Arts was constituted. The two societies, in fact, exhibited until a later period, although under different conditions, and with a new rival in the Academy Exhibition. In other words, there were a great many people who approved of one of the societies from having charitable intentions, while others upheld the endeavour to attain independence without royal support.

Mr. ALGERNON GRAVES, having completed his most useful "Dictionary of Exhibitors at the Royal Academy," has had the courage to treat the exhibitors of the two societies in a uniform manner. It is possible to obtain occasionally, although at much cost, a set of the Academy catalogues. But printed copies of the earlier exhibitions are not to be discovered, and, indeed, Mr. ALGERNON GRAVES's volume had to be compiled from manuscript volumes prepared thirty years ago. Some of the artists and their works are forgotten, and Mr. GRAVES has endeavoured as far as possible by research to obtain information concerning them. He has also given an index to the portraits as well as to the owners of buildings, &c. Altogether he has produced a work which, if complete in itself, becomes a necessary complement to the Academy catalogues.

In those old days the boundaries of the province of art were not laid down definitely. We must therefore expect to meet with entries which would surprise the committee of the Royal Academy in our time. Needlework, for example, took the place of etching. *William Penn's Treaty with the Indians* and *The Death of General Wolfe* after WEST's pictures were favourites with ladies. Landscapes in oil, with trees and shrubs in seaweed, were supposed to be attractions. Indeed, landscapes in seaweed were numerous. Architecture made up of shells as imitations of Classic examples could also be seen. One example consisted of "Eight Corinthian pillars of white shells with flowers twisted round them and urns over them supporting a dome." Hair was another material much employed. "Three Ladies adorning the Tomb of their Father: a bracelet in human hair," was to be seen in 1765. Another work of art consisted of "Two portraits, a sea-storm, a figure of Hope, and a basket of flowers, wrought with a needle on silk in human hair." Paper-cutting was also accepted as art. One lady exhibited "A frame of various devices, cut in vellum with scissors, containing the Lord's Prayer, with her name and the date of the month and year, in the compass of a silver threepence." We may smile at such entries, but they possess an historical interest. It may have been with such things that Dr. JOHNSON was bored when he visited the exhibitions, although it is generally assumed he was unable to comprehend the paintings and sculpture.

There was, of course, much which was important in both series of exhibitions. REYNOLDS favoured the Society of Artists between 1760 and 1768. And among the pictures exhibited were *Sterne*, *Lord Ligonier*, *Garrick between Tragedy and Comedy*, *Lady Waldegrave as Dido*, *Nelly O'Brien*, and *Lady Bunbury sacrificing to the Graces*. GAINSBOROUGH at first contributed to the Society of Artists, but from 1774 to 1783 he gave his aid to the Free Society. ROMNEY supported both societies. In the Free Society's exhibition of 1763 was his *Death of General Wolfe*, which that year gained the prize of twenty-five guineas from the Society of Arts. BENJAMIN WEST exhibited at the Society of Artists from 1764 to 1768. WILLIAM HOGARTH, who was so closely connected with the founding of the Society, exhibited only in 1761. In that year were seen his *Sigismunda*, *Gate of Calais*, *Picquet or Virtue in Danger (the Lady's last Stake)*, *An Election Entertainment* and three portraits.

The architecture has, of course, more interest for us. It is satisfactory to know that the art was recognised in 1761. In that year, besides the model of a candlestick, CHAMBERS exhibited a triumphal bridge at Blackfriars, a triumphal arch at Wilton, and a London house for a person of distinction. He ceased exhibiting in 1768. JOHN GWYNN in 1760 contributed a design for galleries

to contain the Arundel marbles in Oxford, and one of three designs for Blackfriars Bridge. In 1761 he sent "A design for a triumphal arch, in lieu of a transitory fireworks, to celebrate the successes of the present war and the re-establishment of peace. (The said arch may be commodiously erected either at Hyde Park Corner or Holborn Bars, supposing Middle Row as a public nuisance taken away.)" JAMES STUART (STUART & REVETT) between 1765 and 1783 showed several drawings from his "Grecian Antiquities" and other work. Besides, there were drawings which were not architectural, designs for medals, sketches of pictures, models, &c., which testified to his versatility and industry. ROBERT BALDWIN, who from having the "Bridge Office, Black-Fryars," as one of his addresses, was probably an official architect, sent in 1783 "A design for the safety and execution of criminals, detached from the Gaol of Newgate by a subterraneous passage," which was an effort to avoid the disgraceful spectacles then common. JOHN CARTER's drawings were mainly of Gothic subjects, but in 1777 were three pictures showing the history of a Young Cavalier in 1642. One of the busiest architects of the time (1761-78) was JAMES PAINE, who was once clerk of works at Greenwich Hospital and architect to the king. He prepared designs for buildings for the Duke of DEVONSHIRE, the Duke of NORFOLK, Lord ARUNDEL, &c. Several bridges were among his works. He was architect for Salisbury Street, Strand. JOHN JOHNSON, who was for a quarter of a century architect and surveyor for Essex, exhibited in 1775 a design for two houses in Cavendish Street, Cavendish Square. He was then in his twenty-first year. He possessed influential clients. One of his works was the "Quadrangle Prison" in Essex. JOHN VARDY was one of KENT's pupils, and was clerk of works at Whitehall, St. James's, Westminster, and Hampton Court. He exhibited designs for a building for the "Society of Dilitanti, 1751"; the British Museum, 1754; a royal palace at Whitehall, 1748; the north front of St. James's Palace, 1758; King's Bench, 1753, &c. He was architect for Lord SPENCER's house, in St. James's Place. GEORGE DANCE, whose excellent profile portraits were lately exhibited at the Royal Academy, was a young man when he exhibited his design for the "Bridge at Blackfryars" in 1761, to be followed next year by perspectives of St. Leonard's, Shoreditch, and the Mansion House, both buildings having been designed by his father.

There was more sculpture shown than was to be expected. Master JOHN FLAXMAN was represented in the exhibition of 1768 at the Society of Artists by two works in wax, viz. *The Death of Julius Cæsar* and *The Marquis of Granby*. To the Free Society he earlier contributed large models of *Hercules* and of *Omphale*, a *Minerva* bust and *The Assassinating of Julius Cæsar*. FLAXMAN was twelve when he became an exhibitor. ROUBILIAC's first design for the *Shakespeare* in the British Museum was seen in the exhibition of 1760. JOHN BACON was another exhibitor. The early works of BANKS—*The Ransoming of the Body of Hector* and the *Judgment of Perseus*—were shown at the Free Society.

In the last catalogue of the exhibition of the Free Society for 1783 it was stated that "this Society claim the merit of being the first who produced an exhibition in this country; it ranked amongst its exhibitors the most respected painters, engravers and some of the first architects; but the fascinating charm of a royal exhibition induced many to desert it, and the false delicacy of some was hurt by the plan being founded for the purposes of charitably contributing to relieve the distresses of their brother artists. The public, however, had seen the institution in its proper light, and from the first to the last have afforded the warmest encouragement, and not withheld their powerful patronage." The Society of Artists separated from the Free Society, and by some fatality the whole career of the former was disturbed by dissensions.

If HOGARTH had lived his strong common sense must have prevented some of the disunion, and in that case it is quite possible that the foundation of the Royal Academy might not have taken place, or would be delayed. The Society had the great advantage of having a preface by Dr. SAMUEL JOHNSON to their catalogue, which announced that the purpose of the exhibition was not to enrich the artists but to advance the art. A curious proposal was, however, announced by the Doctor. Many artists, it was said, of great abilities were unable to sell their works; they were invited to send them to an annual sale which would be conducted by the exhibition committee. A price was to be secretly set on every piece. If more was given the artist was to be the gainer, but if purchasers offered less the artist was to be paid the deficiency from the profits of the exhibition. The difference between the two societies therefore simply related to the class of persons who were to be benefited by the profits of each year's show.

Many of the works which were seen in the two exhibitions must still exist, and it cannot be supposed they were all valueless. Mr. ALGERNON GRAVES's volume furnishes clues which will help towards their identification, and no doubt many amateurs and speculators will be able to derive advantage from the pages. For those who feel an interest in the history of modern English art the book will be invaluable, for although it may be supposed we never had a school of painting in this country, yet a substitute was found for it in the competition which took place in connection with exhibitions; and the earliest which were organised were those of the two rival societies.

ARCHÆOLOGY IN DURHAM.

THE annual meeting of the Archæological and Architectural Society of Durham and Northumberland was lately held. The venerable Dr. Greenwell presided. In the course of his address, according to the *Durham Advertiser*, he congratulated the Society on the excellent volume of Transactions now out. The cathedral had been lighted with electricity since last year's meeting, and he thought it might have been better done. He was extremely sorry the Dean and Chapter did not utilise those very fine chandeliers that they had, of which two were left in the choir. They were of about 1750 period, as handsome work of that kind as possibly could be found. There were three originally, and if they could have made another one and put either three or four into the nave, it would have improved the appearance of the cathedral enormously; it would have given a better light than at present and would have shown off the very fine specimens of metalwork of the time to which they belonged to advantage. Unfortunately that did not fall in with the wishes of some members of the Chapter, or whoever was responsible for it. They had lighted the cathedral in a fashion he could not say he liked at all. There was at one time a notion to restore what was called the Norman simplicity of the cathedral and they took out a lot of fifteenth-century windows. The notion of restoring the cathedral was absurd. The cathedral, like every other building, had been altered from time to time in the style of architecture belonging to the period, and at the best they could only imitate and it was not the real thing. If it was the best imitation it was a new window, and there were very bad imitations.

They knew that magnificent screen too, one of the noblest in the whole of England, so ruthlessly torn to pieces and scattered about in the castle, and many of the pipes of the organ, which were still in existence, had been allowed to be trodden underfoot and totally destroyed, although remonstrances were made time after time. The chandeliers were taken out of the cathedral, being not commensurate with the Norman simplicity of the building, and one was given to his church in the South Bailey, another was given to Shincliffe, and the third, which was of two tiers, to Ryton Church. The people of Ryton, after having theirs a few years, could not appreciate it, and sold it to a music-hall at Newcastle, and it was afterwards melted down and gone for ever. Some years ago he thought it would be a very great pity if these chandeliers could not be replaced in the cathedral, and asked Mr. Todd,

who was then vicar of Shincliffe, if he would give his back to the cathedral, and promised to do the same. He also spoke to the Dean, who said they would be glad to have them back, and so both were sent back to the cathedral, and there they were now. Then he made a search after the Ryton one and found it had been melted.

Proceeding to speak of the work going on in the castle, Dr. Greenwell said there seemed to be a great deal of good being done in strengthening the structure. But there was one thing not done about which he raised his voice over and over again, and that was in the housing of the students there. Sooner or later a fire would occur. They had one instance of a fire occurring lately in Selby Abbey. It was absolutely certain that some day or another one would occur within the castle, and nothing in the world could prevent the total destruction of the whole of that part of the staircase entirely, the black staircase, and most likely the great hall as well. A match dropping, a man putting his shirt to air in front of the fire, all kinds of causes might be imagined, and the whole place was wood—floors, ceilings, divisions of rooms. Pointing to Dr. Gee, master of University College, who was present, the President said banteringly, "If the castle is burned down there is the man on whom all the blame is." There was pressure, no doubt put on Dr. Gee, but he should be above pressure. They ought to do a thing quite irrespective of the pressure brought to bear, but he was afraid it would not be done.

The Selby Abbey fire was a deplorable event which had taken place during the year. It was not so seriously injured as was supposed. The nave was practically uninjured with the exception of the roof. The masonry had not been damaged at all, and to a large extent the stonework of the choir had not been so much damaged as it might have been, and in fact was expected. The great east window was quite intact, but, unfortunately, the very fine woodwork of the choir was entirely destroyed, and some portion of the very fine stonework which was part of the east end of the building, quite equal in style and delicacy of work and beauty of design to the well-known Percy shrine at Beverley. He was glad to say Selby Abbey, although it had lost a very considerable amount of things which were of interest, would not be a thing of the past at all, but would still be one of their finest buildings in the future as it had been in the past.

One of the most fearful things they had to do with was churchwardens, who had done a great deal of harm to the churches. They sometimes thought it was absolutely necessary to do something when nothing was required; why, he could not tell. But the people they deprecated were the organists, who were a hopeful people thinking of nothing but the organ. What was an organ? It was a very inferior thing to the human voice. The first thing that was considered in the churches was the developing of the human voice, and making it heard to the best advantage. The organist said "No," so he went and drowned the human voice, and you got great big organs put into churches—too large for any use that they could serve—and they got all kinds of destructive work in order to fit in these horrible things. He hoped the clergy present who had organs had small organs, which did not destroy the voice, and which were not put in at the expense of some of the destructive work that he had seen.

Mr. Hodges afterwards gave a brief outline of what had been going on at Hexham, and of the discovery of signs of an ancient church of the period A.D. 674 during the work of excavation at the abbey. The works connected with the rebuilding of the nave had thrown a flood of light upon what remained, and enabled a great chapter of entirely new matter to be written in connection with the great church which at the time it was built astonished all by its size and beauty. They knew now for the first time exactly where it stood and very nearly its actual size. It had a nave 100 feet long, which was a very large church indeed compared with other pre-Conquest churches.

A Bust and Tablet in memory of Charles Dickens have been set up on the site of Furnival's Inn, E.C., which has been amalgamated into the premises of the Prudential Assurance Company. A black granite tablet, designed by Mr. Waterhouse, upon the top of which is the bust of Dickens, has been placed just under the archway at the entrance to the inn. The tablet reads:—"Charles Dickens, novelist, born 1812, died 1870; lived for a time in Furnival's Inn close to this spot, and there wrote 'Pickwick' in the year 1836. This bust was modelled and presented by Percy Fitzgerald."

ARCHÆOLOGY IN READING.

THE annual reports from the Honorary Curators of the Museums and Art Galleries have been presented to the Town Council.

Mr. S. Slingsby Stallwood and Mr. George E. Fox reported, as hon. curators of the Silchester collection, that the season of 1905 was occupied in excavating at the western end of the grass field the two Insulæ V. and VI., portions of which had been examined in 1892. Buildings of the usual character were uncovered, but amongst them may be noted a dyer's workshop, some small houses and what was probably an inn; also what appeared to be a row of shops lining the street leading up to the Forum. The find of objects was somewhat less scanty than in previous years, but such pits and wells as were found afforded little to add to the collection. Of pottery, there was a certain quantity of the so-called Samian ware, but only in fragments. The glass was more interesting, as amongst the pieces turned up were fragments of a sapphire-blue mottled glass bowl like that found in 1895, and of a singular flanged bowl of clear glass. In metal, a short piece of fine gold chain. In clay or stone, the objects needing mention are a part of a figure of a Venus in pipe-clay, portions of trays of Kimmeridge shale, a fragment of a small white marble statuette; and, in ironstone, the forepart of a couchant lion and an altar, with wings projecting at the sides, intended for building into a wall, a base with delicate mouldings and part of a shaft of sandstone may also be noted. An extraordinary deposit of bones was found in Insula VI., consisting mostly of the lower jaws of oxen. The usual animal remains have been turned up, including, however, some of the cat, which are rare. From a tub well in Insula VI. came a stag's horn, pick, and parts of the skull of a child of twelve or fourteen years; but more curious was an interment found in Insula VI. In a room of house No. 1 of that insula a shallow grave dug in the floor close to the wall of the room was discovered. It contained a human skeleton placed on its left side in a crouched position. Such of the bones of the skeleton as could be preserved have been deposited in the collection, together with a photograph showing their condition as found. The photograph, taken by Mr. J. Challenor Smith, has been presented to the collection by that gentleman. Since the last report the plans of the public baths have been added to the collection. These, together with the plans of the baths formerly excavated, have been arranged in Screen III. in the Architectural Room.

Mr. O. A. Shrubsole, the hon. curator of the Geological and Prehistoric Department, reported that the most important acquisition by the Museum during the year had been seven British urns of the Bronze Age, which were obtained from a gravel pit at Sulham belonging to the Rev. H. B. Wilder. The urns were so fragile that it was necessary to specially excavate for them; and Mr. Wilder defrayed the cost of labour and allowed the Museum to retain the urns. In order to provide space for them a new turret-case had been ordered, and room would be found for this by putting the cases closer together.

The Rev. Alan Cheale reported concerning the Historic Archæology Department in September last a grant from the British School of Archæology in Egypt of various objects of interest, a donation from Mr. L. L. Treacher of iron spear-heads found in the Thames at Maidenhead, various loans from Mr. Eli Cauldwell, especially that of a small brass seal, apparently fourteenth century, with an inscription. This department is under much obligation to Mr. Cauldwell for continuous loans of objects. Considerable interest has been excited by the discovery of an upper stone of a quern with Romano-British pottery at the Prospect Park Brickworks. These relics have been presented to the Museum by the owner, Mr. Reginald Wells, who has also consented to excavations by the Berks Archæological Society to be carried out later in search of a Roman villa, of whose neighbourhood there seem to be some indications.

Mr. H. Dawson Barkas, the hon. curator of the art department, reported that the valuable collection of English pottery and porcelain lent by Mr. Cyril Butler, of Bourton House, Shrivenham, received in June 1903 was returned in May last. The two central cases in the art room, occupied by this collection, are now being used for exhibiting our own specimens of pottery and porcelain and the collection lent by Mr. J. G. Stanford, the latter being of educational value, showing the development in the art of English pottery since the sixteenth century. The two wall cases transferred from the Silchester collection are being used for exhibiting Oriental pottery, some Japanese objects

and additional English pottery. In the local collection of engravings and prints several interesting and notable additions have been made, viz.:—A fine coloured engraving of St. Lawrence Church, published in the early part of last century by Lamb (purchased); a coloured engraving of Luckley House, Sonning (purchased), completes our series of local views published by Timms in 1823; portraits of Miss Mitford (presented by Mr. George May); a portrait in colours of Dr. Cowan, of Reading (presented by Dr. Hurry), and an engraving of Dr. Thos. Ring, of Reading (presented by Mr. J. G. Stanford). In accordance with instructions received from Mrs. Mackenzie's solicitors, her collection of Raeburn portraits has been handed over to the authorities of the Brighton Art Gallery. This loan has been much appreciated and has attracted many visitors. At the present the gallery is occupied by the Stott Collection, which will remain until the middle of June, when arrangements have been made with the authorities of the Albert and Victoria Museum, South Kensington, for the loan of one of their series of water-colour paintings, illustrative of the rise and progress of the art of water-colour painting in England.

NATIONAL GALLERY OF SCOTLAND.

THE annual report relating to the National Gallery, School of Art, Museum of Antiquities, &c., for the year ending September 30, 1906, states that the admissions to the National Gallery during the year have been 66,881. The number of persons admitted to the Gallery since it was first opened in 1859 is 4,677,366. The following works of art have been added to the collection:—Antique marble bust of "Antonia Augusta," presented by Major-General D. M. Crichton Maitland; full-length oil portrait of Lady Shand, by Robert Herdman, R.S.A., presented by Lady Shand; picture in oil, entitled "Mischief," by G. F. Watts, R.A., presented by Mr. Watts's trustees; pen-and-ink drawing on panel, entitled "Seapiece, with Dutch Men-of-War," by William Van de Velde (the elder), presented by the Hon. Hew H. Dalrymple.

The number of individual students enrolled in the school during the year was 546, exactly the same number as in the previous year, and there was an increase of forty-two students in the total number enrolled in the various classes. The grant on attendances paid by the Scotch Education Department for the year ended July 31, 1905, was the largest ever received on account of the school, namely, 1,573*l.*, being an increase of 17*1*/₁₀ over that of the preceding year.

The admissions to the Scottish National Portrait Gallery and Museum of Antiquities during the year have been 17,355. The total number of persons admitted to the building since the opening of the temporary buildings in 1885 is 437,879. There have been added to the National Portrait Gallery by gift, or bequest, or loan—oil portrait of Flora Clift Stevenson, LL.D., educationist, by Alex. Roche, presented by Miss Stevenson's executor in fulfilment of her wish; and portrait of General Sir David Baird by Sir David Wilkie, presented by Major-General Sterling; crayon portrait of Lady Charlotte Bury, author and diarist, presented by the artist's executor; chalk drawing of Thomas Campbell, poet, by John Henning, deposited by trustees of the National Portrait Gallery, London. By purchase:—Oil portraits—Professor John Wilson, "Christopher North," by Sir John Watson Gordon; Sir John Macpherson, Bart., Governor-General of India, by Sir Joshua Reynolds. Water-colour portraits—Helen Faucit (Lady Martin), actress, by Kenneth Macleay; James Anderson, actor and dramatic author, by Daniel Maclise; crayon drawing of W. L. Leitch, water-colour painter, by E. Bundell Fox. Medallions—Thomas Walker, political reformer, by Tassie; John Henderson, Scottish actor, by Tassie.

The Council of the Society of Antiquaries have reported that the number of objects of antiquity added to the museum during the year has been 96 by donation and 44 by purchase; also 136 volumes of books have been added to the library by donation and 35 by purchase.

The admissions to Dunblane Cathedral for the period since it was opened to the public on April 1, 1893, to September 30, 1905, were 67,681; the admissions during the year were 4,548.

At the Anniversary Dinner of the Artists' General Benevolent Institution it was stated that 202 applicants were relieved during 1906 with the sum of 4,326*l.* in sums varying from 10*l.* to 100*l.*

NOTES AND COMMENTS.

It suggests the respect paid to law in England when, in spite of all the changes which have been made in the principles of sanitary science and the execution of works, that the statute 23 HENRY VIII., c. 5, should still be respected. The subject arose at a meeting of the Lincoln Court of Sewers last week, when a question was raised about the remuneration of a commissioner. The Act of HENRY VIII. provided that the commissioners should receive 4s. for every day "they shall take pain in the execution of these commissions of sewers, and one clerk by them to be assigned 2s. for every day, of the rates, tares, lots and wains that shall be assessed or lost by authority of the said commission, and be levied and paid by their discretions." Within the memory of living people no such reward was ever paid—in Lincoln, at least. Nor is there any record relating to it at an earlier time. HENRY VIII. was not the first king to recognise the importance of sewers for the safety and preservation of the realm of England, for in the time of HENRY VI. several commissions were sent into various parts of the country. The members held appointments during ten years, but the Chancellor could extend the time to fifteen years. The statute of HENRY VIII. treated the subject on a large scale, for it might be considered as dealing with the arterial drainage of the country, and applied to all works connected with sewers in those days. The oath which had to be taken by the commissioner is worth re-printing as a curiosity, and as suggesting how excellent work was accomplished in the sixteenth century. The phraseology is not unlike what is still employed in some legal documents:—"Ye shall swear that you to your cunning, wit and power, shall truly and indifferently (impartially) execute the authority to you given by this Commission of Sewers, without any favour, affection, corruption, dread, or malice to be borne to any manner of person or persons: and as the case shall require, ye shall consent and endeavour yourself for your part, to the best of your knowledge and power, to the making of such wholesome, just, equal, and indifferent laws and ordinances as shall be made and devised by the most discreet and indifferent of your fellows, being in Commission with you, for the redress, reformation and amendment of all and every such things as are contained and specified in the said Commission; and the same laws and ordinances, to your cunning, wit and power, cause to be put in execution, without favour, meed, dread, malice or affection, as God you help and all Saints."

FROM the report of the medical officer of health for the City of London, it appears that a large and increasing proportion of the new drains in the City are now constructed in iron with caulked lead joints. Iron, according to Dr. COLLINGRIDGE, has many advantages over earthenware, viz. the length of the pipes (9 feet against 2 feet) enabling a true alignment to be kept, the small number of joints, the fact that a defective joint can be caulked at once, saving delay, the greater resistance to subsidence and vibration, and the expedition with which the works can be carried out, the latter being an important item in large business premises, and indeed in any case. The disadvantages are the slightly increased cost of the material and the suggestion that the pipes are liable to corrosion; but if they are properly coated with Dr. ANGUS SMITH'S solution, this does not appear to be a real objection. On the whole, therefore, Dr. COLLINGRIDGE has concluded, iron pipes are preferable to earthenware ones, especially when the drain has to be laid beneath a building; also when a drain has to be driven through a mass of brickwork the iron pipe offers greater facilities for laying the drain, as the joints are so far apart and less cutting away is required in piercing the obstruction. When these advantages are more generally recognised it may be possible to require all drains to be laid in iron.

THE array of the names of supporters of the candidature of Mr. MAURICE B. ADAMS for membership of Council which appears in the last number of the *Journal of the R.I.B.A.* is evidence of the esteem in which he is held, and any member might well be proud of such testimony in his favour. The list may also be regarded as a protest against the inadvertence by which Mr. ADAMS was excluded on a recent occasion. Among the names are Royal Academicians, the President of the Royal Hibernian Academy, some knights, past and present members of Council; indeed, one of the latter it is known resigned in order to make room for Mr. ADAMS. Election in the case of Mr. ADAMS would be a recognition of services rendered to architects for more than a generation. In connection with the visits and excursions of the Architectural Association he was far the most active of auxiliaries. When Secretary of the Architectural Museum he was the principal upholder of the intentions of the original founders. He kept it from losing its character as a treasury of architectural examples, and finally by his tact he enabled the building and collections to become the property of the Architectural Association. Among the thirty candidates how many can point to more efforts for what may be called the general good, or, in other words, for the advancement of professional education? Recent events have demonstrated that a few sturdy, independent members would be an advantage on the Council, and Mr. ADAMS has shown that he will not sacrifice principle to please a majority. We hope therefore for the sake of the Institute as for his own that he will find supporters to place his name high on the voting return.

ILLUSTRATIONS.

CHURCH OF ST. MICHAEL, BECKTON.

THIS church is erected at the Beckton end of the parish of East Ham, for the Rev. J. HUBERT WARE, and is mainly to give church accommodation for the employees of the Beckton works of the Gas Light and Coke Co. The building is faced with Messrs. LAWRENCE & Co.'s T.L.B. bricks, and has stone dressings. The whole of the work was carried out by Messrs. JOHN BARKER & Co., LTD., Kensington, from designs by Mr. A. H. RYAN-TENISON, F.R.I.B.A., of 12 Little College Street, Westminster, S.W.

THE KNOLL, HOLLINGTON, SUSSEX.

HILL CREST, RYE, SUSSEX.

PUBLIC LIBRARY IN THE POTTERIES.

IT not infrequently happens in practice that the site available for a public library is a corner one at the junction of two roads. The design we illustrate is an example of how a public library in such a position may be effectively treated. The main entrance is well placed, whilst the design of the building expresses its functions as a library in a marked manner. The architects are Messrs. GROOME & BETTINGTON, of Hereford.

HOUSE IN CHESHIRE.

THIS charming country home has been built to accord with its surroundings; it seems to fit in with, and be part of, nature's scheme. This is, no doubt, largely due to the use of local materials and the use of half-timber work in the main gable, suggesting the old style known as "Cheshire Magpie" or Black and White. The lower portion is built of red brick, whilst the upper portion is covered with pebble dashing finished white, which contrasts well with the red-tiled roof and with the dark-toned half-timber work. The interior is a model of compact and convenient planning, and comfort has been studied in a marked degree. The architects are Messrs. GROOME & BETTINGTON, of Hereford, the sketch we reproduce being from the pen of Mr. GROOME.

CATHEDRAL SERIES.—CARLISLE: SOUTH AISLE, LOOKING WEST.

TWO BENEDICTINE MINSTERS.

A LECTURE on the cathedral churches of Gloucester and Norwich was given before the Society of Architects on Thursday evening, May 16, by Mr. E. W. Harvey, F.R.S.A., hon. member. The address was illustrated by about 20 lantern slides.

It was explained that each of the minsters is situated near a narrow but navigable river, in a quaint old city redolent with memories of the historic past, and each noteworthy as an example of Norman and Perpendicular architecture of great richness and beauty. In both cases the oldest portions of the existing fabrics, the choirs and transepts and their eastern chapels, were built during the last decade of the eleventh century, in the reign of William Rufus. In both the choirs retain the original Norman cores, but recased, veneered and remodelled in the perpendicular style, and each choir has been covered in by grand lierne vault of stone.

At Gloucester and at Norwich alike popular tradition, and also the guide books, ascribe to the founders the building of the cathedral naves; but in each case it is easy to observe that, although the foundations to plinth level probably date from the days of Rufus, all we see of the superstructure of either nave was in progress during the reign of Henry I.

The lecturer threw upon the lantern screen plans of Norwich and of Gloucester drawn to the same scale. They differ, he remarked, widely from those of most of our other great churches, and are alike in retaining their Norman outline less altered than does any other English fabric.

An initial distinction between the two plans which instantly arrests attention is the position of the cloisters. At Norwich this square enclosure follows the usual rule, as at Westminster, Winchester and Durham, and is placed on the south side of the nave, open to the sunshine and protected by the lofty walls of the nave and south transept from the north and east winds. At Gloucester, for some obscure reason, the cloisters were, as at Canterbury and Worcester, and other exceptional plans, built on the north side of the nave.

Turning now to the churches themselves, we notice that both Norwich and Gloucester are planned in a manner derived from that famous resort of pilgrims, the now ruined church of St. Martin at Tours, a plan usual in Normandy, but only adopted elsewhere in this country at Tewkesbury and Leominster, although traces of its influence are apparent in some features of Canterbury. Each of the cathedral plans shown on the screen has a continuous processional path round the choir, and the eastern end, instead of having the customary English square face, is semicircular at Gloucester and semioctagonal at Norwich. The transepts in either case are short, narrow and aisleless, and their thick walls, of the Norman days, are covered in by Perpendicular vaults. From the eastern face of each transept projects an apsidal chapel, while, alike at Norwich and at Gloucester, another pair of chapels juts out tangentially from the northern and south-eastern angles of the choir ambulatory, these tangential chapels being polygonal at Gloucester and segments of two overlapping circles at Norwich. The east end of the choir in each case formerly terminated in a short apsidal Norman chapel; but this was, in both instances, afterwards rebuilt on a greatly-enlarged scale and to a rectangular plan.

The interest of each church is greatly enhanced by the tracings in the Perpendicular style with which the original Norman masonry has been veneered. Frequent and disastrous fires resulted in both churches in the substitution of stone vaults for all the early timber roofs, while the urgent demands for better lighting, especially at the crossing in the presbytery and at the extreme west end, necessitated the enlargement and reconstruction of all the windows. The two cathedrals are nearly equal in area. That of Norwich covers 34,800 square feet, and ranks fourteenth in size among English minsters, being a little smaller than St. Albans, and a trifle larger than Worcester. Gloucester is less spacious; it stands nineteenth in dimensions, between Exeter and Exeter, with a superficial area of 30,600 square feet.

The proportions of the two minsters are very different. Norwich has an immensely long and narrow nave; at Gloucester the nave is comparatively short and broad. The same relative proportions are followed in the choirs, which, in either instance, is much more lofty and far better lighted than the nave. In each cathedral a portion of the roof vaulting is of unrivalled magnificence, but this splendour is

confined to the nave at Norwich and to the choir at Gloucester.

Norwich is stately, but painfully plain in outline and treatment; it has always lacked any projecting porch, and lost its chapter-house and lady chapel in the middle of the sixteenth century. Gloucester, on the other hand, is one of our most beautiful edifices, and is picturesquely broken in outline, while it possesses a unique interest in that it is the birthplace of the essentially English style known as Perpendicular.

Both fabrics contain little work of the thirteenth century; each has a scarcely altered Late Norman nave, vaulted during Henry III.'s reign at Gloucester, and in the days of Edward IV. at Norwich. Over the rough Norman masonry core of the choir a revetment of Perpendicular stonework has in each case been thrown, massive at Norwich, sumptuous at Gloucester, while the transepts, almost untouched Norman at Norwich, are encased in the later style at Gloucester.

It is well to emphasise the fact that both Gloucester and Norwich, like Canterbury, Winchester, Durham, Ely, St. Albans, Peterborough, Worcester, Chester and Rochester Cathedrals, and the abbeys of Westminster and Tewkesbury, were originally the churches attached to monasteries of the Benedictine order, served by monks who dwelt in the adjoining buildings, separated by the cloisters from the churches.

These monks were habited in loose black gowns, with broad sleeves and cowls; they dined together in a refectory built on the first floor of the monastery, beyond the side of the cloister further from the nave of the church; slept in cubicles in a long dormitory, which ran at right angles to this dining-hall and on the same level behind the east cloister walk. In the centre of this east walk a vestibule led to a rectangular chapter-house, parallel with the south transept, and in this house the business meetings of the community were held.

The monks spent most of their days in the cloister walks, writing and copying illuminated manuscripts in little wooden studies shut off in one of the stone walks; here, too, they taught the novices. They washed in the open lavatory, which we can still see at one angle of a walk adjoining the stone staircase to the refectory.

These cloisters at Norwich and at Gloucester are the most spacious and the most beautiful ever constructed in England.

One other peculiarity of a Benedictine church is well shown in each instance, as it is at Westminster: the choir stalls, instead of being confined to the presbytery, extend under the crossing into the structural nave, and the return seats are enclosed by a stone screen on which once stood the rood, now replaced in each case by an organ case of the Restoration era.

The present choir and transepts at Gloucester were begun by Abbot Serlo in 1088, only eight years before Bishop Herbert de Losinga commenced building similar portions of his church at Norwich; but whereas the East Anglian edifice was from the first intended for a cathedral, and occupied a new site, the see being transferred from a smaller town, at Gloucester the story of St. Peter's Abbey goes back four centuries earlier, to the joint monastery for monks and nuns founded in 681 by King Osric; but it remained only an abbey until 1540, when Henry VIII., having disbanded the monks, converted it into the cathedral church of one of his new bishoprics.

One other point of similarity in the history of the two cathedrals is that both suffered grievously during the Commonwealth, the desecration of Norwich being pathetically told by the saintly Joseph Hall, then bishop, in his "Hard Measure."

The author proceeded to show and give running commentaries on parallel features in the two cathedrals, alternately taking up the thread of either story, as a novelist depicts the woes and adventures of hero and heroine.

A general view of Gloucester from the Severn side, showing the magnificent cathedral tower as the dominating feature of the landscape, was followed by two illustrations of the spire and choir of Norwich as seen across the Wensum at Pull's Ferry, with the fourteenth-century low water-gate of the monastery in the foreground.

The most picturesque aspect of Norwich, that over Life's Green from E.S.E., gave the opportunity for a few words on the construction of the present stone spire, which had three predecessors of timber, each in turn struck by lightning and destroyed, and on the works of vaulting in

stone, all due to fires, carried out successively over the nave, the choir and transepts, by Bishops Lyhart, Goldwell and Nix.

A bird's-eye view of Gloucester from a similar standpoint followed, and it was evident how greatly this minster excels its East Anglian sister in dignity of mass, variety of contour and charm of detail. In the foreground at Gloucester is the grand lady chapel, the finest in England, made cruciform by the projection of little two-storeyed transepts to north and south. From this aspect the eye is led up from the flat-leaded roof of the south choir aisle to the great choir clerestory and the broad and lofty transept, and so upward to the most majestic tower in England, rising in two grand stages to a richly-turreted and battlemented summit of open masonry, delicate as petrified lace, the whole mass being admirable in its balance and proportions.

Following these general views, fresh plans of Norwich and of Gloucester were shown in succession, the salient constructional developments, their builders and the approximate dates being rapidly sketched.

The all-important part which Gloucester played in the history of the architectural development of the Later English Gothic was dilated upon. While in France the curvilinear work of the fourteenth century gradually changed into a florid type of Flamboyant, its vigour losing itself and running to seed in wiry, flamelike curves, here in England, thanks to the lead given at Gloucester, the style gradually became more formal, more dignified and tame, more clearly subdued by the constraint of vertical and horizontal lines. Here, in the south transept of Gloucester, the outlay being met by the offerings of pilgrims to the shrine of that meanest of all monarchical martyrs, Edward II., we witness the birth of the style nicknamed Perpendicular. Here we trace its evolution in the form of a veil of appliqué work in masonry added successively to the wall-surfaces of the choir and the north transept of this great mitred abbey church. The inexplicable fact, the unsolved chronological problem, was that here the new fashion lay dormant for more than a generation, like a bulb during a chilly May, and it was not until half a century later that it was taken up at Edington and at Winchester, and then spread in a sudden blaze of splendour all over England.

Nearer views of the east end of Norwich were then shown, the second one exhibiting the beautiful thirteenth-century arches formerly leading from the presbytery into Bishop Suffield's lady chapel, destroyed in 1573 by Dean Gardiner. The flying buttresses supporting the great clerestory windows of Bishop Percy, and Bishop Goldwell's stone vault to the apse itself rest on lofty piers, the outward thrust whereof is checked by large statues of the Disciples. The utilisation of the Twelve Apostles as makeweights was a thing to be deprecated. Another aspect of Norwich not often seen is from the north-east, the lofty choir and spire forming a background to a view across the palace gardens, with Bishop Reynolds's private chapel and the ivy-clad ruins of the guest-hall immediately to the right.

Bird's-eye perspectives from adjoining church towers of the west fronts of the two cathedrals, that of Gloucester from the truncated spire of St. Nicholas, that of Norwich from St. George's steeple, Tombland, showed that the poorest aspect in both minsters is that from the west. The west end of Norwich fails to attract from inanition and want of go, and also from the foolish restoration of between thirty and forty years since, by which the picturesque Elizabethan cupolas, familiar to the lecturer from childhood, and to all from Garland's and Britton's Views, were replaced by "Early English" pinnacles, and modern "Norman" was substituted for fragments of fifteenth-century masonry. The more recent removal by some timid surveyor of the pair of pinnacles flanking the gable had only made the nakedness of the front more evident. The west front of Gloucester is more ambitious, and is part of Abbot Morwent's reconstruction of the two western bays of the nave in 1430, but architecturally it is a dismal failure. It is ruined as a composition by continuous bands of transoms across the upper part of the great window, and by the harsh lines of the flat gable which show behind the pierced parapet. The open buttresses of the chief mullions, just recently crowned with little figures of saints, of insufficient scale for their position, are remarkable rather than pleasing, and the only redeeming features of the Gloucester façade are the square angle turrets, which consort well with the pinnacles of the central tower. To the left is the beautiful, if bepatched, thirteenth-century front of the Deanery, formerly the

Abbot's Lodging, in which many royal and other visits of high degree have been entertained.

The imposing south side of Gloucester nave and bold south porch, the most satisfactory feature of Morwent's rebuilding works, were next shown, the likeness of the porch to the similar and slightly earlier feature at Chillenden at Canterbury being pointed out. In both cases the statues destroyed by Puritans have been replaced by indifferent modern figures, Redfern being responsible for those at Gloucester, any one of which, it was suggested, would have needed a king's command to secure admission to the current Academy exhibition.

A photograph of the pierced buttresses, the beautiful Decorated windows and Norman walling of the south nave aisle at Gloucester, led to the narration of how, owing to the weight of the stone vault thrown over the nave by the monks under Abbot Henry Foliot in 1242, the south wall steadily bulged outwards, until in 1318 the then Abbot, Thokey, realised that active measures must be taken to obviate collapse of the structure. The present open buttresses were built up against the Norman ones, the stone groining was taken off the aisle and replaced by a pointed vault carried by quadripartite ribs, and for the semicircular windows were substituted new ones with pointed heads and flowing tracery, the whole of the fenestration, within and without, and the vaulting ribs being covered with a profusion of the ball-flower ornament just at that time so popular in the West of England.

Reverting to Norwich, the gatehouse built by Thomas Erpingham in 1420, was followed by a glance at the nave and spire from the south-west, and the story was told of the riots, fire, desecration and bloodshed of 1222 due to the quarrel as to Tombland fair tolls between the monks and citizens, fanned by the aggressive measures adopted by "that accursed prior, William de Brumham." The beautiful but much-restored gatehouse of St. Etheldreda, built by the monks in expiation of their share in the disturbances, was next viewed and the scene shifted back to Gloucester, where the south and north sides of the choir aisles were in turn seen. It was pointed out that, unlike Norwich, Gloucester has under the choir and its chapels an Early Norman crypt, exactly the same in area as the groined plan, and on the first floor again, over the vaulted north and south choir ambulatories, on either side of the choir, is a spacious and lofty triforium, also vaulted in stone, approached by good stone staircases and connected across the east window by the so-called "Whispering Gallery," a corridor 3 feet wide and 6 feet in height. Externally this passage-way forms a marked feature from the south-east and north-east, as it is carried in front of the chapels forming the eastern terminations of the choir aisles; in its construction the fourteenth-century builders reused Norman work in masonry, their economical habits proving a snare and a stumbling-block to ill-read successors to the members of the Pickwick Club. At the south-east angle the lecturer pointed out that there was in view a study in the development of Mediaeval fenestration—Norman, Early English, Early Decorated, showing ball-flower ornament, and finally Late Perpendicular, all comprised at one glance.

Passing still further north in the circuit of Gloucester the audience stood in Pitt Street, looking on the gateway arcade of the infirmary, cleansed by Sir Gilbert Sturges seven-and-thirty years ago of the picturesque sixteenth-century bay windows and walling with which they had been filled in, and left as perfect, as neat and as unromantic as a cemetery mason could have desired. It was curious to note that at six Benedictine cathedral monasteries, this of Gloucester and those of Norwich, Canterbury, Winchester, Ely and Peterborough, only an arcade remains of the infirmary in which the monks were nursed after blood-letting and during sickness and throughout extreme old age. Here the walling was of very Early Decorated character, with grouped shafts and narrow bands of continuous foliage in the capitals and wide moulded arches. Through the openings are gained finely framed views of Abbot Seabrooke's superb central tower.

Once more the magic carpet was invoked to convey the spectators back to Norwich, where the long line of the flat-leaded nave roof was seen rising beyond the ruins of the refectory, while to the right rose the bold south transept with the tower and spire immediately behind. Next came a bird's-eye view across the cloister garth towards the spire at the north-east angle, and the author raised the question whether the cloister garth of Norwich or Gloucester is the most beautiful in England. Certainly they have no rival elsewhere, either in spaciousness, in picturesque

in serenity. In both cases the cloisters replaced earlier ones of timber on stone plinths, probably destroyed by fire, and were several generations in course of construction. Norwich was by far the slowest in reconstruction, for whereas Gloucester cloisters were in progress during sixty years, from 1352 until 1412, during the reign of four abbots, those at Norwich were a-building during 133 years, having been begun half a century earlier in 1297, and not being finished till twelve years after Gloucester in 1430, while even bishops in turn wore the mitre, including such names as Walpole, Salmon, Percy, Spenser, Courtenay and Alnwick. During all this long period the original plan and dimensions of the bays of each walk were maintained, and it is easy to trace a gradual progression in the fashion of the fenestration from east to south by west to the north—that next the cathedral—and the last to be reconstructed. The audience were asked to glance in passing upon the bewildering piling-up of windows in the lofty nave, with two sets of triforia and two of clerestories rising over each other tier upon tier—all tears, like Niobe, it was suggested in an aside—broken into here and there by later efforts to secure better lighting for the interior.

The comparison with the complicated fenestration of Norwich elucidated the simple plan of Gloucester. Here the effect of a peep across the cloisters to south-east suffered from the uniformity of the tracery, as well as from the lower and simpler character of the walling behind; but the tower which here replaced the spire of the East Anglian minster seemed assuredly a grander finish to the *coup d'œil*. The garth of Gloucester was, for centuries after the Reformation, and even when the lecturer first visited it, a howling wilderness, and was traditionally said to have been the chicken garden of the monks, a legend which the author believed. Thirty years ago it was laid out as the amenity garden, and the public had now a grievance in that its beauties could only be inspected from two or three distant viewpoints, as the tracery of the cloister walks was wedged with the obscure glazing facetiously known as cathedral glass, with here and there stained glass as hideous as it was misplaced. Another modern grievance was that the lecturer's visit this spring he found that the trees and shrubs planted about thirty years ago have now grown luxuriously that it is impracticable, even before the trees are burst, to obtain a clear and unobstructed view across the garth. A fifteenth-century gargoyle at the north-east angle of the cloisters represents a bearded man grasping a rainwater pipe, suggesting to the fanciful the Angel Peace bearing away the cannon that has devastated so many homes. Some detailed views of the cloister fenestration were followed by interior views in the walks. At Norwich a drawing by Ethel Buckingham was reproduced, picking up the east walk towards the well-known prior's doorway, which was directly afterwards shown at close quarters from a photograph. At Gloucester the illustrations included the caryls in the south walk, where the monks studied in seclusion in little recesses like sentinels' boxes; and the famous lavatorium and its cistern, the finest of all those of monastic times remaining to our days. The much more modest fifteenth-century lavatory at the north-east angle of Norwich cloisters followed, and a visit was paid to the chapter-house at Gloucester, the best fabric of its class, and part of the original foundation by Abbot Serlo. The eastern bay is obviously new. As a matter of fact, it was pulled down and rebuilt in 1460 by Abbot Richard Hanley, to whom we also owe the present lady chapel. Over the Norman bays is a heavy barrel-vault, carried by ribs rising from recessed columns, and along the walls is the usual Norman arcading, all in marble, resting on a continuous stone bench, whereon the monks sat in chapter. The flooring is so low below this level that the monks of short stature must have suffered grave discomfort during lengthened sittings, and curiously enough the stone bench along the inner side of the cloister walks is just as inconveniently low, to the detriment of tall men. On the north and south wall spaces of the chapter-house some fifteenth-century black and white painting has recently been renewed in startling and unusually vividness.

Having completed a perambulation of the cathedrals, the lecturer devoted the second portion of his address to the interiors. Entering Norwich by the west door, he remarked that the nave was one of the longest and the most impressive in England, its effect being only surpassed by the totally diverse nave of Westminster Abbey. Of sixteen narrow but lofty bays, with a wide triforium and clerestory on either side resting on stone vaulted aisles, it

shows massive treatment of fully developed Norman of the days of Henry I. The huge piers gain some of their effect, as do those in the naves of Ely and Peterborough, from the fact that the inner faces are alternately semicircular and divided into a triplet of shafts. Over the openings to the aisles we glance into the cavernous depth of the triforium on our left, of equal span and height with the arcade below, resembling in spaciousness those of Ely, Peterborough, St. Albans and Southwell, but infinitely finer in treatment than any of these. When a lad the lecturer used to hear the verger boast that a waggon and four horses could be driven round the triforium, so wide and well paved is it, and he then wondered how they got the team up to its floor, and what was found there worthy the cartage. Glancing up to the shallow clerestory, the merest tyro in architectural history realised that what at first seemed a harmonious composition is of two widely separated periods. On the walls built between 1110 and 1120 is poised a magnificent groined lierne vault, erected in 1465-70 by order of Bishop Walter Lyhart. For this stone roof, the finest in the country, we are indebted to the disastrous fire of 1463, when the wooden spire was struck by lightning. The vault is separated by a wide gulf from that by Beaufort over Winchester nave, and is immeasurably superior to Chillenden's roof over the nave of Canterbury; it is noble in conception and execution, refined and yet lavish in detail.

Turning now to Gloucester, we open the west portal, and ask if two contemporary naves could be more unlike than those of Norwich and of Gloucester? They were both in progress at the same time; but the broad piers and great triforia of Norwich are here replaced by lofty cylinders of masonry, rising clear from the paving to a height of over 30 feet, with plain capitals suggesting those of the Doric order, and carrying an arcade, with a narrow but rich double zigzag ornament. Above this tall arcade is a meagre Late Norman triforium and clerestory, and over these again was thrown in 1242 a quadripartite vault of the Chichester type. The monks themselves, under Abbot Henry Foliot, we are told by Froucester, laboured at the roof, considering they could do it better than skilled but less pious workmen. The result does more credit to their courage than to their architectonic knowledge or technical skill—indeed, their revaulting is almost revolting in its effect. The need for the vault was urgent because the flat wooden ceiling, which probably resembled those of Peterborough, Waltham and St. Albans, had been consumed in one of the numerous fires with which Gloucester Abbey was afflicted.

Glancing again at the chimney-like columns, we recollect that they are but shams; instead of being solid, they are mere casings of masonry around masses of loose concrete and rubble. This was their salvation a century and a half ago, when the ignorant and conceited Kent, self-styled an architect, actually proposed to flute them, so as to reduce their girth, but was dissuaded on learning the real construction.

When were these cylinders built? And where was found their model?

They subvert the ordinary opinion that the nave, like the choir, is the work of Rufus's friend, Abbot Serlo, for no such Doric capitals, no such voussoirs to the arcade, can be paralleled elsewhere of that period. The treatment of the masonry is absolutely diverse from that of the core embedded in the walls and arcades of the choir, and it is evident that at the time of the dedication of Serlo's church in 1150 only the eastern limb, the transepts and a bay or so of the nave existed. Similar columns and abaci to these exist only on the Western Marches, at Tewkesbury, Malvern and Pershore.

Here a slide of the interior of Tewkesbury Abbey church, looking east, was cast on the screen, and it was apparent that while there is a great resemblance to Gloucester, the soffits of the arcade and the treatment of the aisle are plainer. This nave, which was revaulted in the fifteenth century, was consecrated in 1121. Somewhat similar caps and abaci were to be seen in the nave of Southwell, built in 1120. Two other views showed the north nave arcades of Gloucester and Tewkesbury looking in the same direction, east, and seemed to the author to establish the point that they were contemporary and influenced each other. At Tewkesbury the same details were visible as at Gloucester, but executed in a ruder and plainer fashion, and with less available funds.

In the nave of Norwich the feature that awakens most curiosity in the minds of laymen is the pair of enormous

twisted, or rather channelled, columns on either side at the second bay west of the organ screen. A like but less noticeable pair is embedded in the eastern wall of the choir-screen. Each pillar is of great girth, and is ornamented with spiral channelling cut deeply into the surface. Somewhat similar fluted columns are to be seen in Ralph Flambard's nave at Durham, built between 1100 and 1129, and smaller ones at Waltham Abbey and Lindisfarne, and stamp the date of the nave in the days of Henry I. as effectually as do the lofty shafts at Gloucester. On the south side of Norwich nave the two aisle bays west of the channelled pillar were converted into a chantry by Bishop Nix, 1536, who invested the piers and soffit of the Norman arcade with stonework of Tudor character, and set up an altar, of which only the reredos, despoiled of its statues, remains. The fan tracery above each bay is nearly two centuries later than the similar work in Gloucester cloisters. To light his chantry the better Nix cut away the twelfth-century arcading below the triforium in the two bays of the south wall of the nave opposite and inserted huge windows of his own day. Nix, indeed, comes down in history as an infamous, simoniacal and persecuting prelate; but contemporary historians probably painted his character the blacker because he had the audacity to side with the Pope against that godly defender of the faith, Henry VIII.

Successive illustrations of the south nave aisles of Norwich and Gloucester were exhibited, the former tame and ordinary, the latter showing Abbot Thokey's daring and successful reconstruction of the twelfth-century vault. Crossing the nave of Gloucester by the screen, the north aisle, which retains its Norman vault, was seen in either direction, from east and from west, and on its north wall were successively examined in detail Abbot Froucester's grand processional doorway into the west cloister walk; John Flaxman's dignified monument to Mrs. Sarah Morley, attended in her ascent heavenward by a well-grouped bevy of angels, and the quaint Jacobean tomb to Alderman Thomas Machen, his portly spouse, and their symmetrically disposed dozen kneeling sons and daughters in a bas-relief, the whole an excellent illustration of the costumes of 1615.

Returning to Norwich, the nave was seen looking westwards, and it was noted that, unlike Gloucester, it retains its Late Norman work throughout. The whole space over the western doorway of 1120 (and a stone beam of the fourteenth century), is filled by a huge nine-light Perpendicular window of the Westminster Hall pattern. Erected by Bishop Alnwick in 1436, it was filled by Hedgeland nearly sixty years ago with the strangest medley of stained glass ever passed by a complaisant memorial committee. In one hotchpotch are jumbled together feeble copies of half a dozen paintings by men as diverse as Raphael, Le Brun and Benjamin West. This travesty on stained glass serves as a memorial of good Bishop Edward Stanley, the ornithologist and evangelical preacher, father of the more distinguished Dean of Westminster.

A similar pair of illustrations of the nave of Gloucester, looking west, showed the results of Abbot Morwent's reconstruction of the two western bays, c. 1425-30. The work is of a poverty-stricken type of Perpendicular, and fitly matches with Foliot's home-made vault over the eastern portion of the nave. The nine-light west window is uncommonly like that of Norwich, and like it is filled with stained glass to a mid-Victorian bishop, Dr. Monk. It is by Wailes, is seven years later than Norwich, and does not offend the canons of good taste in glass so outrageously. The rector of Dursley, the Rev. Canon Bartleet, has a tale to tell of this window. Under the canon's guidance some old dames from his parish visited Gloucester. In the cloisters Mr. Bartleet explained to the members of his mothers' meeting how the Benedictine monks once lived there, studied in the caryls, washed at the lavatory, dined in the refectory and slept in the dormitory, or betimes, perchance, in the church. At the close of the inspection one old lady lingered long, and cordially shaking her rector's hand, told him how she appreciated all he had told them about the monks more than the other villagers, "Because you see, sir, my old mother washed for them monks." The canon was taken aback, because, although his informant's mother might have suffered ablutions oft and sore vicariously for the Benedictines, they had been disbanded for three and a half centuries, and the daughter had neither the reputation nor appearance of being a tridentarian. Further questioning showed that the "monks" for whom the old dame's mother washed comprised the family of the first Bishop of Gloucester and Bristol, to whose memory this window was erected.

The glory of Norwich is the lierne vaulting over the nave. The intersections of the moulded ribs are covered by stone bosses, 328 in number, carved in rather coarse and archaic fashion with incidents from the Old and New Testaments, with here and there Bishop Walter Lyham, rebuking a hart lying in the water; they are richly coloured and gilded. Several examples of these bosses were shown, including representations of the Magi, the Last Supper, Peter Released from Prison, and Satan Securing the Son of Herod, the last scene depicted in the customary Mediaeval manner as a befurred, horned and tailed satyr drawing a small naked figure from between the bearded lips of a dying and bedridden king.

Once more the glories of Gloucester held the field, the audience were invited to inspect one of the most brilliantly lighted and most stately choirs in England. Looking eastward from the entrance under the organ screen, all stone panelling seen to right and left beyond the stalls was observed to be but skin-deep ornamentation, a casing of a core of Norman masonry, glimpses of the inner fabric, the oldest part of the minster above ground, being revealed in the round arches of ground floor and triforium. These wide semicircular arches two storeys in height were draped but not hidden by a veil of delicate masonry in open mullions and transoms forming a panelling to each bay. Elegance, harmony and grace characterise the encasement executed by Abbot Staunton and his successor Horton during the fifty years' reign of Edward III., an expenditure easily defrayed by the gifts of pilgrims at the tomb of the king's father. The vaulting overhead, although not up to the Norwich standard, is light and effective, but attention held by the glowing illumination provided by the enormous east window, the largest in Great Britain. Its width is 38 feet is, indeed, a little greater than that of the choir itself, for in order to enhance this wealth of glass the north and south walls of the last bay of arcading in the presbytery were taken down and rebuilt so as to slope outwards at the east end towards the aisles, the inner face of the vault being thus slightly concave. It still contains much of its original stained glass; of the forty-nine full-length figures thirty-seven are absolutely genuinely attired in the costume of the early days of Edward III.; of the eighteen armorial shields thirteen bear the identical coats of arms worn by those who fought on the field of Cressy. Thus records of costume, heraldry, treatment of glazing are independently witnessed that the window was completed between 1330 and 1350. Unfortunately, the colour of the glass is to the lecturer not attractive, being largely dingy white and yellowish-green. If one goes outside he will find that the tracery heads and cusps so prominent in the upper portion of the window are only applied on the inner soffits, and are not repeated on the external surface; the same economy in cusping is evident in the great west window of the nave.

The stalls to the left or north are the oldest, the work of Abbot Staunton; those to the south were constructed by the next abbot, Horton. In the foreground, in front of Scott's reredos, the oaken effigy and altar tomb of Robert Curthose have recently been replaced on the original site.

As we stand here a dissolving view passes before the mental eye. All the appliqué work dissolves from the walls, and squat piers and round arches equally divide the space to right and left, and before us is a similar low arcade, through which we see the light of a round-headed eastern window in the short apse and the chapel beyond, as in St. Bartholomew's, Smithfield, and St. John's in the White Tower. The roof-vaulting is lowered, barrel shaped, and plastered and painted; rude oak benches and a stone benching next the walls replace all the fittings, and to the left a clumsy wooden pulpit. It is August, 1100, and even the massive-walled fragment of a church is well lighted. In the choir itself are seated the hot-tempered red-haired king and his nobles, clad in short-sleeved tunics, and over them full-lined cloaks, with pointed shoes and gloves; nearby are armed huntsmen, while massed in the transept limbs of the shire abbey church are the three-score monks from the adjoining monastery of St. Peter and others from neighbouring houses and not a few secular clergy, with the Abbot Serlo, his prior, treasurer and other officials. The pulpit before us is occupied by a stranger, Abbot Fulda of Shrewsbury, who preaches a scathing sermon in which he predicts the end of a covetous, unjust and pleasure-loving monarch in a district far to the south-east, where two other members of the blood-royal have already met violent deaths. The prophecy is so pointed and unmistakable that courtiers and monks alike wince as they look upon the haughty king's countenance. Afterwards Abbot Serlo, who has a genuine

affection for his rough monarch, begs William to take warning and, at any rate, not proceed on his hunting expedition. How the king angrily brushes aside his mentor, how he rides off to the New Forest, where Walter Tyrrel's bow, drawn at a venture, lays him low, and how his corpse is buried under Winchester Cathedral tower, which forthwith collapses—all these we recall as schoolboys' history as the vision fades.

The unsatisfactory and inadequate reredos at Gloucester, designed by Sir Gilbert Scott and executed by Redfern five-and-thirty years ago and the Early sixteenth-century four-stalled sedilia, elaborate but stiff in treatment, were seen and a return was made to Norwich. From Lyhart's organ screen is a bird's-eye view to east-north-east over the choir, presbytery and apse, with a glance at the unaltered work of the days of Rufus in the north transept. We are still west of the crossing, and beyond the massive clustered piers carrying the tower and spire we see the veneering applied by Bishop Goldwell to the lower arcade of the Norman presbytery. To Goldwell we also owe the heavy ierne vault overhead. The apse itself is Norman, but the openings into the lady chapel are Early English, while the clerestory above is the work of Bishop Percy in the middle of the fifteenth century. A clamber up the narrow and ill-lighted tower staircase brings us to the lantern stage, looking on the Norman arcading and circular portholes of the passage round the interior of the steeple. From this point steps and shaky ladders took the lecturer to the topmost lucerne light in the spire, where beyond and above the closely massed houses and churches of the old city stretches on every side a broad tableland of sparsely inhabited country, wide segments of grey sea rimming the horizon at two points to east and north-north-west; but of this view no slides were obtainable. Descending again to the floor level we look up into the central tower, revealing a curious foreshortened effect of arcading and of the wooden panelling of the belfry floor, 120 feet above the legs of the camera. The next illustration was of the beautiful Flamboyant clerestory windows in the apse, executed about 1360 for the youthful Bishop Percy, who, appointed to the see an inexperienced priest of two-and-twenty, died at the early age of thirty-five. The roof then was of timber, and was replaced a century and a quarter later by the present stone vault, in which Goldwell has perpetuated his memory by arranging that very boss should represent a shallow gilded bowl as a rebus on his name. The next view is taken from the edge of the central triforium bay in this apse, looking westward and upward along the whole length of Lyhart's nave vault to the west window. On the nearer and eastern lower arch can be traced the outlines of the earlier timber roof over the choir, which was waggon-shaped and much lower than the present vault. Below the wide triforia on either side can be seen Goldwell's Perpendicularisation of the presbytery arcade. The guide books dilate on the "wonderful engineering ingenuity Goldwell displayed in supporting the upper walls" while he removed and rebuilt the arcade. The author, therefore, examined the work closely on his last visit to Norwich, and found that all the prelate's ingenuity consisted in scraping the Norman wall to a depth of 2 inches to 2½ inches, and applying to it a veneer of thin slabs of richly-carved stone. Even so unreflex and original a writer as Mr. Francis Bond speaks of this as "one of those marvellous pieces of engineering which the Mediæval architects were so fond of," but the lecturer could see nothing beyond the powers of a Max Ende to devise or a Brunel to execute. Below to the left, in a bay of the south arcade, is Goldwell's tomb, built in his lifetime, and the only Mediæval monument in Norwich showing an effigy. The figure is, as Bloxham pointed out a generation since, a unique example of a pre-Reformation bishop wearing a processional cope. The mantling and helm on the cornice are exceptionally vigorous, and dwarf the coat of arms below.

Returning to Gloucester, a nearly contemporary tomb effigy is seen in the choir—that erected by the last Abbot Parker to house the dust of King Osric, by whom the abbey was founded in 681. The tomb was long regarded as a mere cenotaph; but twenty years ago it was opened by the present scholarly Dean, Dr. Spence Jones, when it proved to contain human bones in a leaden coffin. Parker was no stickler for historical exactitude. The seventh-century monarch represented, with a charming indifference to anachronism, in Tudor regal costume, crown, tunic, mantle, collar and shoes, the latter resting on a lion of England. On his east is the model of a sixteenth-century church. The treatment of the tomb and its cornice and bratticing is far

superior to that of Goldwell at Norwich some twenty years earlier. Next was seen the thirteenth-century oak figure of Robert Curthose, son of William the Conqueror, which, with the fourteenth-century altar tomb on which it rests, has lately been brought from the Boteler Chapel to a space immediately in front of the altar in the choir. During the Commonwealth troubles this effigy was broken in pieces by the soldiers, but the fragments were preserved by Sir Humphrey Tracey and replaced in the north-east chapel soon after the restoration of Charles II. The sculptor was no genius, and evidently found the carving of the hands beyond his skill; they are more like the flippers of a seal. Passing through a wide and richly-groined ante-chamber, we find ourselves in the largest, loftiest, widest and most splendid lady chapel in England. It was built at the very end of the fifteenth century—between 1477 and 1499—by Abbots Hanley and Farley. The richly-groined roof is of the same type as that over the choir, and the nine-light east window contains a medley of ancient glass. Before the beautiful reredos are the altar rails put up by Archbishop Laud when dean. Along the panelled walls, which above the dado level are almost unbroken window surfaces, are several interesting Jacobean and Georgian monuments. Turning back, we see that over the vestibule is a small ante-chapel, separated by an open screen and approached from the triforia, right and left, by the famous Whispering Gallery. We retrace our steps to the altar steps of the choir, and looking westward see a fine six-light window in the west wall, the greater height of the choir over the nave allowing this to be pierced so as to derive light through the tower. This western window, with which the vergers of Gloucester love to astonish non-architectural visitors, suffered in the very last outburst of Puritanical iconoclasm in England—in 1689, when the Mediæval stained glass it contained was smashed, on the ground that it represented the Trinity.

A view of Norwich choir from a like standpoint shows the much tamer character of the architecture. It displays also the new bishop's throne recently substituted for an awful example of an "eighteenth-century Gothic" throne, now justly relegated to the Consistory Court. The choir-stalls both at Norwich and Gloucester each provide sixty-two seats, the number of the inmates in the monasteries. In both cathedrals there are good examples of fifteenth-century carving in oak. Two misereres were shown from Norwich—a lion biting a knight, to whose rescue a maid comes and attacks the animal from behind, and the familiar story of the farmer's wife chasing the fox which has stolen her fat goose, a collie joining in the pursuit, while a pig takes advantage of the occasion and helps itself from an overturned pot. The examples selected of Gloucester misereres, which are carved the reverse way so as to be viewed from the ledge and not from the back as at Norwich and elsewhere, were three—a mermaid with her outstretched arms supporting a pair of dolphins, Samson being shorn of his locks by Delilah, and the ascent into heaven on eagles' wings of Alexander the King.

Another visit was paid to Gloucester to inspect the details of Thokey's early fourteenth-century work in the south transept and the adjoining aisle of the nave, and a bird's-eye view was taken across the transepts to the north, the suspended vaulting across the tower arches to north and south being shown in detail and demonstrated to have no structural or mechanical value. The very early character of the Perpendicular work in the south transept, the rounded sections of the vaulting ribs and the absence of bosses at the intersections were pointed out. In the north transept it was seen that the treatment is more advanced. A somewhat similar view across the transepts at Norwich from south to north, also taken at the triforium level, revealed plain and scarcely altered late eleventh-century masonry, although the vaulting is the latest work of the kind in the cathedral, having been added by Bishop Nix about 1530. Two monuments of nineteenth-century Norwich prelates in the transepts were seen in detail—the seated marble figure of Dr. Bathurst, a dull, dignified bishop who died in the year of Queen Victoria's accession, and is represented by the latest and one of the poorest of Chantrey's works. This is placed against the east wall of the south transept, while in the centre of the north transept is James Forsyth's altar tomb to the last bishop, Dr. Pelham, in which the contrast between the white marble effigy and the streaky alabaster tomb is somewhat too vivid. Returning again to the north transept of Gloucester, the variety and superior beauty and scenic effect of this cathedral were at once apparent, the

views selected for illustration including a peep to north-west across the nave, a glance into the apsidal chapel of St. Paul, with its richly-canopied Perpendicular reredos and Late windows set in Norman walling; the thirteenth-century reliquary, described in a guide book of eighty years since as the "punishment cells for monks," and at a later period regarded as a lavatorium; and the curious little fourteenth-century pilgrims' lectern at the entrance to the north ambulatory. In the ambulatory itself the chief object of interest is the elaborate monument of Edward II., with its ornate tabernaclework, set off by contrast with the dwarf Norman pier on either side. The profile of the face was shown to have a great likeness to the effigy by William Torel of the murdered king's grandfather, Henry III., to that of his son, Edward III., both in the Confessor's Chapel at Westminster Abbey, to that of his grandson, Edward the Black Prince, at Canterbury, and to those of his great grandsons, Richard II., shown by carved figure and Haxey's painting at Westminster, and Henry IV. at Canterbury. Crossing the choir of Gloucester to the south ambulatory, the great and unique cope chest, shaped like a legless grand piano, was seen; a glance given into St. Philip's chapel, and the stone staircase was ascended to view the spacious and well paved and light triforia, with their peculiar flying buttresses employed within as vaulting ribs.

Reverting again to Norwich, the choir ambulatories were visited. A charming and unparalleled feature is the bridge crossing the north aisle, formerly leading to a reliquary chapel long since destroyed. A circular turret contains the staircase by which the priest gained access to the bridge, from which he hung the Eastern or Sepulchre light. The garishly-decorated vesical Jesus chapel projecting to the north-east having been visited, the choir was crossed to the south ambulatory, ridicule being poured on the tradition beloved of Norwich vergers that the "Wicked M." tracery in the windows over the entrances to these ambulatories from the transepts was devised to evade the iconoclasm of the Reformers. With an inspection of St. Luke's chapel at the south-east angle, a glance at the fine fourteenth-century font with its sculptured panels of the Seven Sacraments and a peep up the steps across the apse to north-east, the survey of Norwich closed with a view of the ancient episcopal throne, in which the bishop, who stood in the ambulatory of the apse with his face to the lady chapel, obviously occupied the westward position while celebrating mass. The final slides were of a feature at Gloucester not paralleled in Norwich, the spacious and many-chapelled crypt; here, the entrance from the south nave aisle, the steps as seen from below, and the altar slab and piscina in the south-east chapel were the points selected for illustration.

In conclusion the lecturer said:—We have spent a long evening in inspecting and comparing two of the most picturesque and historically interesting of our great Benedictine churches, edifices in regard to which the hackneyed lines from "Il Penseroso" are peculiarly appropriate:—

Let my due feet never fail
To walk the studious cloister's pale,
And love the high embowered roof,
With antique pillars massy proof;
And storeyed windows, richly dight,
Casting a dim, religious light.
There let the pealing organ blow
To the full-voic'd choir below,
In service high and anthem clear,
As may, with sweetness to mine ear
Dissolve me into ecstasies,
And bring all heaven before mine eyes.

ARCHITECTS AND LABOURERS' COTTAGES.

THE Council of the Royal Institute of Architects of Ireland have issued a copy of the correspondence that has passed between it and the Local Government Board regarding the appointment of architects to supervise the erection of labourers' cottages under the Labourers (Ireland) Act, 1906. Since the date of the last letter from the Board a statement was made in the House of Commons by the Chief Secretary for Ireland that many highly qualified architects had applied to rural councils for employment at less than the maximum fee fixed by the Board. The Council state that, so far as they are aware, no member of the Institute, which numbers among its members most of the practising architects of standing throughout Ireland, has

applied at less than the maximum fee. The Council point out that many of the applicants are totally unqualified to act as architects, several of those appointed by the district councils having been objected to by the Local Government Board as unfit under the exceedingly wide qualifications the regulations under the Act, while in other cases the competition for the post proved abortive, there being on one applicant. The inevitable result of fixing such very low fees is, the Council hold, to render it impossible for an architect of any standing to apply and consequently inferior men are appointed. The Council wrote to the Board expressing their opinion that the fee of 2½ per cent. should only apply to exceptional cases, and submitted a list of amendments to the draft rules proposed by the Board regarding the employment of architects. Subsequently the Council asked the Board to receive a deputation for the purpose of submitting a statement dealing with the fees of architects, but the Local Government Board in reply stated that no useful purpose would be served by the deputation, as the matter was fully considered by the Board before prescribing the scale of fees. The Council then wrote explaining its suggested amendments to the scale of remuneration. The Council deprecated most strongly the power given to rural councils to invite tenders from architects and engineers with the object of inducing them, under the stress of competition, to undertake the duties required under the Act for a bulk sum. The Local Government Board was also asked to reconsider its decision regarding a deputation from the Council, but a reply was received stating that the Board carefully considered the views put forward on behalf of the Institute, but it was not prepared to reopen the matter.

ARCHITECTURE AND COLUMBIA UNIVERSITY.

THE following account by Professor Hamlin of the methods employed in the school of architecture at Columbia University is given in the *Architectural Record*:

In this school the work in design really begins for the majority of the students entering the school as novices in the middle of the first year of professional study. The first half of that year must, of necessity, under present conditions, be occupied with very elementary subjects. The students learn their orders and how to cast their shadows, how to lay washes, how to render backgrounds and foregrounds, how to handle the T-square and triangle, pencil and brush. They must learn the alphabet before they can begin to spell. By the middle of the first year they are ready to undertake small and simple problems in the use of the orders and the more familiar Classic forms of door, windows, pediments, balustrades, &c.; they are learning to spell with the one practical architectural alphabet which they have mastered.* By the end of the first year they are sufficiently familiar with the manipulations of architectural drawing and with the commoner applications of the orders and elements of architecture to be admitted to the problems entitled "Elementary Design." In these the subjects are simple buildings, in some cases making use of prescribed order; in other cases permitting of a freer range, and furnishing problems to each of which the afternoons of three or four weeks may be devoted. The student acquires his first discipline in the artistic considerations which distinguish a good plan from a bad one, a well-composed façade section from a poor one. Presentation counts for a great deal in these little problems, because the young designer must be made to acquire absolute mastery of his means of expression in order that in later and more important problems he may instinctively and without effort express his design in the most advantageous manner. When the student has acquired the prescribed number of "points" in design in this class, he is entitled to take those of the next higher division, called "Intermediate Design." The problems in this class are fewer in number and more elaborate than the elementary problems, and introduce more varied considerations of planning, composition and surroundings. They include such buildings as a post office, a public library, a crematory, &c.; buildings of a somewhat complex character but not yet of great monumental importance. The problems in this class require from four to six weeks.

* These elementary attainments are to be hereafter insisted upon as requirements for admission to the school, so that the student will then begin his work in design at the very outset of his school career, and a larger number of points in design will be required for graduation.

for their elaboration, and the juries in their awards place emphasis upon fundamental qualities of planning and composition, while they penalise slovenly and negligent presentation by exclusion from any awards. It is not the presentation, but the real design of the problem which determines the merit of the different solutions. In this class the student is required to win a larger number of "points" than in the elementary class. There is no prescribed length of time in which these "points" may or must be acquired, so that each student is advanced from one class to the other solely according to his own skill and advancement as shown by his work. Some pass through both classes in a single year, others take two or more entire years to accomplish the same result, and others do it in varying periods between these extremes.

The highest class of problems given to undergraduates at the school is termed "Advanced Design." The students who take this work are, for the most part, such as have completed all or nearly all of the prescribed lecture courses and classroom work, and are therefore free to devote their entire time to these exercises. The subjects of the problems are of a monumental character and extremely varied in kind. Variety of experience is a desirable acquisition for the young student, so that while concentration marks the work of the earlier classes, the purpose of the advanced problems is to give the student the widest possible range of experience. Churches and synagogues, technical schools and like problems, involving the grouping of many buildings; state capitols and town halls, presenting the problem of a single monumental exterior and complex planning; railroad stations, armories, hospitals and school buildings, furnishing practice in the meeting of highly specialised and practical requirements; a frontier custom house and lighthouse of picturesque character; decorative problems such as a monumental ceiling or a memorial arch, and problems involving a certain amount of landscape architecture—such is the varied scope of the problems in this class. It is interesting to note the effect of this training upon the student, as it shows itself in the final thesis design which must be submitted before graduation. The fuller grasp of the conditions dominating a problem, the increased sense of monumental fitness and artistic propriety, the gain in resourcefulness and flexibility of design, the greater ease and readiness with which the details are handled—these things measure the efficiency of the training that has gone before. The programmes of the problems in advanced design are purposely so framed as to require for the most part drawings of large dimensions involving bold delineation and breadth of handling. The student must learn to see things in a large way if he would handle them broadly. Little bits of drawings, however valuable in certain stages of his training, will never enable the student to work in a large-handed and masterly fashion. The buildings he is to erect are large objects, and largeness of scale and breadth of handling are not promoted by the study of either plan or elevation solely to the $\frac{1}{8}$ -inch scale. Alternating with these various "problems" (as they are technically called in the school) there are given out in each of the three grades a series of sketch-problems or "sketches," each to be executed entirely within ten or twelve consecutive hours, as exercises in rapid invention and delineation. The subjects of these sketches are usually small structures like rustic gateways, water-towers, band pavilions or the like, or else (especially for advanced students) compositions of a decorative character, such as a fireplace, a public clock, a ceiling, a tomb or an episcopal throne. The dominant considerations in judging these sketches are:—First, a good and reasonably artistic scheme of fundamental conception; and, secondly, a simple and effective presentation—clear, forcible and workmanlike drawing, with a touch at least of imagination and feeling in the delineation and colouring. The standard is purposely set high, and very few of the sketches are awarded even the coveted "pass," which counts for one point on the student's record, while a "mention," counting two points, is still more rarely accorded.

Of a still higher grade are the graduate problems given to post-graduate students, some of them candidates for the higher degrees. Four such problems occupy the academic year, forming a continuation of the discipline of the advanced design. These problems may be taken by graduates of the school resident abroad, doing the work in the Paris ateliers, or as special student-guests of the American Academy at Fieschi, the programmes being sent to them from Columbia University. The most important of the post-graduate problems are those given out as the competitions for the

resident or the travelling scholarships—one of each kind every year.

Supplementing all these problems in design are the special problems given out as a part of the work in the courses in the history of ornament, in architectural history and in construction and office practice. A Byzantine column and spandrel, a Romanesque doorway, a Gothic window or tomb, a Renaissance pilaster or entablature, a Renaissance ceiling, a Louis XV. mantel and wall-treatment, as exercises in decorative style; a chapter-house or a bay or west front of a Gothic church for practice in the Mediæval styles; a country house in wood and a city house, with the drawings worked out, figured and calculated as for the contractor's estimates—these or like problems serve to remind the student that architectural design is a practical art as well as a useful art, and that styles are studied not as mere curiosities, but as languages which can be used.

A paragraph may be devoted to the machinery of the instruction and its working. The school maintains three drafting-rooms, two of these on down-town streets, under the general care of two distinguished architects with the rank of professors in the University—Mr. McKim and Mr. Hastings—each represented and assisted in the actual work of instruction by younger practitioners specially qualified for such work, and a larger drafting-room at the University under two instructors, both likewise practising architects. These six gentlemen form a committee on design, meeting from time to time to prepare the programmes for sketches and problems, to discuss the general interests of the work and to select the jurors who, with one instructor from each drafting-room and the executive head of the school, pass upon the various designs submitted. The dates for handing in each problem are scheduled and the drawings rejected unless handed in by the specified dates. They are mounted on stretchers and hung on the walls in the "model-house," near Havemeyer Hall on the University grounds, and there examined and judged by the jury on an appointed day. The awards consist for the "problems" of "passes," counting three points, "mentions" counting four points, and "special mentions," given only for exceptional excellence, counting five points. The standard of the work depends very largely on these juries, which unite in their membership the academic element and that of the "outside" general practitioner. The partly changing membership of the jury makes it impossible for the work to fall into narrow ruts, or for students to win points by sacrificing fundamental qualities in their work to particular "stunts" or tricks supposed to be in special favour with the jury, for they never know who is to be on the jury. It likewise renders impossible the domination of the jury, month after month, by one person or one element, and thus two of the objections alleged against the jury system as organised in the great Ecole at Paris are effectively removed. No medals or prizes are offered; the awards are honours having a purely scholastic value, and as their number is not restricted and they are given for absolute and not merely relative merit, they become emulative rather than competitive distinctions, and any one or any number may win them, whereas a medal or prize can only be won by one man to the exclusion of all the rest, no matter how good their work. The two annual fellowships, one for resident and one for foreign study, are awarded as prizes, it is true, but not to students in the school. They are open only to graduates, and the competitions are established to determine the holders of the fellowships instead of the fellowships being offered to stimulate interest in the problems of the competitions.

All this is, however, the mere machinery of the teaching of design. The results depend upon the judgment, taste and enthusiasm of the men who administer the teaching and on the industry, imagination and enthusiasm of the students who work under them. At Columbia the six professors and instructors having charge of the design give only a part of their time to the work of the atelier. They are all practising architects, not academic pedagogues.

The cost of such an education at Columbia University is less than at most technical schools in the United States, the fees charged amounting to scarcely 50 per cent. of the actual expense to the University of providing the instruction. A student who pursues the entire course for the degree or certificate, if he spends four years in doing it, pays altogether about 860 dols. in fees. If by hard work and brilliant performance he can accomplish the same in three years, it will cost him less than 700 dols. This covers all the drawing, design, mathematics, history, theory and research, and includes the special fees for registration,

gymnasium, and graduation. But the University is also very hospitable to draftsmen who cannot afford either the time or the money for such a course, admitting them as "special" or "non-matriculated" students, to take whatever course or combination of courses they wish to pursue. All students who take only a part of the work pay accordingly; so that a non-matriculated student can, for example, take elementary or intermediate design and drawing at a cost of only 45 dols. per year; while for the classroom courses the charge per half-year is 7.50 dols. for each hour per week of lectures or classroom work. Thus every student may regulate his work according to his purse. It is perfectly possible for a draftsman who can arrange to command two or three hours two or three days per week, besides his evenings, to complete the entire course for the certificate in six or seven years, with a splendid gymnasium and an incomparable library (the Avery Architectural Library) at his command at all times.

CHICHESTER "GUILDHALL."

THE Rev. Prebendary James Fraser, formerly rector of Eastergate, and now residing at Chichester, with a view to the carrying out of the scheme proposed for the repair of the City "Guildhall" or Franciscan church in Priory Park, in a letter to the town clerk says:—

"You kindly gave me an interview this morning respecting the City Guildhall, and this letter is the result of our conversation. I have been connected with Chichester for more than fifty-five years, and love it well; also I am a venerator of St. Francis, and do not like to see a building which was once the chapel of a Franciscan priory left to decay. Therefore I gladly welcome the scheme for effecting the necessary repairs as soon as possible. Can we help on matters a little? Last autumn I inserted a legacy in my will for this purpose, but as time is pressing I am prepared to make a change, and I now offer to add (give) 50*l.* to each 200*l.* as it is subscribed, and I will give four of these fifties—*i.e.* 200*l.*—if 1,000*l.* is raised by subscriptions, and I shall direct that my legacy be reduced as I think best. Next, with respect to the employment of an architect, I consider that Mr. Prior has a first claim, but should he decline it or be willing to share it, I desire to strongly urge the appointment of Mr. Percy W. Lovell, Parliament Chambers, Great Smith Street, Westminster, who received an excellent training in Sir Aston Webb's office, and who has made a most careful study of Boxgrove Priory Church. May I ask you to lay this matter before my friend, the mayor, and the proper authorities?"

This letter has been submitted to the finance committee who repeat their former resolutions, the chief of which was that application be made to the Local Government Board for sanction to borrow from the Corporation's invested Consols for five years the sum of 500*l.*, to be utilised for the purpose of repairing the building.

GENERAL.

Copies of the first and second volumes of the first edition, 1576-9, of Androuet's "Des Plus Excellent Bâtimens de France" (40*l.*) were sold on Saturday at Sotheby's and the first edition of Columna's "Hypnerotomachia," the rare Italian architectural romance, for 100*l.*

The New Convent at Fenham Hall was visited on Saturday by about forty members of the Northern Architectural Association, under the guidance of the architect, Mr. L. Stokes.

In a Congregation at Oxford University the statute instituting a committee for the further organisation of the study of classical archaeology and establishing diplomas in classical archaeology to be granted after examination was promulgated and the preamble approved.

Mr. B. T. Batsford will publish in a few days a new and enlarged edition of Mr. Thomas H. Mawson's "The Art and Craft of Garden Making," the last edition of which was issued in 1901. The present edition will contain numerous fresh illustrations and schemes of gardens.

The Institution of Civil Engineers.—The fifteenth "James Forrest" lecture will be delivered by Dr. Francis Elgar, F.R.S., on the evening of Tuesday, June 18, his subject being "Unsolved Problems in the Design and Propulsion of Ships." The fourth engineering conference will be held on June 19, 20 and 21, commencing each day at 10 A.M., and the annual conversazione on the evening of June 20 at the Royal Albert Hall.

An Exhibition of Persian faience is now on view at Burlington Fine Arts Club. About 200 examples have been lent by English collectors. The exhibition will not be closed until July 14.

Toronto Architects complain, says the *Canadian Architect*, of the difficulty experienced in trying to procure competent draughtsmen. Even where they are prepared to pay the highest salaries it seems impossible to secure good men. Trial has been made of some English draughtsmen who came to Canada with highest recommendations from leading London firms, but their services have not proved satisfactory, partly on account of the difference between Canadian and British methods.

The Dublin Corporation by a majority on Monday agreed to increase the salary of Mr. Spencer Harty, the borough engineer, from 1,000*l.* to 1,500*l.* He has held office during forty-seven years, and was the lowest paid officer of his class in the United Kingdom if compared with others having similar responsibility.

Chester Consistory Court last week sanctioned two church improvement schemes. One was the restoration, at a cost of over 2,000*l.*, of the old church of St. Andrew's, Tarvin; the tower is a familiar landmark in the vale of Cheshire. The Chancellor described this edifice as a fine specimen of Perpendicular architecture. The other scheme was alterations, costing 1,000*l.*, at Holy Trinity, Gee Cross, near Stockport.

The Constitution of the committee which will manage the new Art School, Edinburgh, was discussed last week by the art school sub-committee of Edinburgh Corporation. The proposal was submitted that the committee should consist of fifteen members, of whom eight would be nominated by the Town Council, a certain number by the R.S.A., and the remainder (probably two) co-opted. The chief difficulty lies in the proportion of members to be appointed by the R.S.A. and the Board of Trustees. The proposal will be further considered by the full committee. The Town Council will be the ultimate authority in connection with the school, the committee doing the administrative work and being confined in expenditure to the estimates approved by the Council.

The Competitive Design by Messrs. John Gibbons & Sons, architects, Manchester, has been accepted by the committee for St. Michael and All Angels' new church at Bramhall, which will seat 500 persons.

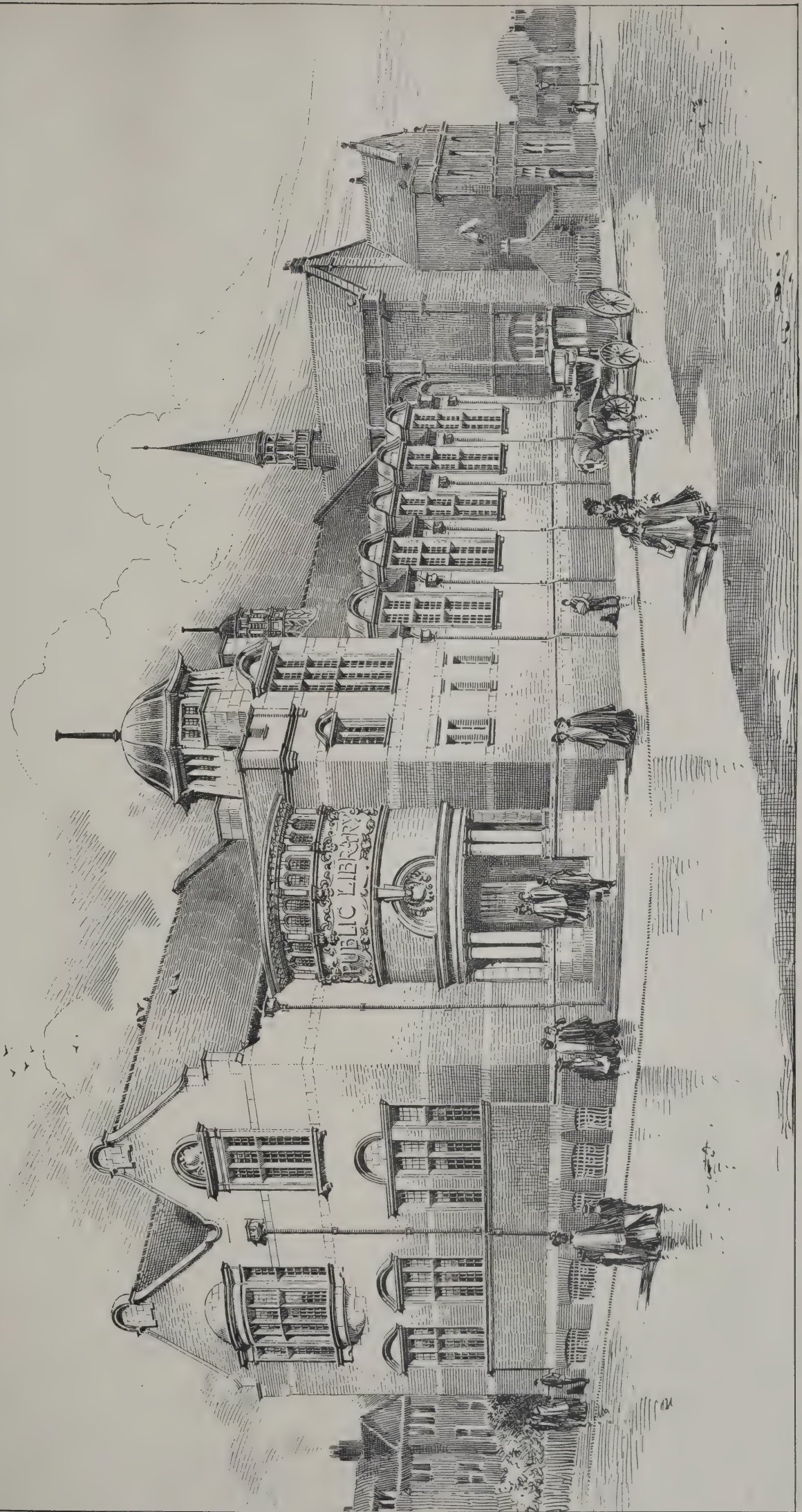
The Glasgow Institute of Architects held an extraordinary general meeting last week. The resolution adopting new articles of association of the Institute, which have been framed in order that the members of the Glasgow Architectural Association may be admitted as members of the Institute, was unanimously passed. The Secretary reported that the president (Mr. James M. Monro) and Mr. Barclay had been elected representatives from the Institute on the governing body of the Glasgow School of Art for the next years from August 1 next. It was agreed to renew prizes annually allowed to architectural students in the Glasgow School of Art and the Technical College.

A Sub-Committee of the Lord Provost's committee for Edinburgh Town Council recommend that a reception be held on the occasion of the visit to Edinburgh of members of the Royal Institute of British Architects on July 4. The reception will be held in the City Chambers.

The Marylebone Borough Council have rejected by a large majority the proposal that the improvements and housing committee should consider the question of erecting a new town hall for the borough and of acquiring a site for the same.

Mr. R. C. Haworth, of Manchester and Colwyn, was offered to give a plot of land at Irlam for a free library, but was waited on by a deputation from the District Council and told that public baths would be much more acceptable to the district than a free library. Mr. Haworth agreed, therefore, that the land should be used as the site for public baths. At the subsequent Council meeting the survey was asked to prepare plans. The site adjoins that of the new Council offices now being built.

A Carnegie Research Scholarship of the value of 100*l.* has been awarded to Mr. D. M. Levy, A.R.S.M., assistant lecturer in the metallurgical department of the University of Birmingham. Mr. Levy proposes to conduct researches in the metallurgical department at Bournbrook, and has selected as his subject "The Influence of Sulphur on Carbon in Cast-iron."



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PUBLIC LIBRARY IN THE POTTERIES.

Messrs. GROOME & BETTINGTON, Architects.

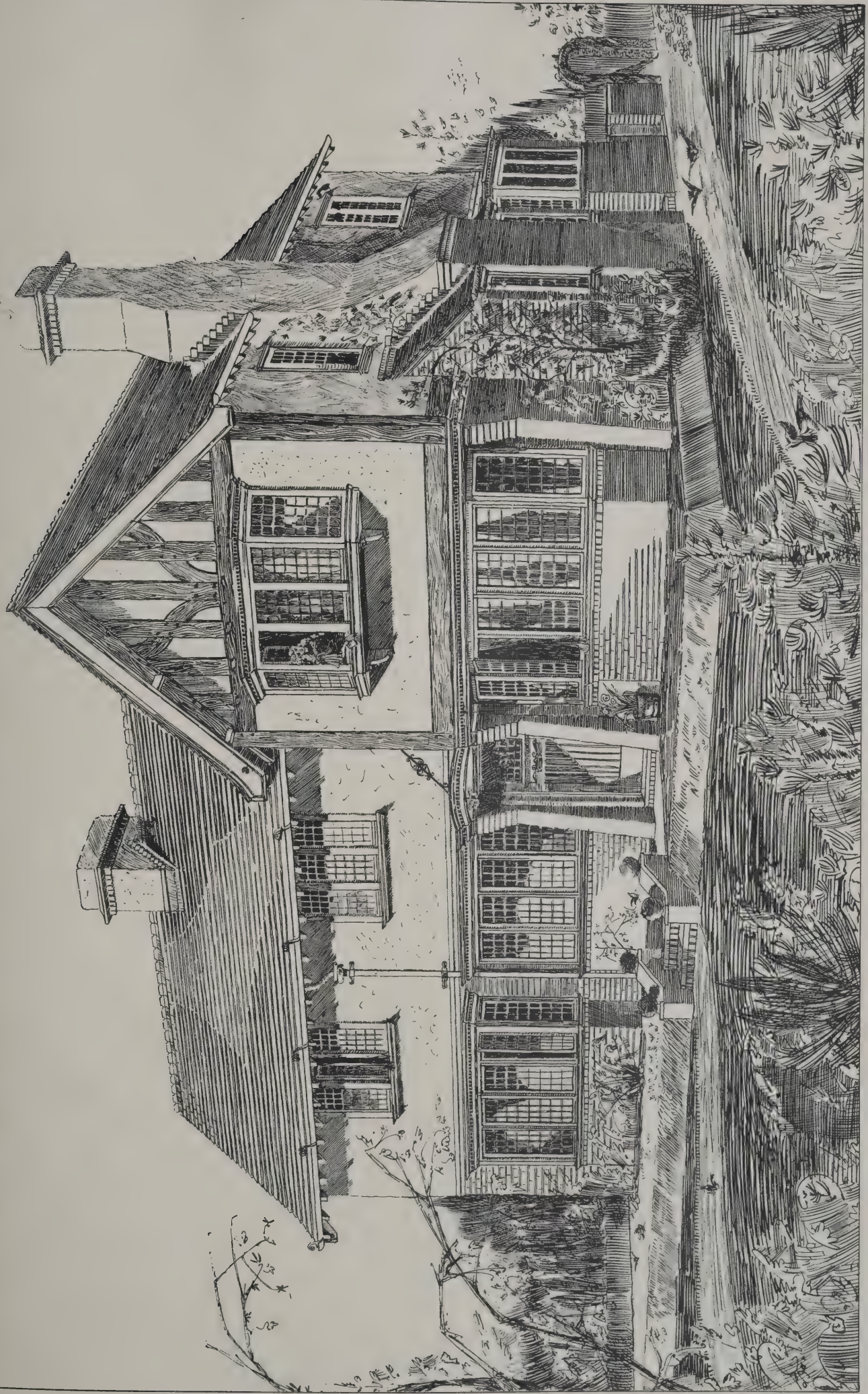


PHOTO-LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

HOUSE IN CHESHIRE.

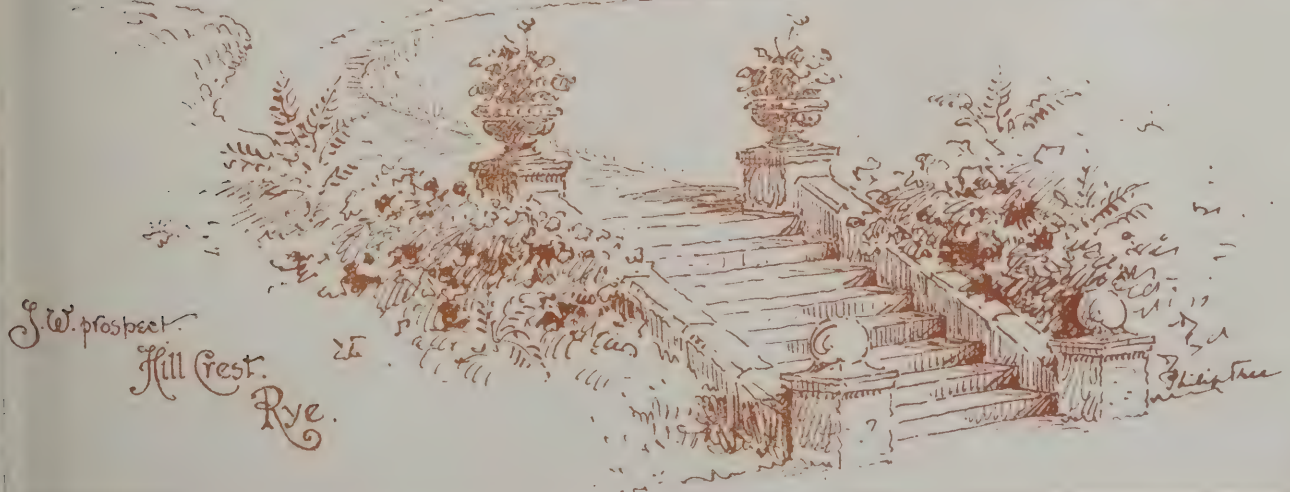
Messrs. GROOME & BETTINGTON, Architects.



PHOTO-LITHO SPRAGUE & CO. L. & CO. EAST HARDING STREET FETTER LANE, E.C.

"THE KNOLL," HOLLINGTON, SUSSEX.

PHILIP TREE, F.R.I.B.A., Architect.



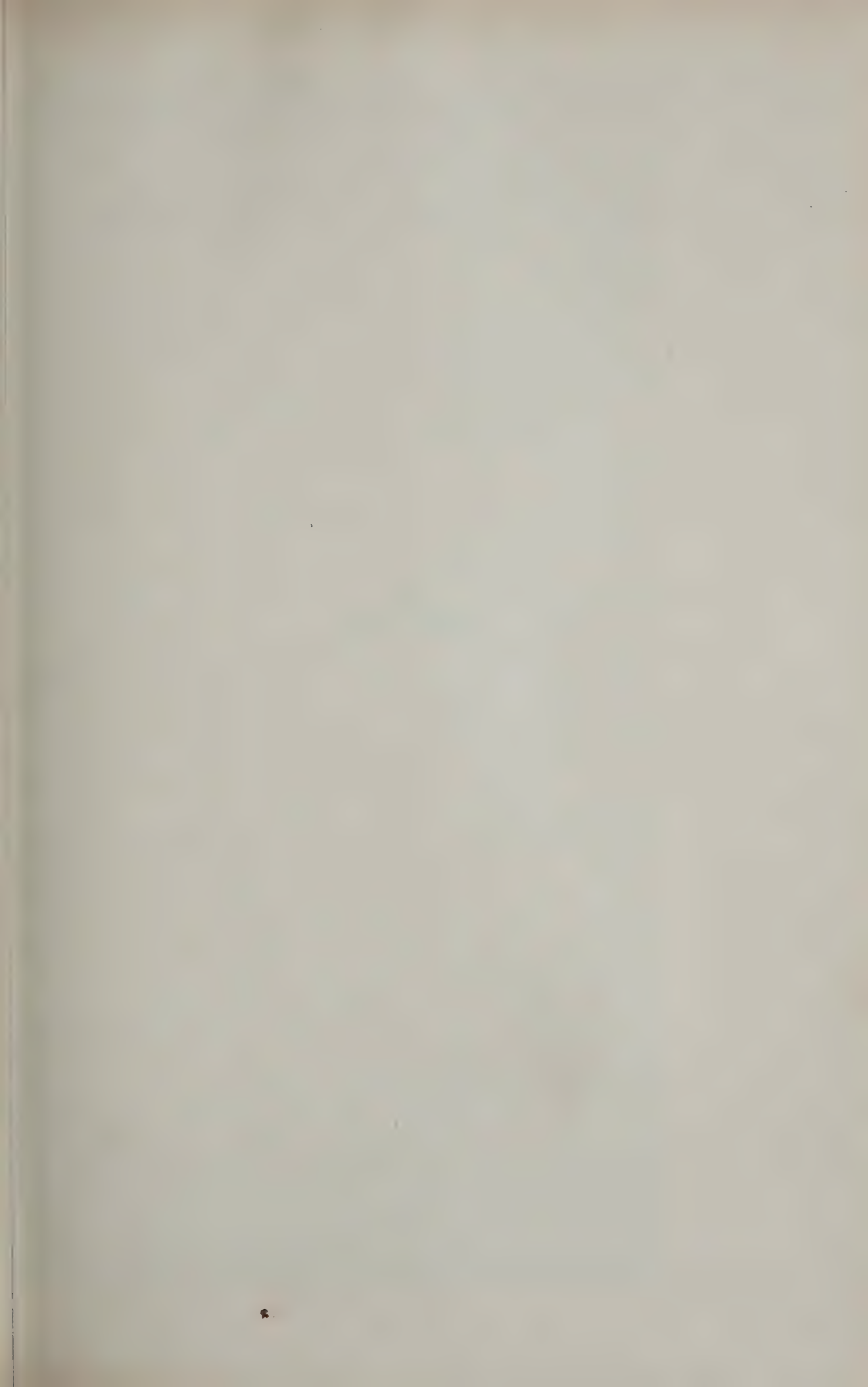
S.W. prospect.
Hill Crest.
Rye.

Philip Tree

PHOTO-LITHO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

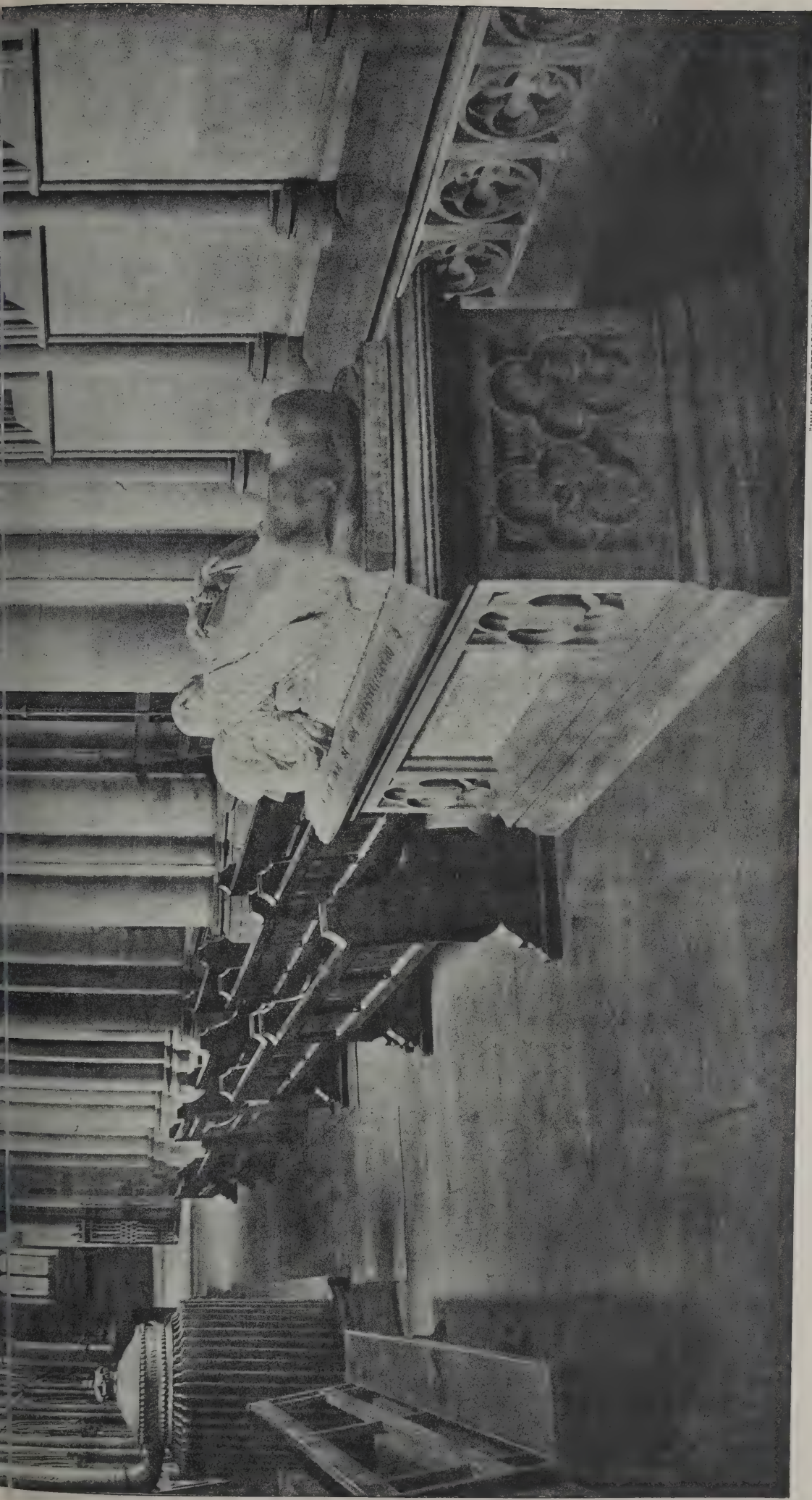
"HILL CREST," RYE, SUSSEX.

PHILIP TREE, F.R.I.B.A., Architect.



The Architect, May 17th 1907.



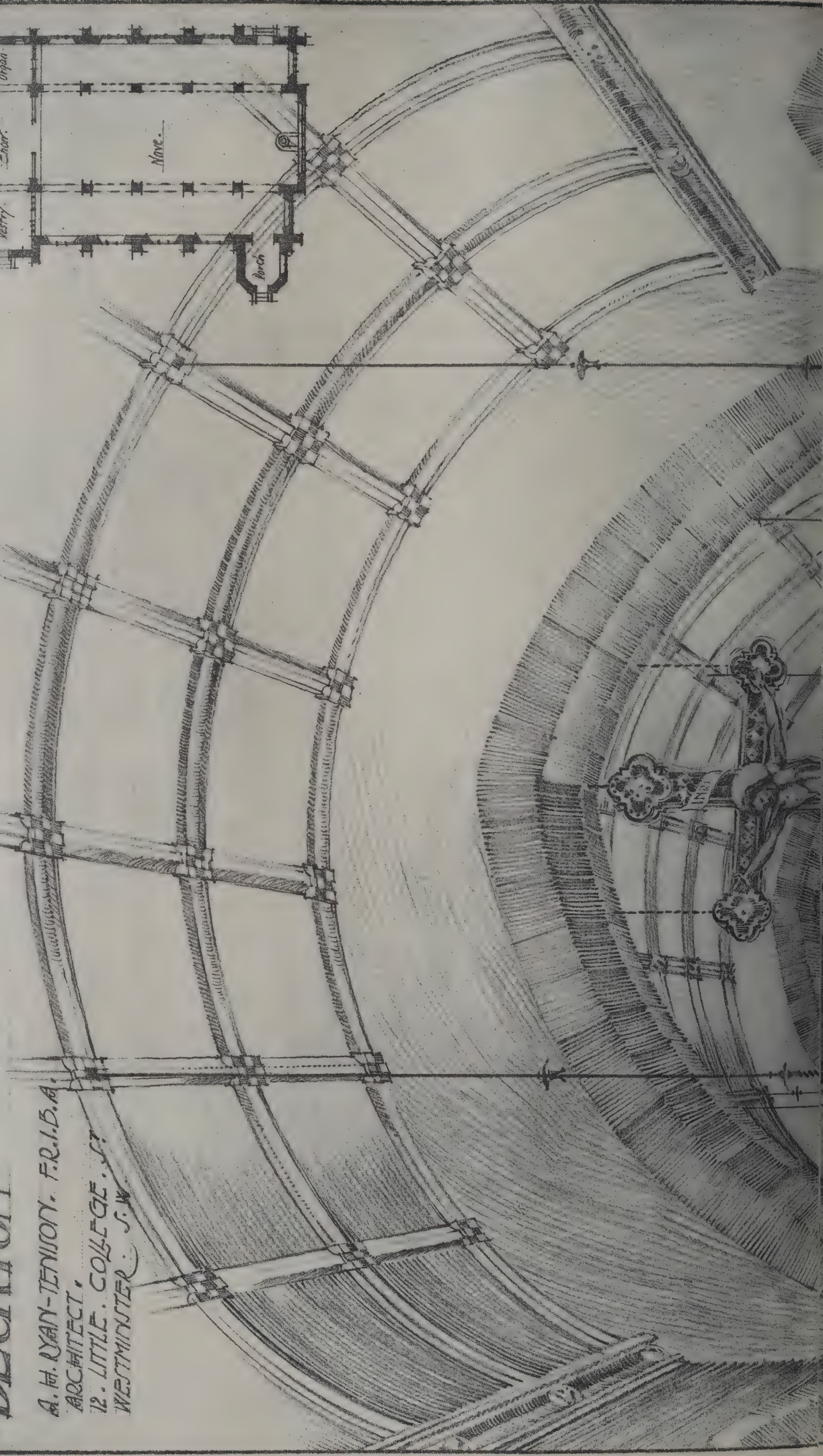
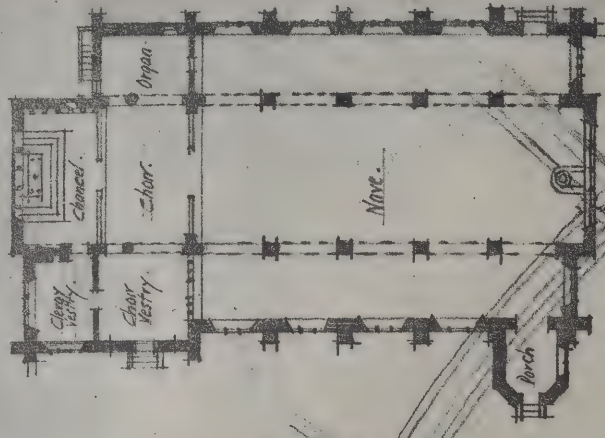


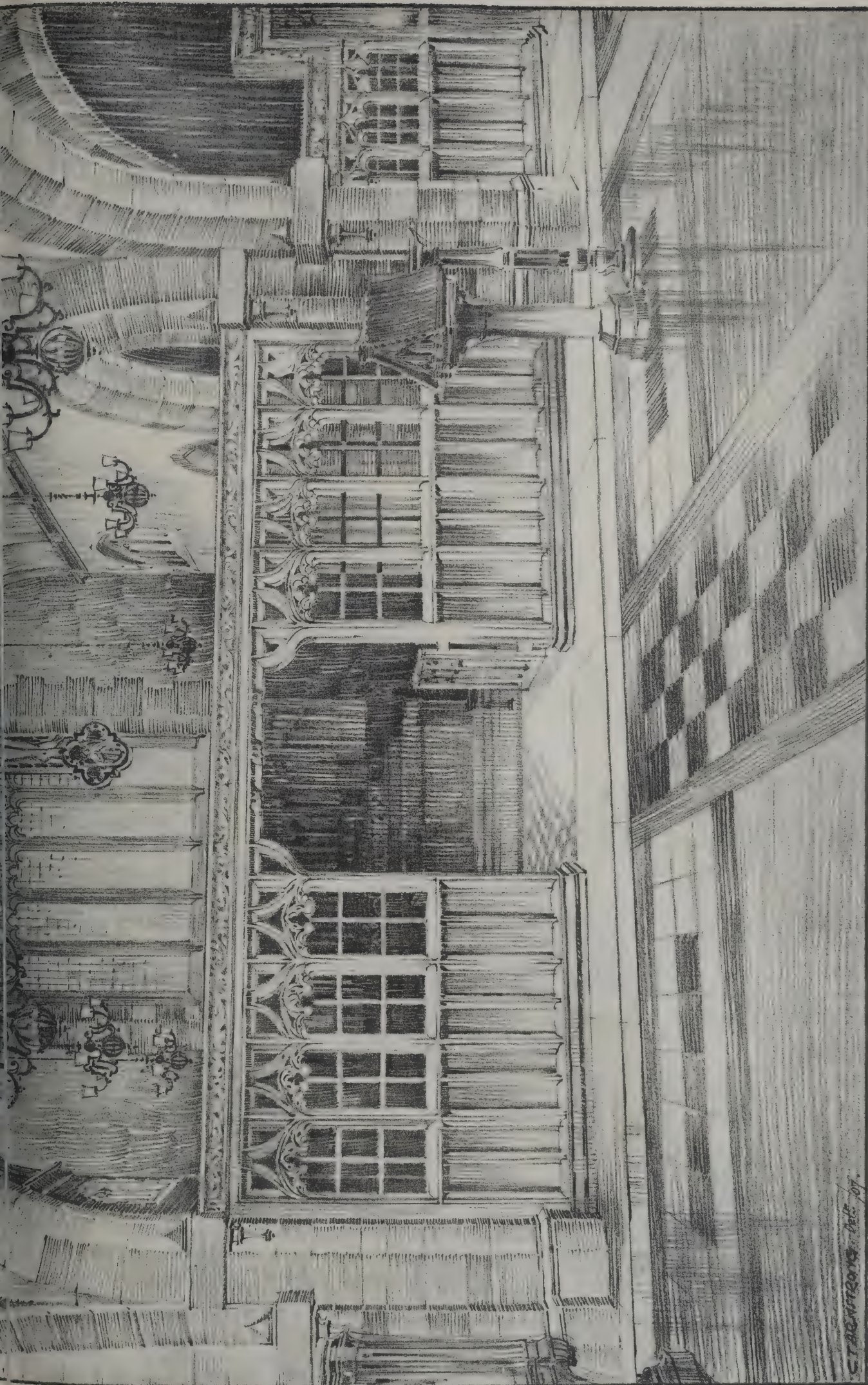
"INK" PHOTO, SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CATHEDRAL SERIES, No. 600.—CARLISLE: SOUTH AISLE, LOOKING WEST.

CHURCH of ST MICHAEL BECKTON ~ ~ ~ ~ ~

A. H. VAN-TENSION, F.R.I.B.A.
ARCHITECT,
12, LITTLE COLLEGE, ST
WESTMINSTER, S.W.





The Architect.

THE WEEK.

is not the fault of a great many people in Manchester if art does not flourish in that city. There are several societies who take an interest in endeavouring to spread a taste for art among the humbler classes. But as yet Manchester does not possess an art gallery on a suitable scale which would be adapted to educational purposes. It seems to be generally agreed that the erection of one, being a necessity, must be shortly undertaken. The citizens have contrived to compete with other places in works of public utility, and yet they have to confess that as respects art Manchester is not on a level with Liverpool or Birmingham. The removal of the infirmary will leave a fine building which could not be better utilised than for educational purposes, including an art gallery. But some economists appear to be of opinion that it is not necessary to erect a new building, for the old infirmary could be altered into a series of galleries at a comparatively small expense. The removal of the infirmary would not have been so generally approved if people did not believe that an old hospital was a danger to all who entered it, no matter how brief might be the period. It was not the practice to line the walls with materials in which microbes would be unable to find shelter, and if properly scrutinised the condition of the Manchester infirmary would be found to contain sources of danger which would cause a general panic. To convert such a building into picture galleries would mean the removal of the pleasure with which pictures could be seen, and visits to it would be only under compulsion. The sooner such a scheme is wiped out of official records the better it will be for the credit of Manchester and its inhabitants.

THE prices given for English works at the sale of DEEDEMAYER'S collection in Paris were not as liberal as those paid of late years in London for works by the particular artists, but they denote an advance in the appreciation of English art. What is most remarkable is the importance attached to portraits of English artists. It is doubtful whether a portrait of a French artist would realise over 6,000*l.* at an auction in London, but the sum of 160,000 francs was obtained for BURN'S portrait of *Miss Tighe*, and 130,000 francs for BURN'S *Mrs. Monteith*. The highest price for an English picture by REYNOLDS was 60,000 francs for his *Schindlerin*. A portrait of *A Princess* by GAINSBROUGH cost 43,000 francs. LAWRENCE'S *Charles and his Daughters* was sold for 110,000 francs. HOPNER'S *Mrs. Home* realised 78,000 francs, and his *Miss Raine* 102,000 francs. The paintings which were not portraits did not attain more than moderate prices. JOHN CONSTABLE is supposed by some authorities to have revolutionised French landscape painting. The two views of the river Stour were the most coveted, and were sold for 32,000 francs and 55,000 francs respectively. BONINGTON was more highly valued than an English painter, and it may have been on that account no more than 3,000 francs was given for one of his works. WILKIE'S *John Knox Preaching to the Lords of Congregation* was sold for the credit sum of 2,100 francs. TURNER'S *Lake of Thun* realised only 6,800 francs.

THEATRICAL performances have been so successful in several years in the Roman Theatre of Orange, it is not surprising that an attempt would be made to produce the effect of classic drama in Timgad, the ancient city of Algiers. The play selected was the *Altre* of POYZAT, in which the ancient story of the death of AGAMEMNON is retold. More Arabs than Christians were present at the performance. By

utilising the ancient theatres the French give a lesson in archaeology which is likely to be more effective than the reading of any description. The spectators are able to realise the arrangement of an ancient Roman theatre, which is not easily done by the aid of drawings alone. The revealing of antiquity also suggests the power of the French rulers to the natives, and many of them must draw the conclusion that the French are the legitimate successors of the Romans. Although there are Roman remains in England, they have not been utilised for spectacular purposes, and consequently they are incomprehensible to the majority of people.

THE Kent County Council may be said to have approved of the erection of a bridge over the Medway between Halling and Wouldham. The cost will be about 28,000*l.* That is a low sum for an important work. But the bridge is to be constructed of ferro-concrete instead of masonry. It is also proposed to erect a bridge of the same material at Aylesford, the cost of which is estimated at 10,000*l.* However, a great many of the inhabitants are in favour of the retention of the existing bridge. It is therefore proposed to hold a local inquiry at which the objections to the change can be publicly stated. A majority of the County Council have also agreed that as soon as possible a building for educational and other county purposes should be erected at Maidstone. At present the business of that department is transacted in hired buildings in London, and it is supposed that a building could be erected for 30,000*l.* which would serve, and besides be more convenient and economical.

THE connection between the motor car and architecture is generally unrecognised. The *American Architect* of the 4th inst.—which is practically the equivalent of a volume on concrete buildings—points out that architects can regard the expansion of automobile traffic with complacency. According to our contemporary the automobile craze is sure to be the direct cause of putting in the way of the younger architects many a pot-boiler. The automobile, moreover, is quite likely to have a very distinct effect on the architectural character of the buildings erected as summer "cottages" by the more wealthy. What do these "hill-climbing contests" mean? What is their use, if it be not in part to assure the future country gentleman that he may safely place his house upon a hill-top, no matter how steep the approach or how craggy the site? In the past many a man, attracted by the situation and enamoured of the view, has built an expensive house on a hill-top only to desert it in a year or two, after experience had shown how unendurable was the tedium and waste of time in crawling uphill in horse-drawn vehicles. But now the automobile makes practically any height a good building site, and with that fact established will come a revival of the discussion of whether in a building designed for such a site horizontal or vertical lines should predominate, whether silhouette or mass should count; and, just as the bicycle tours through the valley of the Loire had much to do with creating the present fashion for the pseudo-French châteaux sprinkled over the American country-side, so we may expect to find the automobile an active agent in the crowning of many a hill-top or craggy bluff with American adaptations of Rhenish castle or French *château fort*. Further, reinforced-concrete methods and materials lend themselves admirably, almost naturally, to the easy reproduction of the brute masses of castellated dwellings, and a contractor who would add heavily to his estimate if obliged to haul building stone to a hill-top site, will see that, with such easily divisible loads, and so readily handled, as broken aggregate and cement, he can figure teaming at a lower rate. It may be worth while for architects to be ready to meet a demand for castles provoked by the ubiquitous excursions of automobile parties.

CONCRETE COLUMNS.

THE recommendation of EMERSON was to be sparing of material in walls in order that it might be utilised in columns, which would afford more pleasure to those who looked on them. "Under the conditions of building construction," says Professor TALBOT, "columns may form a weak element in the structure. To overcome this, the working stresses should be kept low, and every precaution taken to secure proper materials, workmanlike fabrication and efficient inspection." The difference in views between the two Americans, the visionary and the engineer, or the theorist and the practitioner, is not wider than is usually found by experience. Columns can be very beautiful, but we should remember that they are as much intended for ornament as for utility, and on that account we should not make too much demand upon their strength.

This is especially to be remembered in dealing with columns of concrete. Fine monoliths, which are the most desirable material for shafts, are not always and everywhere to be found. But it is now possible to prepare excellent substitutes for them in many varieties of concrete, and the strength and stability can be increased by a combination with steel. To a professor of municipal and sanitary engineering, who also has charge of theoretical and applied mechanics in such a university as that of Illinois, the question of strength takes precedence in his mind before any consideration of beauty. Professor TALBOT, who holds the two offices, undertook an inquiry on the subject. The university authorities of America are not satisfied with the old European system of classroom teaching. At Illinois, for instance, there is an engineering experiment station for the purpose of carrying on "investigations along various lines of engineering, and to study problems of importance to professional engineers and to the manufacturing, railway, mining, constructional and industrial interests of the State."

In undertaking the investigation of the strength of columns care was taken to have them of sufficient size. From the days of TREDGOLD, an able man who was very poor, a great many experiments on the strength of materials have been made with little blocks. Now, as Professor TALBOT says, a small block of concrete is made in a manner different from that of a large column, and the resistance of the block may be exhibited in a different way. A professor or a skilled assistant who prepares a cube will exercise a care which is not to be expected from the ordinary worker in concrete. The Illinois columns which were tested were generally 12 feet high, and their section was 12 inches by 12 inches. They were put together by men experienced in mixing concrete, and the mixing was done with shovels by hand. For the purpose of comparison cubes measuring 12 inches by 12 inches by 12 inches, and blocks 9 inches by 9 inches by 12 inches, as well as cylinders 16 inches long and 8 inches in diameter were also tested. Care was taken to secure the sides of the columns by strips of pine, which were braced by cross-pieces of the material. The columns were kept fourteen days after they were made before any weight was applied. They were carefully placed in position in order that the weights might fall upon them fairly. The load was applied in regular intervals of 10,000 lbs. In one case the total weight reached 254,000 lbs., or in other words, the maximum load was equal to 1,709 lbs. per square inch. After being applied sixty-one days the columns crushed in middle of length, which was found to be a rather unusual part to exhibit weakness. It was without reinforcement from steel rods. It is needless to say other columns failed under a smaller weight, while some exceeded the figures we have given. The maximum stress per square inch varied from 2,004 lbs. to 1,079 lbs., the average of the eighteen plain concrete columns being 1,553 lbs. per square inch.

Although care was taken to approximate the making of the columns to ordinary practice, Professor TALBOT

says the conditions, such as they were, should be considered as more nearly constant than those to be found in ordinary building operations, and a greater allowance for variation should be made in designing concrete columns for buildings. The column of which the maximum stress was only 1,079 lbs. was "made hastily and somewhat carelessly, with the expectation that it would be used at an early age merely for practice in the use of the instruments and machine, and gives not on less stiffness, but a very low compressive strength. Some architects are likely to say it was not inferior to the average builder's column of concrete.

The columns reinforced with longitudinal rods at the angles appeared at first sight to exhibit rather anomalous results. In most cases the rods did not extend further than within half an inch of the end, and therefore the compression or bearing plates of the machine did not come into contact with them. If, as we have said, the average strength of the plain concrete columns was 1,553 lbs. per square inch, "the average strength of the reinforced concrete columns, based on gross area and without allowance for the steel, was 1,746 lbs. per square inch." That is a difference in favour of reinforcement of about 15 per cent., but Professor TALBOT suggests that care should be taken not to use too high working stresses in columns of the kind. The rods served as stiffeners to keep the concrete from bulging, but in the reinforced concrete used for constructive purposes and not for testing they would, of course, be arranged to share the bearing the load and enduring the strains. To what extent they were capable of serving would, of course, depend upon the size and arrangement of the rods. In the experiments it was found that the rods buckled after the failure of the concrete, and this fact suggests that a diameter of $\frac{5}{8}$ -inch was of little value against the indirect effect of the vertical-screw testing machine.

The columns of concrete alone failed suddenly, those which were reinforced by the rods indicated an approach of failure by vertical hair cracks. As a rule the failure occurred rather near the top or the bottom. The central part was not the weakest. The proportion of length to thickness appears to be of less value, regards flexure, than is commonly supposed. Professor TALBOT remarks:—"Even for 15 diameters we readily conclude from the calculated results of long column formulas, and also from the small lateral deformation found in the columns tested, that the difference in strength between a column 15 diameters long and 5 diameters long is less than the variation among several columns of the same length. The same conclusion may be drawn from the set of tests of columns of various length made at the Massachusetts Institute of Technology."

It must, of course, be borne in mind that concrete cannot be expected to act with the same regularity in resisting loads as columns built up of steel angles and plates. There are several remarks in Professor TALBOT's account of his experiments which are enough to suggest that in America there is an excess of confidence in the virtue of concrete, and that calculations respecting its strength can be made without much regard for contingencies. Professor TALBOT says:—"Caution should be used in accepting high values, because they may have been obtained from elastic deformations, or because they have been taken from short specimens affected by the restraint of the bearing-plates, or because they represent concrete of a much denser quality than would be found under the conditions of practical construction." The correspondence, however, between the experiments made at the University of Illinois and those of the Watertown Arsenal is remarkable. Much, of course, will depend upon the character of the cement. If the same brand is used and under similar conditions, it is to be expected that there will be similarity between the results. But concrete can be considered under the best circumstances as a heterogeneous material, and such things as time, weather

to be taken into account. The Illinois columns kept under conditions by which the warmer air at top of the laboratory could not be supposed to affect tests. And they were upheld in a vertical position the time they were made to the time they were used. In ordinary buildings similar precautions could be observed. And although sound concrete columns do not have their strength diminished by handling, could at least not be increased. Professor TALBOT's sum of the tests is not only novel but authoritative, with the corresponding report of "Tests of Reinforced Concrete T-Beams" is well deserving of attention by every architect who intends to employ concrete in buildings.

SIR BENJAMIN BAKER.

Y the sudden death on Sunday last of Sir BENJAMIN BAKER, England has lost her principal consulting engineer. His sphere of activity as such as wide as the employment of English capital, or, in other words, there were few parts of the world where his advice was not acted on. It was only three or four years ago his opinion was put forward as a sufficient support of the theory that the projected sewer of the London County Council was not likely to be a source of danger to St. Paul's Cathedral. Shortly before he gave his opinion as the representative of the Council in respect of the alleged danger to the Royal Observatory at Greenwich by the generating station. In the report of Lord CROMER his opinion respecting the Forth bridge across the Nile was printed. If the reports he prepared concerning engineering works during the last year could be published they would form a substantial volume.

If he were considered simply as a consulting engineer, he might be easily supposed Sir BENJAMIN BAKER was one among a large number of safe men who are to be found in Westminster. With no less justice he might be considered as the pioneer in a new era of engineering science. By a remarkable coincidence Sir BENJAMIN BAKER served as a connection between old and modern systems of engineering practice. When he became known in Parliamentary committee-rooms at the Institution in Great George Street he was assistant to the late Sir JOHN FOWLER. That sturdy shireman, who had taken part in the opposition to the STEPHENSONS, contrived to attract a great many able men to his service. His Metropolitan Railway was a big scheme in which several auxiliaries were employed. He seemed, however, to prefer that his assistants should start enterprises of their own rather than become permanent assistants in his London office. BENJAMIN BAKER was, however, retained there, for he was one of the latest on whom FOWLER relied, and he gave him many opportunities for the exercise of varied knowledge.

BAKER was not satisfied with repetitions of the structures which FOWLER and the other patriarchs of the profession had designed. STEPHENSON'S bridges with their web plates had been superseded by lattice girders, and these again by truss bridges. BAKER did not consider that construction was exhausted, and he wrote a series of papers on long-span railway bridges which he afterwards published in a small volume. The investigations were remarkable as coming from a man who had to exercise so important a rôle in one of the most important offices. They displayed a mastery of mathematics as well as of construction. A great many looked upon him as mere speculative efforts, but JOHN FOWLER was too shrewd to allow BAKER'S conclusions to remain untested. It became necessary to bridge the Firth of Forth with wide spans, and FOWLER found it easy to persuade the directors of the railway to allow a bridge on BAKER'S principles to be constructed. Practically it may be said that an arm of the sea about one mile in length is crossed, two of the spans being of 1,700 feet each and two others of

675 feet each, with some of less dimensions on either side. The bridge had to be constructed so as to allow a headway of 150 feet above high water. Notwithstanding such exacting circumstances, there was practically no interruption to the navigation of the Firth of Forth. This was in a large measure due to the fact that as the bridge was constructed on the cantilever principle the girders were mainly put together on the land, and were compelled to serve as staging for other parts. The Britannia Bridge had no greater span than 465 feet, or not one-third of one of the large spans of the Forth Bridge. The economy of the system was also remarkable, for although between 40,000 and 50,000 tons of steel were used, every ton has definite work to perform. The bridge was the forerunner of several others on the same principle, and BAKER well deserved the knighthood which was conferred upon him when it was opened. The Forth Bridge should never be mentioned without some reference to the constructive genius and organising power which were exhibited by Sir WILLIAM ARROL, who obtained the principal share in the contract for the superstructure.

FOWLER was the first English engineer to be employed in the designing of great works in Egypt. In them BAKER, as a matter of course, took some share. It was not therefore extraordinary that he should be asked to co-operate in the great project for increasing the water supply of Egypt by works at Assouan, which would have the effect of increasing enormously the storage of water, by making the Nile become a reservoir for a length of 140 miles. To some extent the project had been worked out by Sir WILLIAM WILCOCKS, who after ten years' service in India was appointed to the reservoir section of the Egyptian Public Works Department. But the assumption of the office of consulting engineer by Sir BENJAMIN BAKER gave a new form to the enterprise, enabled large sums of money to be assigned to the work, and gave confidence to intending contractors. The work was carried out by Sir JOHN AIRD, and at times 12,000 men were employed. When the dam was completed some wonderful mathematicians, who think that diagrams and formulæ rule the world, raised doubts about the safety of the structure, but if experience is a test all their predictions have apparently been futile. The dam not only served the purpose contemplated, but it has been found advantageous to increase its wonderful utility by giving it additional height. Lord CROMER declared that all the rumours about the want of stability had not the smallest foundation, and that all who were competent to judge had entire confidence in its security. It was to be expected that with so large an army of workmen careless joints in the masonry would occasionally escape supervision, but, taking as tests the rush of water through the sluices and the continued velocity with which the water has been flowing, the results are remarkable.

As a member of the Institution of Civil Engineers BAKER went through the usual gradations until he arrived at the presidency. It seemed fitting that he should be the first to deliver an inaugural address in the new building which the late CHARLES BARRY had designed. It suggested some of BAKER'S own qualities when he pointed out on the occasion a few of the examples of want of foresight afforded by really great men. Sir ROBERT PEEL had blocked a Bill in Parliament for a central railway station which at the time could have been made on economical terms, and would have obviated many difficulties which have since arisen and are never likely to be remedied. Lord BROUGHAM, although he was supposed to be a man of science, tried to make it illegal to have greater speed than thirty miles an hour on railways. Lord PALMERSTON, acting on the report of ROBERT STEPHENSON, scouted the Suez Canal as if it were a bubble scheme to impoverish English capitalists. SMEATON could not believe in the steam-engine until he saw many of them working, and TELFORD was not less dubious about the practicability of railways. BAKER was not the man to be indifferent to those lessons.

He was generous towards projects, but he took enormous pains in making experiments where they were possible before he came to a conclusion.

His evidence in connection with the collapse of the roof of the Charing Cross terminus on December 6, 1905, is enough to show his great care in investigations. Many causes had been assigned for the breaking of the tie-rod, but it was mainly by the course of reasoning supplemented by experiments of Sir BENJAMIN BAKER that it was ascertained that the fault was committed at the ironworks, for although the bar was made up of several pieces they were not all properly welded, and therefore the rod used was never fitted for its purpose. What was no less remarkable was that the rod was supposed to be tested under hydraulic pressure without the flaw having been discovered. The outer welding was excellent; it was at the core the defect was found.

From the circumstances of his position he was allowed few opportunities to display his inventive power. Sir BENJAMIN BAKER had, however, invented a shield which was considered to be well adapted in connection with underground tunnelling. It would not be considered etiquette on his part to insist on its use on any line with which he was connected. Everyone seemed to have confidence in his opinion, and he was therefore a formidable Parliamentary witness. The Government as well as local authorities were equally desirous to obtain his advice under difficult circumstances, and it is not unlikely that the strain upon his physical and intellectual powers during several years had much to do with his sudden death on Sunday. He had attained his sixty-seventh year, but he appeared to be as active as a much younger man. His name will not be soon forgotten by his brother engineers.

BELGIAN ARCHITECTURE.

IT was admitted by FERGUSSON that in the Middle Ages architectural magnificence was characteristic of Belgium. In endeavouring to account for subsequent indifference to it, one of the causes he gives is that the Belgians are not essentially an artistic people. He held doctrines of his own concerning races and their connection with art, and if the Belgians were not an illustration of what he laid down the fault was theirs, and not that of his theories. To an ordinary observer there is no country in Europe which, amidst difficulties, exhibited so strong a predilection for art. The reader need not be afraid that we are about to write a history of the country. But a very few facts will suggest its peculiar circumstances.

In the fourteenth century Belgium or Flanders was ruled by its own counts. In the fifteenth century it became part of Burgundy. Then it fell into the hands of the Emperor CHARLES V. His son ruled it for several years. Afterwards it became part of Austria. In the middle of the seventeenth century it was held by France. It again passed into the hands of Austria, that ruled it with the exception of a few years, when it was seized by the French, until the period of the French Revolution. Subsequently it was part of the French Empire. It was to be expected that with a variety of masters there would be many changes in taste, for whatever might please the rulers would obtain the favour of people who were peaceably disposed.

In 1814, when there was a partition of some parts of Europe, it was a difficulty to decide the fate of Belgium. If it were not through fear of the growing influence of Prussia it would now have belonged to that country, a circumstance which is remembered in Berlin. England insisted on it being separated from France. Austria knew by experience the impossibility of ruling it. Finally Belgium was incorporated with Holland.

The fate of the country at that time was curiously suggestive of many features of Belgian art. The peculiarities of the Dutch painters were easily imitated by Belgian painters. A Belgian *Kermesse* by RUBENS does not differ much from one of the crowds of Dutchmen

which were so often represented in Holland. TEN and BRAUWER, who were Flemings, are often supposed to be Dutchmen. On the other hand, the influence of French building was most marked. Indeed it might be said that the art of Belgium in general swayed between its northern and southern neighbours. Since Holland has lost its influence with Belgian art, while France has gained much of its old supremacy among them.

The Dutch Government were well aware of this before them in dealing with their new possession. Three months exactly after the fate of the French Emperor had been finally decided at Waterloo an ordinance was issued that the Dutch language was to be the official tongue of Belgium. Language is closely linked with liberty and much else, and although they are so near neighbours few of the educated classes in Belgium could express themselves in the dialect of Holland. The consequence was that not only in Cabinet Councils but in all Government departments Belgians were in a ridiculous minority. Out of thirty-nine diplomatists only nine were Belgians. In the Home departments there were eleven Belgians to thirty Dutchmen. There were six times as many Dutch commissioned officers in the army as Belgians. The Supreme Court was at The Hague, and litigants had to travel there from all parts of Belgium. As was to be expected, the Belgians conspired, and the success of the Paris Revolution of 1830 caused an uprising in Brussels. The Dutchmen very wisely did not make much difficulty about a separation.

Although the Belgians might not be considered men of the FERGUSSON class as essentially artistic, after they became independent they set about building with an enthusiasm that recalled Mediæval times. One must remember that the people in those days looked upon their freedom from Dutch officialdom as a blessing from Heaven. In consequence the revolution barely ended when they began to erect parish churches and convents. The majority were more or less Renaissance in character. The adoption of the style was remarkable, and suggested southern influence. A Jesuit father designed two churches for the Order at Ghent and Brussels, in which Ionic columns were employed in the interior. In one or two churches an attempt was made to use a Byzantine type. Although so many buildings arose throughout Belgium the earliest effort to employ Gothic was not made in Antwerp until 1818, when a parish church in one of the suburbs was commenced, and which was claimed to be the first Gothic building erected in Belgium in the nineteenth century. The architect was M. BERCKMANS. In 1847 a more remarkable building in the same style was erected at Namur from the designs of M. DUMONT, while a third was erected at Bauffe.

M. SUYS, who was the architect of the church of St. Georges, Antwerp, is supposed to have given a new turn to architecture. He was a pupil of PERCIER, one of NAPOLEON'S architects, and as Belgium was then a province of France, he was enabled to win the Prix de Rome, and spent more than the required time in Italy. He was recognised as the great authority on architecture in Brussels, and through his influence Italian style became more firmly established in Belgium. The new National Gallery in Brussels was designed by him, and it may be remarked that Scottish granite was used for the immense columns, although nowadays Belgium yields an abundant quantity of the stone. In the National Bank of Brussels BALAT, however, preferred to imitate the French style of LOUIS XVI. Some churches were erected in the Gothic style, while in others the style of Romanesque was preferred, partly because the painting was exercised by several artists, and partly because panels for the display of religious pictures were considered a necessity.

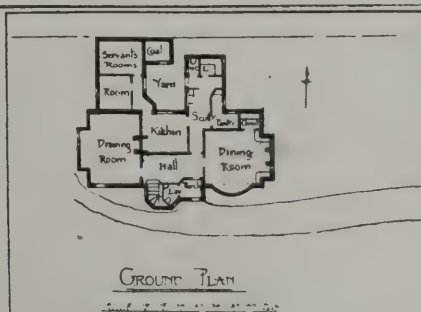
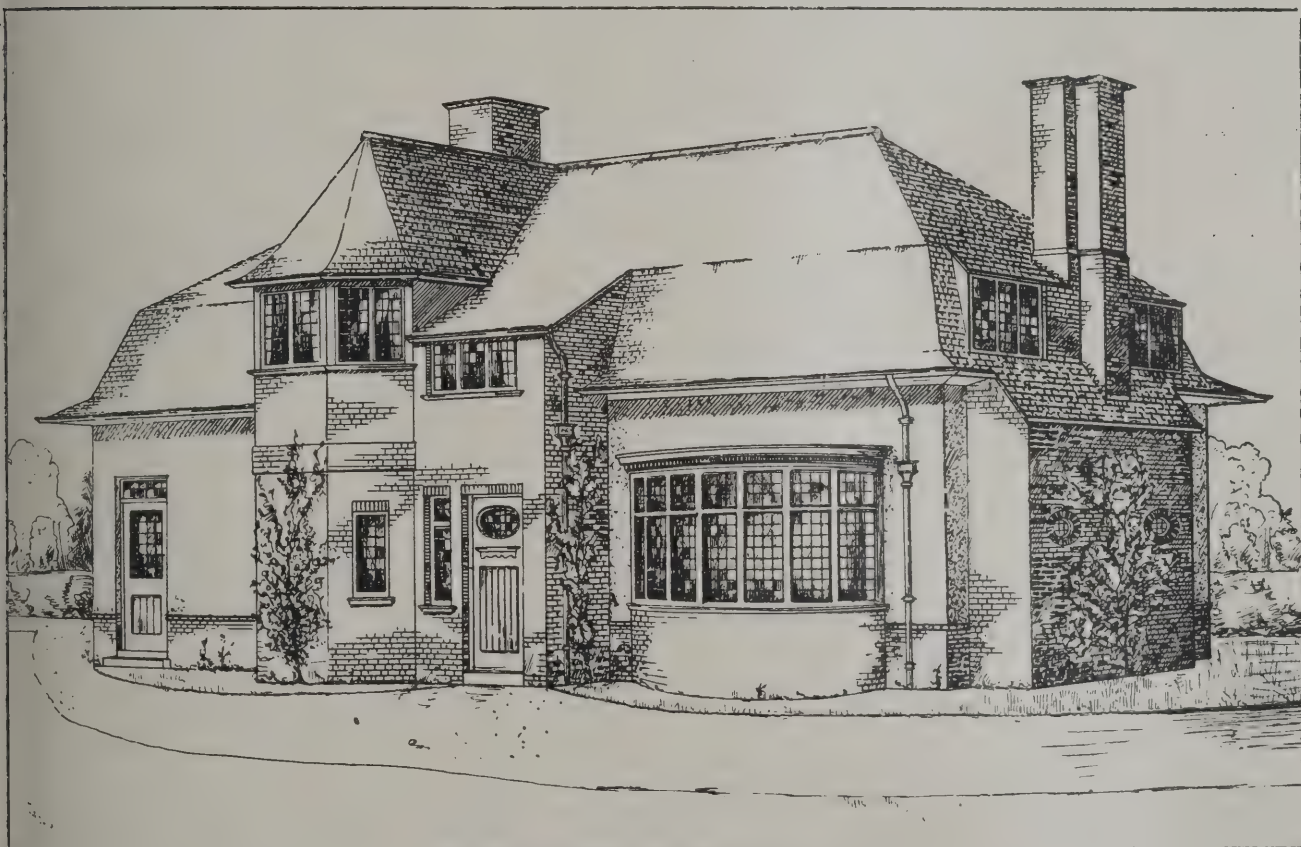
The skill exhibited by the painters produced an unanticipated effect in architecture. The most precious treasures possessed by Belgium are the town halls

no other country of Europe are such memorials to be found of the power of burghers. After the Revolution of 1830 several of the most ardent painters devoted themselves to national subjects. It then became manifest to the humblest peasant that, in spite of the anomalies of the Government of the country in the past, Belgium had then a history of which the people could be proud. Several of the town halls were decorated with paintings which helped to explain historic incidents which occurred in their vicinity. So much success attended those efforts, it was but a step to the revival of Belgian architecture, not only for new municipal buildings, but for banks, business establishments and private residences. Some of them may appear allied to examples in Holland, but in the best work there are features which are distinctly Belgian. The increased interest which quarrying obtains has revealed the existence of a marvellous variety of building stones, and the architect has therefore at his command materials which are adapted to all necessities. In fact, there is no country in Europe in which there

seems to be a more hopeful likelihood of a national style, in which Renaissance elements will be fused into compositions which can recall the peculiar position of Belgium as a country which was closely related to many foreign nations. It is possible that desires may again arise for a style which will be more distinctly French, but at the present time the native style enjoys most favour.

It may be said that POELAERT's colossal building, the Palais de Justice in Brussels, has nothing which can be considered as native about it. Although it does not recall any other building in Belgium, it is an example of the free treatment of Classic which in a measure corresponds with other buildings. It has not, however, inspired efforts on a smaller scale which would recall it, and probably the effect of the law courts is to a large extent dependent upon the almost countless repetitions of columns and other features. It may be taken as an example of the skill which is found among Belgian architects, and which has been displayed in a variety of works which are well deserving of study by Englishmen.

DOONE, SUNNINGDALE.



THIS residence has recently been erected and completed from the designs and under the superintendence of Mr. HENRY T. CHALCRAFT, architect, of 48 Bishopsgate Street Within, E.C., and is situate on the Ridge Mount estate, overlooking the Sunningdale Golf Links. The walls externally are finished with white rough-cast, and the roofs are tiled; the windows have steel casements and lead lights.

SAXON TOWER, MARTON.

IN a letter to the *Lincolnshire Chronicle* the Rev. J. H. Mallinder writes:—

Will you kindly allow me to make an appeal to your readers to help us in our earnest endeavour to save our fine unique Saxon tower, which is in great dangers? In 1868 the north side of the tower was unfortunately undermined, and heating chamber constructed underneath the foundation, which has caused a serious settlement. The north-west and east walls are badly cracked, and I am sorry to say that those in the north wall are beginning to enlarge. Its condition is causing much anxiety, and a strenuous effort is being made to raise the necessary funds for its repair, so that the work may be put in hand and carried out with as little delay as possible. The construction of it being unique, its ruin would be an irreparable loss. The parish being poor and the need of repair very pressing make it absolutely necessary to appeal to the patriotic public to help in our earnest endeavour to save this noble example of ancient workmanship. Mr. Stebbing has written the enclosed interesting and instructive account of church towers in general, with special reference to our tower, and as he very kindly wrote it for the benefit of our restoration fund, it is very earnestly hoped that all who read it will send a contribution. Marton Church is archæologically an extremely interesting building, and is architecturally an epitome of English history from early Saxon times up to the sixteenth century. A great antiquary calls it "a museum of architecture." All lovers of ancient architecture will surely be interested in the repair and preservation of such a noble and venerable building. An account has been opened at the Union of London and Smith's Bank, Lincoln, into which donations may be paid. This appeal has the full approval of the Bishop of Lincoln, Bishop of Grantham, Archdeacon Bond, Dean of Lincoln and Chancellor Crowfoot. Sum required 600*l*. In bank or promised, 230*l*.

Description by W. P. D. Stebbing, F.G.S., Mem. R. Arch. Institute.

As the writer of these notes has given a certain amount of study to the architecture of some of the earliest ecclesiastical buildings in England, and as he was much interested in your church, which possesses some almost unique features of this early period, he, with your vicar's consent, would like to point out to its lovers, as well as to those who appreciate Mediæval buildings, what it is that makes their fine old village church a possession of great value to the dwellers around it, and to the people of England as a whole. Although the writer had made notes about the tower before his attention was particularly drawn to it, it is your vicar who deserves the credit, as it is his zeal and love for his old church that brought before the writer the feeling that Marton possesses that which ought not to be hidden under a bushel. It is to the vicar's appeal in the *Times* of August in last year that this account of the tower, and early church towers in general, is due. This tower is only one of the features of interest about the church, but its age and the danger it is in make it of the greatest importance. It is well known that towers or tower-like structures have been built in all ages and for all purposes, but we now mainly think of them in connection with some sacred edifice, for the advantage of which they were specially developed some time after the Christian era. They may be said to be even now the beacon that points out that there is some building for the diffusion of religious knowledge, and in fair weather or foul the bells hung in their highest storey have been always calling for the same purpose.

The first churches to be built were poor, humble little erections, both because the structures were temporary, the converts few and the necessary knowledge for constructing a better building was wanting; but when this country, for instance, became more civilised and large tracts were Christianised, larger buildings were wanted, necessitating greater architectural skill, especially in the main centres; this again led to a more elaborate ritual and a development of arrangements for calling the people together at many different times and seasons. Before clocks were invented, and when the knowledge of reading and writing was nil, our ancestors had to depend on their ears and eyes to know the times of the many Mediæval services that they were expected to attend, and in church their only way to learn the true Christian life was from pictures and example. Church towers were first built in Italy, but in spite of the early dissemination of Christianity over the country and the early elaboration of the Romish ritual, even there they

cannot be said to be much over 1,200 years old. From that country the trend of the tower, with the growth of the arts of peace and religious feeling, was northwards to Germany, and thence along the Rhine valley, where a local style grew up, and so across the sea to England. This development, however, was not the affair of a few years, for, as far as can now be ascertained, the first church tower was not built in this country till the end of the ninth century, or, roughly, 200 years after they were first built in Italy. In that country the early type of tower is a tall, slender structure, with openings near the top, somewhat similar to those in Marton tower, but as a rule the bells, instead of being hung inside, are hung in the openings themselves. This means that the bells could not be very large, and that there would not be more than one or two of them.

There is no doubt, considering the rudeness of the period, that the English village tower was built in its typical form because it was the simplest for the purpose, but there are exceptions, and these, as Professor Baldwin Brown has, I think, fully proved, are clearly modelled on structures still to be seen in the Rhine valley, and many details in our simplest examples may also be clearly traced from the same source. Those towers, how many we know not now, as only one remains, and that in Sussex, which were roofed with the peculiar pyramidal German cap, must especially have given a foreign look to the countryside. Unhappily, the existence of any of the earliest English church towers is doubtful, but it seems from documentary and other evidence that they would hardly be more than 1,000 years old, and meantime the country which is now France was advancing in civilisation, and being near to England had a considerable amount of influence over the architecture, and incidentally the towers of our churches, so that when we arrive at the approximate period when Marton tower was built, getting on for 900 years ago, there may very well have been a combination of Italian, German and French feeling in the mind of the old Saxon master builder who had to do with its erection these many hundreds of years ago.

Now, in looking at this tower of Marton Church, I think everyone will agree that it has a distinct air of its own; it is not like a tower of the Norman style, and still less like one built about the year 1200 or later. To put it simply, it belongs to a class distinct in type, and it is now clear that such were built by Saxon or Scandinavian workmen, under the supervision of a man who was not a Norman either by birth or bringing up, even though they may have been built after the Norman conquest. Although the proportions of Saxon towers differ, slenderness is a marked characteristic in many cases, and Marton is of this type. These early towers commonly again are inset at the top belfry stage, and if not reduced in size at this point have a projecting stone string-course to divide off this part of the tower from that below, and this band, with a proper artistic sense, usually acts as a dividing line between the comparatively light and ornamental belfry stage and the plain austere walling below. This is the case in this tower, as there is little below the string-course to arrest the attention. We have evidence that towers of this early period, in their own day, were used for many purposes besides belfries, such as dwelling-houses for the priest in charge, watch towers and watching lofts, and as places of security. Frequently, doubtless from a sense of greater safety, although with no idea of defence, no external doorway was built into the tower, the only admission being from the body of the church. The want of this additional opening may, however, be merely due to the desire to save expense, as poverty and inability to construct tower staircases undoubtedly accounts for their absence except in a few instances, and in two of these exceptions they are later additions to an earlier tower. In the smaller towers, too, like Marton, which seems to have had no west doorway, there may have been no floors in them at all.

Marton tower, except for the cement covering it, the modern-looking window of Norman type low down in the west wall, and the ruined battlementing and pinnacles, is almost in its original condition, and thus shows how plain these early structures were. Except in the construction of the walls, it is typical of the prevalent style of the period, which Professor Baldwin Brown and I (if I may link my name with his) put down to the first half of the eleventh century. Sorry as I am to say it, I believe the delightful and almost unique method of building exhibited in the walling of the tower was never intended to be seen. There is no doubt that many of the Saxon towers now existing were covered, except for the quoins, with a thin coating of

ment; their rubble walling was built too roughly and of so small stones intentionally to have been exposed, and I doubt not that that was the case here. The angles of the tower, of course, are built of massive stone quoining, but the actual walling is mainly of very carefully constructed herring-bone work of an unusual type, and I believe only to be seen elsewhere, as Professor Baldwin Brown points out, in a fragment of the wall of the very early Norman bell keep at Tamworth Castle. (A shell keep in its simplest form was a fortified wall surrounding the top of an artificial mound, and so was intermediate between the Saxon palisaded mound and the wholly masonry structure into which it developed.) With all its other purely Saxon characteristics, we cannot consider Marton tower in any way to be Early Norman, but the thickness of the walls, viz. 3 feet 6 inches at the ground level, is part proof of its late Saxon date. The material used for this walling is a limestone that splits up into thin slabs, and this, in pieces of much the same size, has been laid, not horizontally, but sloping—each course consisting of slabs leaning one way or the other, and roughly at right angles with those above and below. This forms typical herring-bone work such as may be seen in a belt some distance up in the tower of Broughton Church, in the north of the county, but here the construction has been further elaborated by each course of herring-boning being isolated from its neighbour by two horizontal layers of the fossiliferous stone. The effect as a whole is extremely ornamental, and these horizontal courses between the others doubtless aid the strength of the masonry by binding it together. Herring-bone work is by no means rare in the eleventh century, but I think the dwellers round Marton may pride themselves on possessing one of the finest examples of this form of construction in existence.

Of other noteworthy details about the tower those interested may notice in the first stage a curious little opening shaped like a keyhole, a form practically confined to a few Saxon towers in Lincolnshire. This little window in addition has a ring of stone, termed a hood mould, running round the semicircular stone in which the upper half of the keyhole is cut; time and other circumstances have dealt hardly with the actual opening, its outline now being not quite perfect. Immediately above this light hole is a crudely carved head in flattish relief projects from the wall. With the evidence of several examples of sculpture remaining in this and similar positions, it is attractive to suggest that this head may be the remains of a figure of the Christ, otherwise, if no traces of the body are found during the restoration, I am afraid we must consider it merely an isolated fragment of sculpture built in at some period to preserve it. I hope the former suggestion will prove to be right.

Continuing our survey, we find that the walls of the belfry stage, as in most Saxon examples, are reduced in thickness by being set back six inches, or so from the line of the walls below. In the lower part are placed the openings to let out the sound of the bells, a similar pair in each case. In design and construction these belfry openings are similar to many others of about the same date in the country, although there are slight differences in detail; in this case the special feature being a semicircular incised groove which runs round the solid stone heads of the openings, and slightly relieves their otherwise plain surfaces. The particular construction which differentiates these early belfry apertures from those of later date is shown as "mid-wall work," the term meaning that the heads of the openings are carried by a single support or shaft placed mid-way through the wall. As the shaft alone, however, would not carry the stones composing the whole thickness of the wall, this is arranged for by a massive pier known as the "through stone," which rests on the shaft and carries the various stones making up the heads of the openings. The "through stone" generally projects slightly beyond the face of the wall, and the shaft commonly is as a simply shaped capital and a base to help to distribute the weight. As usual, through time and decay all trace of the original termination of Marton tower has gone, and we have instead a flat roof hidden by battlementing and angle iron, doubtless of the fifteenth century, which in their turn are fast mouldering away after a life of seemingly somewhat similar duration to the work erected by our Saxon ancestors. Thus at greater or less length have I run through the several features that prove the age and interest of the ancient tower of your parish church, a tower that, on the one hand, is doubtless a connecting link with the early missionary preachers who made the site sacred

and possibly helped to rear, if the fragments do not commemorate them, the carved crosses of Celtic type which—now broken up—may be seen in the west wall of the south aisle, and on the other is a survival of the early church in England, which, under Henry III., partly lost its independence to the Pope, but which once again recovered its full status as a national church at the glorious Reformation.

HIGHLAND CHURCHES.

THE special building committee of the advisory committee of the United Free Church appointed to inquire into the needs of the Highlands have so far completed their labours as to make an estimate of the probable extent of the scheme possible. Three sets of plans have been adopted for both churches and manse, and these will be sent out to congregations who are required to build, in order that they may choose which of the three is most adapted to their requirements, while it is proposed to allow local architects to be employed to make any deviation of the plans which the local situation demands. In the event of there being no local man available, the committee in Edinburgh will appoint an architect to make the necessary alterations. In regard to the manse there is likely to be more diversity of opinion and more objection to anything in the way of uniformity of design, but here also local architects will, it is expected, be allowed to make deviations, provided these are submitted to the building committee for their approval and involve no additional expense.

The assessors have issued their awards as under:—

For churches—1, "St. Andrew," Messrs. Greig, Fairbairn & Macniven, Edinburgh; 2, "Ossian," Mr. Alexander Cullen, Hamilton; 3, "Unity," Messrs. J. W. & J. Laird, Glasgow.

For manse—1, "Unity," Messrs. J. W. & J. Laird, Glasgow; 2, "Ossian," Mr. Alexander Cullen, Hamilton; 3, "Tigh a' Minist'ir," Messrs. Clarke & Bell, Glasgow.

The assessors further recommended for honourable mention designs by the following (arranged alphabetically):—

For church buildings—"Anon," Messrs. Robert J. Walker & Thomas Ramsay, Glasgow; "Caterthune," Mr. D. Wishart Galloway, Brechin; "Emergency," Mr. David W. Robertson, Edinburgh; "Loco Citato," Mr. W. Carruthers Laidlaw, Edinburgh; Star (device), Messrs. Clarke & Bell, Glasgow.

For manse—"Comfort" (red letter), Mr. Charles Davidson, Paisley; "Comfort" (black letter), Mr. H. Foxall, Carlisle; "Gael," Messrs. Robert J. Walker & Thomas Ramsay, Glasgow; "St. Andrew," Messrs. Greig, Fairbairn & Macniven, Edinburgh; "Simple Order," Mr. Victor D. Horsburgh, Edinburgh; "Red Seal" (device), Messrs. John C. T. Murray & J. A. Minty, Westminster; "Whin," Mr. W. Stephen Gibson, Wishaw.

Until the Executive Commissioners have completed their work and allocated all the congregational property, and until the destination of the proprietary churches is settled, the committee cannot definitely decide what the extent of the building scheme may be, but it is understood that something like eighty churches and eighty manse will have to be provided. The estimated cost of the churches is expected to average 1,000*l.* Such a large congregation as that of Dingwall, for instance, will require an edifice which may cost even 4,000*l.*; but, on the other hand, many of the evicted congregations in country districts will be able to adequately accommodate themselves in churches costing considerably less than 1,000*l.* The average cost per manse is to be about 800*l.*, and the expectation of several members of the building committee is that a sum of 150,000*l.* will meet the requirements of the evicted United Free congregations in the Highlands.

The Edinburgh Dean of Guild Court last week passed plans for the new municipal art school at the cattle market, Lauriston. Mr. J. M. Dick Peddie is the architect, and it is estimated that the buildings will cost 40,800*l.* It may be recalled that the site of the school is the north part of the market, and the building will be in the form of a parallelogram, measuring 370 feet by 126 feet. The hewn work will be of red stone, and the rest of the wall surfaces of common rubble from Hailes Quarry. The work is to be completed in thirteen months, and the Corporation have now intimated that on and after May 31 the western portion of the cattle market area will cease to be used for market purposes.

NOTES AND COMMENTS.

THE disposition of the wall-space in the French Salon is so difficult that sooner or later the painters are likely to draw lots for a place on the line. At the present time each member of the Society of French Artists has a right to be considered *hors concours*, and therefore can claim space for two paintings on the coveted *cimaise*. At present the number of painters who possess the privilege is 550. In other words, the superior position is assigned before the exhibition opens to 1,100 paintings. If the average length of each is taken as a metre, or 39 inches, which is a very low estimate, a length of 1,100 metres is bespoke. Now the total length of the line in the different rooms only amounts to 1,000 metres, and it is therefore one-tenth too short for the works of the *hors concours* alone. Every year, however, works by outsiders are sent in which, in the interest of the Society—financially and popularly—should be found in positions where they could be appreciated. That is impossible so long as the present arrangement holds good. It is therefore proposed that all the painters who have a claim on the line should from henceforth send in one work instead of two. But it will require many heated discussions before a majority of the members can agree to such a self-sacrifice.

THE second divisional volume of "The Modern Plumber and Sanitary Engineer," by sixteen specialist contributors under the editorship of G. LISTER SUTCLIFFE (London: The Gresham Publishing Company), has appeared. It relates to such varied subjects as copper-roofing, zinc-roofing, corrugated-iron roofing, water-supply, the latter being treated with ample details of all that relates to water for domestic use. A great many apparatus and appliances are described. The care taken in making explanations clear is suggested by the 200 illustrations which appear in the volume, and all of which are drawn with care. The work promises to be the standard authority on twentieth-century plumbing. Such late works as the copper domes on the Sessions House, Old Bailey, and the Gaiety Theatre are among the examples noted.

It has been repeatedly announced that the French Minister of Colonies had arranged to depart with his large staff of officials from the Pavillon de Flore, which survived the burning of the Tuileries, in order to avoid the possibility of a great fire in the Louvre. The danger continues to exist. It is possible, however, that the safety of the contents of the picture galleries will shortly be secured. The President has approved of the plans prepared by M. REDON for the alteration of the monastery in the Rue Oudinot, which is destined to become the French Colonial Office. As the proposed works will be limited to the transformation of the monks' cells into offices by removing the walls between them and converting the larger rooms into places of audience, they can be expeditiously completed. The undesirable tenants are likely to commence removing their papers in the coming autumn.

THE fallacy of municipal trading being profitable to the inhabitants has reached Italy, which was always favourable to the growth of economical experiments. It does not appear the new system is more advantageous to the people of the South than to those of northern climes. Palermo, like most Italian towns, was in financial difficulties, and it was imagined that by purchasing gas works and manufacturing gas the debts would soon be repaid. It appeared before long that the municipality could not hope to secure any immediate financial advantage from the gas works and that the people were exceedingly dissatisfied with the gas supplied to them. Many of the clients found their accounts for gas consumption doubled, whilst the lighting and the heating power had decreased enormously. Other experiments which were tried in Palermo have not been

more successful. Several civic councils believed that the most abundant source of profit would be found in colossal bakeries. People can if necessary dispense with gas, but bread is an indispensable commodity. In Palermo the King of ITALY has laid the foundation of a municipal mill, tenders have been invited for machinery, but municipal bread is not forthcoming. In Catania bakeries were established without authority, and in four years the inhabitants have by these means increased the municipal debt to the extent of 17,000*l*. Other instances could be cited, but the belief in trading conducted by amateurs continues to be ineradicable.

THE indifference to the works of J. B. CHARDIN which prevailed for many years in Europe, including France, the painter's own country, is suggested when we find that besides the *Fontaine*, which was purchased in 1898, there is only a small study of still life by the painter in the National Gallery. In the eighteenth century FREDERICK THE GREAT and other royal connoisseurs were able to appreciate his homely scenes, and if those works were now to be sold it would be found there could have been no better investments. An exhibition of CHARDIN'S works is about to be held in Paris in order to obtain funds for various charities, and it is anticipated that the enthusiasm which will be aroused by the sight of the pictures, several of which will come from foreign courts, will be atonement for the long neglect in which such charming works were suffered to remain. At a time when so many painters were producing pseudo-heroic and historic scenes CHARDIN was satisfied to take scenes from the everyday life of the bourgeoisie for his subjects. He lived in Paris from 1699 to 1779, and until his last days he continued to work. It must be owned the contemporary painters recognised his extraordinary ability, and DIDEROT declared him to be the first colourist of the time.

If the Germans can succeed in their enterprise of reclaiming the Campagna di Roma, it will be a victory which will give them a still higher place in Europe. CHARLES DICKENS did not exaggerate when he described it as the fittest burial-ground for the Dead City:—"So sad, so quiet, so sullen; so secret in its covering up of great masses of ruin and hiding them; so like the waste places into which the men possessed with devils used to go and howl and rend themselves in the old days of Jerusalem." The Campagna has an area of about 1,400 square miles, and the formation is mainly volcanic. At one time a large number of people lived on it. But when, in the early days of the Roman Empire, the nobles were allowed to divide the territory into immense estates, ruin seized it. Under the Popes many efforts were made to reclaim the Campagna, and in consequence parts were utilised without much danger. But the great plain requires to be treated as a whole and that was a task which was impossible in any of the preceding ages. It remains to be seen whether the German syndicate will be more successful than the Emperors and Popes who attempted to grapple with the difficulty. The plans prepared by Colonel DONATH, an engineer officer, propose the excavation of a connected series of water-courses which will all trend towards the sea. There are already some rivers, but they are not sufficiently looked after, and the obstructed courses overflow. The soil is not absorbent, and in consequence marshes are formed which become a perennial source of miasma. The works of the Panama Canal appear to be easy in comparison with those required for the reclamation of the Roman Campagna. If the aim of the projectors could be accomplished not only would an immense area of cultivated land be produced, but Rome would enter on a new historical period for people could live there without apprehension of the dangers which centuries of neglect have created, and in that way unanticipated prosperity would follow for the ancient city.

ILLUSTRATIONS.

WYPHURST, CRANLEIGH, SURREY.

THIS illustration shows alterations and large additions to be made to Wyphurst, near Cranleigh, or Mr. C. E. H. CHADWYCK HEALEY, C.B., K.C. The old buildings are shown in black on plans and the new buildings in hatching. The corridor leading past library and billiard-room is shut off from lavatory back stairs and servants' quarters by swing doors beyond billiard-room door, which are not shown on the plan on drawing. The whole of the buildings to the left from and including entrance tower are new, and are joined up with existing buildings by half-timbered work. The facings are of thin red bricks with patterns in vitrified headers, and all mullioned windows and dressing in Portland stone; roofs tiled. The hall is oak panelled, with gallery at end and enriched elliptical coved ceiling. Mr. REGINALD BLOMFIELD, A.R.A., New Court, Temple, is the architect.

WOLDINGHAM DENE, SURREY.

THIS house, with lodge, coachman's house, stabling, &c., was built for Mr. HENRY GAMMAN. The materials used in the elevations are red brick, rough-cast of a deep yellow colour, with red tile roofs. The back wall of the house is built against the hillside, which was excavated to form a site for the house. The steps from drive to lawn are of concrete and red terra-cotta. The architect is Mr. F. T. W. GOLDSMITH, R.I.B.A., 1 Verulam Buildings, Gray's Inn, W.C.

MADAME BERGMAN OSTERBERG'S PHYSICAL TRAINING COLLEGE, DARTFORD HEATH.

THE dining-hall forms part of the recent extensive additions to this well-known college. Our illustration is from a drawing exhibited in last year's Royal Academy. The architect is Mr. F. T. W. GOLDSMITH, R.I.B.A., 1 Verulam Buildings, Gray's Inn, W.C.

PROPOSED RESIDENCE, GALICIA, AUSTRIA.

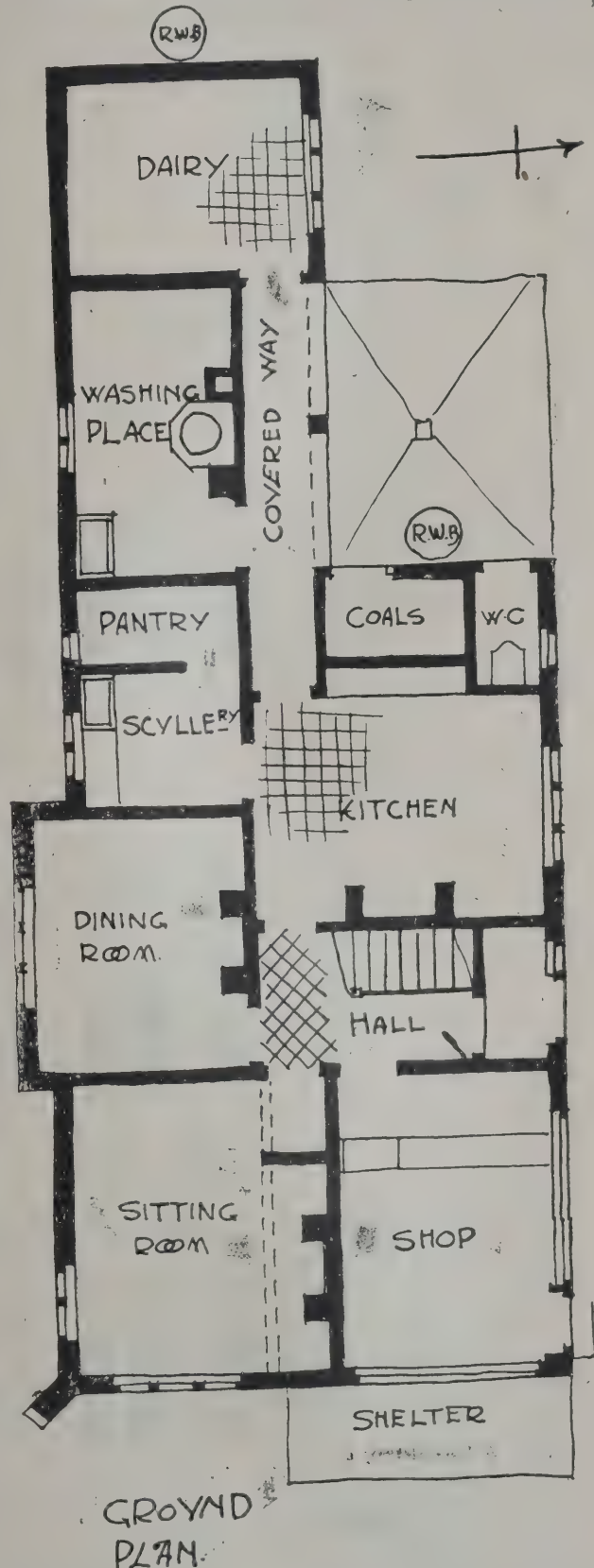
THE site is now being prepared for this house in the centre of a very large estate, covering about 5,000 acres, in Galicia, and a circuitous approach drive is being constructed partly through a forest up to the site, which has an altitude of about 1,200 feet. Magnificent and extensive views will be obtained from the terraces and balconies facing the terrace, the horizon in front being outlined by the distant mountains of Russia. It is proposed to construct the walls of the lower storey and gables with local stone quarried on the estate, and the upper storey with half-timber work formed of solid oak framing, filled in between with 3-inch Mack slabs and cement rendered outside, and the inside lined with 2-inch slabs and plastered, forming a fireproof half-timbered construction. The floors and partitions also will be formed of fireproof slabs, and in fact the whole building would be of fireproof construction. The roof is to be covered with tiles made upon the estate. Owing to the rigours of the winter season all the outside windows will be double, the inner lights folding back against deeply-recessed jambs. All the principal reception-rooms are to be connected by sliding doors, so that when open a vista may be obtained the whole length of the house into the winter gardens. The servants' quarters, kitchen and offices could be entirely isolated, according to the usual custom in the country, and connected to the house by means of a corridor. Each of the principal bedrooms will be provided with a dressing-room, bath-room and lavatory adjoining, and open out into the balcony. It is proposed to heat the entire house by hot-water radiators, in addition to the open fires, in place of the large independent glazed-ware stoves for burning wood and coal generally in use in the country. Some of these are 5 feet to 6 feet square, and reach nearly to the ceiling. The architects are Messrs. CLARE & ROSS, 1 West

Street, Finsbury Circus, E.C., and Westcliff-on-Sea, and the building will be erected by the different mechanics employed on the estate.

NEW PREMISES FOR THE SCOTTISH PROVIDENT INSTITUTION, LOMBARD STREET, E.C.

HOUSE AND DAIRY AT PORTISHEAD, SOMERSETSHIRE.

THIS work has recently been completed for Mr. GEO. TIPPETT. The building is situated in the village High Street, and is kept back some 35 feet from the road. The external walls are of 9-inch brickwork,



cement rough-cast. The plinth, heads and sills to windows, &c., are of blue vitrified bricks. The roofs are covered with varied Broseley tiles, sombre reds and brown-greens predominating. The external wood beams are painted green and the sashes white.

Internally the work is combed in two colours, and the woodwork adjoining hall and staircase is stained brown, finished with a slight gloss resembling a beeswax polish. The doors have black iron rim dead locks and Norfolk thumb latches. Excepting the sitting and dining-rooms the whole of the ground floor is tiled. The contract was entrusted to Mr. W. A. GREEN, of Clevedon, who has carried out the work to the entire satisfaction of the architects, Messrs. RODWAY & DENING, Scottish Widows' Fund Buildings, Bristol.

THE GEORGE, GLASTONBURY.

THIS is a well-known example of a domestic building in the Perpendicular style. It stands in the main street, in close proximity to the market-place and the abbey, the pilgrims to which used formerly to stay there. It has been little altered since it was first erected, with the exception of some back additions, which have been built to provide more accommodation.



GEORGE INN, GLASTONBURY.

[Drawn by W. Eaton, A.R.A.]



OLD POSTERN, LENDAL BRIDGE, YORK. [Drawn by W. Eaton, A.R.I.B.A.]



ENTRANCE FRONT, BELFIELD HALL. [Drawn by W. Eaton, A.R.I.B.A.]

OLD POSTERN, LENDAL BRIDGE.

THE old posterns of York are very picturesque in appearance, with their grey stone walls and red tiled roofs. There are but few now remaining, but the one shown in the sketch is one of the best, and was once used as the ferry-house before Lendal Bridge was built.

BELFIELD HALL.

BELFIELD HALL, which lies on the outskirts of Rochdale, is one of the few old halls in Lancashire which are built on the quadrangular plan. It adjoins the ancient village of Newbold.

The walls are constructed of stone in long thin courses, well bonded at the angles with ashlar quoins of large size, which gives the work the appearance of great strength and solidity. The hall was built at various dates, but chiefly during the reigns of HENRY VIII. and JAMES I. The ancient banqueting-hall has windows of enormous size, with sixteen lights in width. The buildings have been greatly altered to suit modern requirements, and some of the old rooms have been divided by brick walls and are now used as cottages.

PALLADIO'S WORKS AT VICENZA.

BUILDINGS designed by Andrea Palladio are to be found in several of the Italian cities and imitations of them in most parts of the world. But as a native of Vicenza he must have preferred that city, and the people allowed him more opportunities for building than at first sight appeared necessary. He returned there after a long course of travel, when he was in his twenty-ninth year, that is in 1547.

After so many years it is not to be expected that they could escape scathless from decay. Stucco was largely employed by Palladio, and in the numerous places where it has been removed the materials exposed are not always pleasing. But with the aid of imagination and the exercise of the virtue of making allowance for the effects of time, the buildings can be restored to a sufficient extent to enable a modern architect to appreciate their original qualities. The most important among them are the following.

The first building which was entrusted to him without having any coadjutor was the Gothic "Basilica," or Palazzo della Regione, which required adaptation. The columns of the tiers of the loggie are independent of the real or apparent strength of the edifice, and Palladio intended they should be so, for he has made the entablatures break round them. Had the architrave been continued in a straight line the columns would have become essential, and the great space between them would have produced an appearance of debility. The great coved leaden roof is not his fault, but as the point of sight is near, it is never so offensive in reality as it appears in the published elevations. Internally, the lower part is a market, the upper a great hall, which is not handsome. Each intercolumniation of Palladio is opposed to two arches of the original work. He would probably have produced a finer building if he had followed the old plan, but the present building forms a more singular disposition, and suggests what may be done when the spaces are large. The fame of his Basilica was so extended he was summoned to Rome to advise on the subject of St. Peter's, but the death of the Pope prevented the employment of Palladio. He returned to Vicenza in more esteem, and the citizens eagerly sought for his plans. Several palaces were undertaken.

The composition of the front of the Palazzo Capitanale, if completed, would have exhibited a range of eight half columns, comprehending two storeys in height. The openings of the lower storey are large arches, including almost the whole intercolumniation. Above the order is an attic. The effect is rich and magnificent, partly from the solidity and partly from the bold relief of the parts. On examination one cannot but severely condemn the cutting the architrave by the windows, not merely judging by rule, but by the effect. In its present state the brick columns, the stucco of which is half peeled off, have a forlorn and desolate appearance, yet the colouring thus produced is not bad; what displeases is merely the associated character of poverty and ruin. At the end is an elegant doorway ornamented with a smaller order.

The fragment known as Fabbrica Conte Porto al Castello is by some attributed to Palladio, by others Scamozzi, but the latter disclaimed it. Whoever was the architect, we may certainly pronounce it a noble design, although a very small part has been executed and that fragment is nearly in ruins. It would have consisted of a range of Composite columns placed on high detached pedestals and these on high double plinths. The lower range of windows reaches to the top of the pedestal. The second range, in the spaces between the columns, is much larger than the others. The upper windows are in the frieze. These latter have certainly a bad appearance, and the situation of the lower range is not free from blame; but in the cases, where the order is merely ornamental, their want of perfect correspondence with the apparent internal work of less consequence than might be imagined.

The architect of the Palazzo Tiene al Castello is said to have been the proprietor, Count Marc Antonio Tiene, the contemporary and friend of Palladio, from whom, I doubt, he has largely borrowed. Scamozzi seems to have added parts, but the building has an incomplete appearance. It consists of two orders, Corinthian and Composite, and an attic. The lower order is partly rusticated, and an impost moulding contracts the heads of the windows, which are square; but the thin flat arch over them, the sun panel and then another thin flat arch are objectionable. The upper windows are smaller at top than at bottom, but the diminution is slight; altogether the building is beautiful. The back consists of an open colonnade of two orders, closed at each end; the middle intercolumniation is wider than the others, and has some masonry and an arch within it; this variation seems to be introduced merely to spoil the composition. The front has eight columns in each storey, the back ten.

A triumphal arch before a long covered arcade leads to the church of Sta Maria del Monte. This arch is simple and elegant, imitated in some degree from that of Titus in Rome. It is crowned with a ridiculous little lion, and the angels represented on the spandrels have too much projection; but these are not essential to the architecture. The gallery is remarkable for nothing but its length, which is 2,145 feet, and for its 180 columns, but no ingenuity is played in overcoming the ill effects of sloping architecture.

The renowned Rotonda, or Villa Capra, imitated at Chiswick by Lord Burlington, is certainly Palladio's design, and must have been nearly completed by him, though Scamozzi lays claim to the honour of terminating it with some alteration. What this alteration was is not known. We may attribute to him the internal cornices of doorways, chimneys, &c., which are heavy and inharmonious. Although outside the city it partakes of the desolate condition of everything at Vicenza. Internally it is admirable, but it looks small, even more so than it really is. This is probably owing to the preposterously massive ornaments about the doors. The rooms form one suite of apartments, few of which are intended for bedrooms. It would be difficult to accommodate the design to our climate and manners without spoiling it, even if we should find for it a suitable situation, although the Chiswick attempt is not the only one in England.

The Palazzo Valmarana is another incomplete work adapted to a difficult site. It is a handsome edifice, but would be more so if the angles were better supported, if the small pilaster and figure over it, instead of the pilaster of the larger order, are displeasing, and the change in the size and number of the windows in the adjoining divisions is equally reprehensible. The mouldings of the lesser order project beyond the pilasters of the larger, and if the panels of sculpture over the lower windows were somewhat narrower, they would have a better shape themselves, and the greater space over them would be an advantage. In other respects the proportions are excellent, and the distribution at once beautiful and uncommon. The total absence of windows in the height of the pedestal is considered to be a great advantage.

The Palazzo Trissino is probably one of the best works of Vincenzo Scamozzi, and it is a noble edifice, though it wants something of that undefinable grace of proportion which we admire in Palladio, and it stands in so narrow a street that one can hardly judge of it fairly. It has a range of narrow windows on the principal floor, with intermediate pilasters doubled at the angles, but the change of design in the middle divisions, the high unmeaning arch of the central part, and the double pilasters separating the centre from the wings, are so many defects. In the ground floor the large central arched opening is too reasonable to displease.

Palladio in his design for the Palazzo Barbarano had seven openings in the range; two more have since been added, and the composition has not been injured, except that the doorway is no longer in the centre. It is overloaded with ornament. The sprawling figures over the pediments of the windows, the husks which run down on each of the openings, and the trophies in the lower storey, ought all to be taken away: with these exceptions in the decorative parts the composition is excellent, and presents in its unbroken entablatures a simplicity not usual in the Palladian architecture. It somehow recalls the banqueting-hall of Inigo Jones.

The Palazzo del Conte Orazio da Porto, now the Casa del Diavolo, was designed by Palladio for a Conte Giuseppe Porto, and great part finished by him, but the whole design has never been completed. There are arches above the windows of the basement, larger than the openings below, and the lines not being continued downwards, they have an unmeaning appearance; and it would be better if the figures and husk ornament, which are added to the middle and extreme windows, were omitted. These are very trifling defects, and for everything else the building is one of the most correct of Palladio's designs.

The outside of the Olympic Theatre having been erected on a contracted and irregular piece of ground, does not claim any attention. In the scene, which is the part most admired, Palladio anticipated the discoveries of the Pompeian theatres. Of course he had the guidance of Vitruvius. It consists of two orders and an attic, has clustered columns and pilasters, and breaks upon breaks, and abounds in figures and bas-reliefs. The finish against the ceiling is low and poor. The author wished apparently to give the appearance of a building terminating in an attic, and meant that the ceiling should entirely disappear; and if the latter were kept of a uniform dead colour, this by candle-light might perhaps have been the case, but the idea has not been preserved, for the ceiling is gilt and painted. In the middle avenue a very considerable effect of distance is obtained; those on each side, opening into the middle, are nearly lost; those of the second openings on the right and left look pretty well from certain points of view; the end ones are failures. It is remarkable that the point of sight is lower than it would be on the lowest seat, which is 3 or 4 feet above the stage. The seats are most inconveniently narrow and nearly as high as they are wide. The colonnade above the seats is beautifully proportioned, but the centre division has been filled up in consequence of want of room, and this is very injurious to its beauty. The row of statues at the top seem in danger of knocking their heads against the ceiling, and offer another proof that this was not intended to be conspicuous; they would be very much in the way of any spectators in the gallery. It must be allowed that Palladio did not witness the construction of the theatre, and he might have introduced some deviations from his plans. Palladio's columns are mostly mere ornaments, but in contemplating his buildings it is impossible to feel this to be a fault. The sculpture which loads the pediments of the windows is certainly ill placed, and still worse is the little panel of bas-relief so frequently introduced into the lower windows, dividing what ought to be one solid mass into two miserably weak arches. What is it, then, that pleases so much and so universally in the works of this artist? It seems to consist entirely in a certain justness of proportion, with which he has distributed all the parts of his architecture, the basement being neither too high nor too low for the order above it, the windows of the right size and well spaced, and all the parts and proportions suited to one another. The same excellence is found in his orders and the relation of the columns, capitals, entablatures, &c. He has not adopted the theoretical rules of another, but has drawn them all from what he felt to be pleasing to himself and suited to his own style of art; but they are not good when united to a more solid and less ornamental manner.

It is impossible to deny that Palladio's works abound in defects and solecisms that would hardly be tolerated in anyone else. Not only are there engaged columns and matters of that sort belonging to the system itself, but dryness and littleness of manner frequently resulting from an order being adapted only to a single floor of a building. One consequence of the latter is that, notwithstanding so much stress is laid upon proportions, the due proportion that should be observed between the columns and the windows is almost lost sight of. There are also such errors as windows cutting into architraves, windows within friezes, doors lower than windows, figures on the raking cornices

of window pediments, naked and dressed windows in the same composition, &c. Other faults can be pointed out which, if they do not run counter to rule, are yet sins against beauty and good taste, such as ugly balusters, mean attics, offensively wide intercolumns, heavy pediments, meagre entablatures and columns, particularly in the Ionic order, and above all a dryness, mannerism and monotony of detail. As regards Palladio himself, there may be much excuse for his errors, but certainly none for the prejudices of those who would now insist upon our admiring his works without qualification, more particularly as nothing is easier than for a modern architect to avoid his faults, and even to improve upon his beauties.

J. B. LASSUS ON LONDON.

IN any history of French architecture during the first half of the nineteenth century the name of Jean-Baptiste-Antoine Lassus must be prominent. Born in 1807 and dying in 1857, his career was brief, but within it he was allowed to produce excellent work. Apart from his buildings, he also rendered a service to his generation, for it was by his aid the sketch book of Villard de Honnecourt was produced. His first work was the restoration of the old church of St. Severin in Paris. Having exhibited a design for the restoration of the beautiful Sainte-Chapelle, he was entrusted, along with Duban, with that important work. After a time he had sole charge. He likewise co-operated with Viollet-le-Duc in the restoration of the cathedral of Notre-Dame. Lassus became official architect of the dioceses of Le Mans and Chartres, as well as Paris. The fine church of St. John Baptist at Belleville was erected from his designs. The list of his works would be long, and we have mentioned a few to suggest the competency of Lassus to criticise English architecture when he visited London in 1851, and afterwards wrote the following epistle to a friend:—

My dear Sir,—I take great credit for having waited till now before I imparted to you the impressions of all sorts which crowded upon us during our short stay in England.

To us Frenchmen, the colossal aspect of your capital, the infinite number of streets, the hasty movements of people and of carriages, stirring in all directions, all form a picture so immense and so animated that it is really enough to make one giddy, and it is only at the end of some days that the mind can be settled, and in a condition to judge. This was the general sentiment of our whole party. We had left Paris knowing perfectly well that we were going to visit the greatest capital of the world, and, nevertheless, the reality far surpassed all that we had been able to imagine.

Forced to renounce the pleasure of seeing a friend, I took at once the course of tearing up all my letters of recommendation, in order to profit by every instant of which I could dispose in rambling about the town, going by chance without any other guide than the modest map *de circonstance* of Mr. B. T. Wilme. This method of seeing a town is certainly not the quickest, but it is full of charms, for surprise plays a part in it which piques curiosity, and gives continual life to one's attention.

I was always accompanied in these walks by my two friends, Paul Durand and the Baron de Guillermy—Paul Durand, the most perfect fanatic on Greek art whom I know; and Guillermy, the witty and learned archæologist, with whom you are acquainted. Though we were only eight days in London, yet I shall never forget the pleasure I felt during that week. It is unnecessary to say that our excursions were not made in silence; between Frenchmen the thing is an impossibility. You will also well understand, my dear sir, that we were very rarely of the same opinion, otherwise the excursion might have been tiresome.

Entrusted with the functions of guide, with the help of that famous map which I have already mentioned, M. de Guillermy assumed the part of passionate admirer. He praised all, he applauded all and was never tired of admiring. Durand only thought of the British Museum and the bas-reliefs of the Parthenon. As to me, being unable to admit without contest the exaggerations of Guillermy, I was naturally drawn to criticise, and I much fear that I have still preserved a tolerably large share of my travelling habits. I hope, however, that you will excuse the criticisms in favour of the end, and that your national pride will not be hurt by the frankness of my observations. You will see in them, I am sure, only the artist earnestly seeking the truth; besides, on many of the points, you will doubtless be of my opinion.

It is evident that you cannot approve of certain modern churches and chapels which resemble much, as to their merit at least, those constructed in France and confided to architects ignorant even of the principles of Gothic art. I confess to you that I find these bad imitations a thousand times more detestable than those which were given to us as reminiscences of Grecian and Roman art.

This opinion I back by more than one argument. The first is, that Grecian and Roman art are both of them composed of elements more simple and far less in number than Gothic art, and in them the proportions and the principles of the orders have been reduced to rule and there remained fixed by absolute standards, from which it is impossible to depart. The most incapable mason has but to take his formulary and it is then perfectly competent to him to raise a Doric, Ionic, or Corinthian portico, as he may wish.

In the Gothic art the elements are infinite, and besides, every monument presents the greatest variety in the manner of combining them; in short, most happily there exists no formulary which enables ignorant men to make something like columns, without value, it is true, but which at least present nothing very shocking. In proof, look at those who try to make imitations of Gothic art without having seriously studied its principles. They imagine that there is nothing more easy, that it is enough to group bundles of shafts to make pointed openings; and, above all, to multiply the details indefinitely, to ornament, and to cut out. They are entirely ignorant that the productions of this art are subjected to principles and rules as absolute, as positive as those of that of Greece and Rome. Nay, more, they go so far as to deny the existence of those laws, without which art cannot exist.

You see I keep to my character of critic, and I do not flatter myself in being tender to your modern buildings, but in truth I sacrifice in return to you a great part of ours, to which the same reproaches may be justly addressed.

Du reste, the fault does not lie precisely at the door of living artists; the evil dates from further back, and with us at least it is to the radically vicious instructions of the schools that we must attribute it, and there it is that a reform must first be made. You cannot imagine how difficult it is to shake off those bands with which one finds oneself embarrassed on leaving the school. Vigorous and long efforts are indeed needed to disengage oneself from all the accumulated shackles by real instruction.

You may perhaps think that I exaggerate. I assure you, however, it is far otherwise. I am persuaded that he who wishes to become an architect in earnest cannot attain his end, but on the condition of first forgetting all that he has learnt at the *Ecole des Beaux-Arts* and of learning afterwards a multitude of necessary things which are not taught there. Is it the fault of the pupils if their judgment is ruined? Evidently not; it all falls back upon the professors, and the worst part of it is that themselves having no conviction of the truth of those false principles which they teach, they utter anathemas against those who only dare to doubt their infallibility.

You remember that famous crusade attempted about two years ago by the Academy, in order to stifle at the birth the taste for Gothic art. Unhappily for the erudite body its appeal had no echo, and all the efforts of its learned supporters have had no other results than to provoke a tolerably large number of replies, in which the Academy found itself very ungently handled.

Evidently, whatever they may now do, the movement has begun, and the Academy knows well that it is impossible for it to stop it, only to unite all its efforts to cripple it, but the stream is stronger, and in spite of all obstacles, the influence of archaeological studies makes itself already felt even in the compositions of the pupils of the school.

I have been struck with it this year; I, who do not usually frequent the exhibitions of the *Ecole des Beaux-Arts*, was very far from expecting what I saw on going by chance to visit the exhibition of the great prizes. Not that I approved of the subjects exhibited—much the contrary—and I went so far as to think that it was difficult to answer worse to the programme, but here again it was the professors on whom the fault should be laid. The subject, in short, was a hospital of refuge to be built upon mountains, like the Mont St. Bernard. Now it is certain that if the pupils had made reasonable plans, with closed cloisters sheltered from the wind and snow, they would have been rejected. Instead of this they had drawn long ranges of colonnades, vast galleries open to all winds, and the satisfied Academy had given the palm to the most impos-

sible plan. However (and this was the subject of my surprise), in one of them, that which obtained the second great prize, the tower of the chapel was surmounted by a real Gothic spire, of a pyramidal form, with quatrefoil openings, planted, one knows not how, on a basement composed of antique elements. The effect was truly detestable; but, nevertheless, there was in it a character of boldness which would have cost its author immediate expulsion from the prize list only four or five years ago.

You see we advance; and in spite of the efforts of the Academy, the taste for Gothic art develops itself more and more. The resistance of the academicians and their disciples does not frighten me at all; and I confess frankly to you that what appears to me much more to be dreaded is the precipitation with which people rush into the execution of certain so-called Gothic monuments, which have nothing of Gothic in them but the name. In fact, as I have already said, I prefer a hundred times the bad imitations of the antique; these at least do not hurt our cause at all, quite the reverse; whilst a bad Gothic construction furnishes very dangerous weapons with which to oppose the principles which we defend, and I think that in this case we ought to be the first to repudiate them, and refuse them any credit.

The weight of these arguments will, I hope, explain to you the severity of my judgment on your new Houses of Parliament. Besides their author, raised by public opinion to the level of the first architects of ancient and modern times, occupies too high a position for him to care for the opinion and the criticism of a foreigner.

I am the first to recognise the impression of grandeur produced by this immense building, of which the feet are bathed in the Thames, and the summit, cut into a thousand pinnacles, stands out against the clouds and fogs which brood over the great city.

Seen from Westminster Bridge in a fine moonlight, or under certain effects of clouds, one may say that its aspect is magical. It is a fairy palace, a marvel of the Thousand and One Nights.

But, and here you will be greatly astonished, to my eyes this colossal monument does not appear to be conceived according to the fundamental principles of Gothic art. Nay, more, I find that it resembles much rather the appearance and disposition of the antique. Symmetry reigns there in the most despotic, the most absolute manner—all the arcades, all the windows, all the pinnacles, all the niches—in short, all the details—are identically the same in the façade of the building. It is like the Roman column and capital, repeated indefinitely on the four faces of the temple; and if I did not fear to be too severe, I should say that this disposition shows the same Classic purity which characterises the academic plans.

Setting aside the enormous differences of dimensions and of style, the Houses of Parliament appear to me to be open to the same criticisms as our *Hôtel de Ville*, recently enlarged and completed at great expense.

In these two monuments we find the same absence of the real. In the *Hôtel de Ville* the four fronts are alike, and, nevertheless, that of the quay is destined for the great apartments and that opposite for offices; from which it results that the grand arcades, perfectly suitable for lighting the apartments of state, are found to be divided by a floor on the side of the wing destined for the service of administration; and the result is there are offices lighted from below, and in which it is impossible to see clearly in broad daylight.

It is nearly the same thing in the Houses of Parliament—the great internal dispositions are not expressed in the façade; and if you place a stranger before this immense monument, it would be completely impossible for him to guess its destination. It is like the Madeleine and the Chamber of Deputies—ask one who finds himself for the first time on the Place Louis XV. which of these two buildings is a church, and there is no doubt that these two lines of columns, crowned with similar pediments, would place him in the greatest embarrassment.

When I seek to imagine how the architects of the Middle Ages would have dealt with the composition of a palace to serve for the meeting of two such powers as the Houses of Lords and Commons, it appears to me that they would have been occupied, above all, with the idea of expressing strongly in the façade the two great halls destined for those assemblies. I do not know if I am mistaken, but I think also that they would have given more importance to the Upper House; and I am convinced that the aspect of the monument would have presented an infinite variety in accordance with the different uses to which it was destined.

I know well that you will tell me of the two towers ; but, first, what do these two enormous constructions mean ? what is the reason of their existence ? Are they towers of defence, or belfries ?—neither the one nor the other ; and I see, in truth, no argument of real importance which can justify the existence of these two giants. If they are there to recall the two Houses it would have been much more simple, and, above all, much more real to have expressed them, themselves, openly in the façade, instead of drowning them under an ornamentation, in the midst of which it is impossible to suspect them. But I must stop, and I really fear that I have gone too far. Nevertheless, you see that if I criticise the Houses of Parliament, I hold as cheap several of the monuments of Paris, which are generally much admired ; and I hope you will only see in this the very sincere desire of arriving at the truth.

IRRIGATION IN EGYPT.

THE practice in Egypt in calculating the dimensions of canals and distributaries is to allow per day 1,050 cubic feet of water for each acre to be irrigated. In Lower Egypt the period for lower discharges for 1904 has been taken from May 1 to June 30. The mean volume for the six canals withdrawing from the river at the delta barrages was 1,746,395,000 cubic feet per 24 hours. In addition thereto there were taken from the river by pumps and other means 140,980,000 cubic feet per 24 hours during the same periods. Of this quantity, however, 5,075,000 cubic feet per 24 hours were used in Alexandria and Port Said for domestic purposes. After therefore deducting this latter quantity, we have a total of 1,882,300,000 cubic feet per day diverted from the river for the irrigation of the delta land between Cairo and the sea from May 1 to June 30.

The following crops were irrigated during the period under review in the area in question :—

Rice	141,135 acres.
Other crops	1,299,240 "
	1,440,375 "

Assuming, as is usually done, that rice requires twice the quantity of water that other crops do, the actual quantity of water used from the river per acre per 24 hours would be :—

$$\begin{aligned} &1,882,300,000 \\ & (141,135 \times 2) + 1,299,240 \\ & = \text{cubic foot per acre per day.} \\ & = 1,190. \end{aligned}$$

This figure is higher it will be observed than that used for calculating the canals and distributaries by 140 cubic feet per acre per day.

Reducing these figures to the number of acres which one cubic foot of water per second will irrigate, we have—

$$\begin{aligned} & (141,135 \times 2) + 1,299,240 \\ & 1,882,300,000 \\ & 24 \times 60 \times 60 \\ & = \text{acres per cusec.} \\ & = 73. \end{aligned}$$

In Upper Egypt during the periods of low discharge in 1904 the mean volumes for the Ibrahimiyah and the Sabakhah Canals were 369,182,870 cubic feet, and 72,159,185 cubic feet respectively, or a total between Asyut and Cairo of 441,342,055 cubic feet per 24 hours during the summer of 1904.

The total area of crops under irrigation for the period under review was 344,755 acres for the Ibrahimiyah Canal and 52,359 acres for the Sabakhah Canal, making a total of 397,114 acres. The actual quantity of water used from the river per 24 hours would be—

$$\begin{aligned} & 441,342,055 \\ & 397,114 \\ & = \text{cubic foot per acre per day.} \\ & = 1,111. \end{aligned}$$

This is slightly less than Lower Egypt, but higher than the duty reckoned upon.

Reducing these figures to the number of acres which one cubic foot of water per second will irrigate, we have—

$$\begin{aligned} & 397,114 \\ & 441,342,055 \\ & 24 \times 60 \times 60 \\ & = \text{acres per cusec.} \\ & = 78. \end{aligned}$$

Taking Lower and Upper Egypt together, the duty in acres per cusec is 74.

It must, however, be borne in mind that it is quite ordinary for three crops to be grown during the twelve months where perennial irrigation is in vogue, and the average is two and a half crops. In India it is customary to take credit in the duty from the crops grown per annum rather than the acreage of land. Assuming that this is sound practice in the case of Egypt, in order to bring the duty into the same plane as India and make it possible to compare the one with the other, the 74 acres per cusec for the year must be multiplied by 2.5. The duty per cusec for the crops irrigated would be 185 acres.

SPECIFICATION FOR PAINTS, &c.

THE following suggestions are offered by Mr. R. J. Angel, M.Inst.C.E., in the Journal of the Royal Institute of British Architects. He says :—It is not assumed that the list is by any means exhaustive or complete, but it is submitted for the use of other members, who may find a need for the information.

(Percentages calculated on Original Pigments Undried.)

Turpentine.—Refined, genuine American, free from adulteration (optical rotation not less than + 4 degs. 5 mins. in 100-mm. tube).

Terebine.—Finest. One part of terebine, when mixed with sixteen parts of linseed oil and spread in a thin layer on a glass plate, and kept at a temperature of 60 degs. Fahr., must dry in eight hours. To contain not less than 10 per cent. metallic oxides.

Varnishes.—All varnishes to be made from the best pure gums and oils, to flow easily, dry lustrous and with a firm coat in eighteen to twenty-four hours.

Driers.—To contain not less than 20 per cent. of lead or manganese preparations.

White Lead.—To contain not less than 25 per cent. or more than 30 per cent. hydrated oxide.

Red Lead.—To contain not more than 3 per cent. of impurities, to be good colour, smooth and free from grit.

Ochre.—Genuine, of good colour and body. Free from barytes and other base mineral.

Burnt Umber.—To contain not less than 45 per cent. oxide of iron and 15 per cent. manganese dioxide. Free from barytes or other base mineral. To be fine, well ground and free from grit.

Purple Brown.—Containing not less than 60 per cent. oxide of iron, good colour and free from grit.

Ultramarine Blue.—Containing not less than 40 to 45 per cent. silica, 20 to 25 per cent. aluminium oxide, 9 to 10 per cent. sulphur. To be fine and free from gritty matter.

Vermilion.—Pure sulphide of mercury ; ash not to exceed 0.5 per cent.

Venetian Red.—Containing not less than 25 to 30 per cent. oxide of iron. Free from barytes or other base mineral. Fine and free from grit.

Indian Red.—To contain not less than 97 per cent. oxide of iron. Strong in colour and well ground.

Sienna Burnt.—Containing not less than 70 per cent. oxide of iron. Fine, good colour and free from grit.

Sienna Raw.—Containing not less than 60 per cent. oxide of iron. Fine, good colour and free from grit.

Chrome, Lemon and Orange.—Pure commercial, of a fine colour.

Brunswick Green.—To contain not less than 15 per cent. lead chromate, well ground and good body.

Zinc White.—Pure zinc oxide, well made, free from grit.

Lamp Black.—Containing 95 per cent. carbon, mineral matter not to exceed 3 per cent. Free from unburnt oil.

Vegetable Black.—Containing 97 per cent. carbon.

Prussian Blue.—To contain not less than 40 per cent. oxide of iron. Ash must be soluble in dilute acid. Fine and free from grit.

Bronze Green.—To contain not less than 10 per cent. lead chromate.

Emerald Green.—To contain not less than 28 to 30 per cent. copper oxide and 55 to 56 arsenious oxide.

English Gold Leaf (best).—Unadulterated with any foreign material, and must be supplied to whatever tint is required. Twenty-five leaves per book.

Red Oxide.—Containing not less than 65 per cent. oxide of iron. Fine and bright in colour.

The architect will submit such material as may be necessary, whether included in the schedule or not, to an analyst (to be chosen by the architect) for analysis, and

should the report of the analyst indicate that the materials are not equal to the quality or standard specified or ordered, or are not genuine, or do not conform to the specification in any way, the cost of the analysis will be deducted from any moneys due or becoming due to the contractor, and the contractor must, on receiving notice from the architect, remove the rejected articles and supply others equal to the standard specified within two days.

Samples of the materials will be taken on the site, and when in the condition for use on the building, the contractor or his representative will be advised that samples are about to be taken in order that he may be present or be represented. The samples will be divided into three parts, to be then and there separated, and each part will be marked, sealed, or fastened up in such manner as its nature will permit. One part will be delivered to the contractor or his representative, one part will be retained for future comparison, and the third part will be submitted to the analyst. If the contractor or his representative fail to be present, no question will be allowed to be raised afterwards as to the authenticity of the samples should the analysis prove unfavourable.



Bath Stone.

SIR,—My attention has been called to a paragraph, for which I am personally responsible, in the fifth volume of "Modern Buildings," to the effect that all the Bath stone quarries "are owned by the same great combine." This, it appears, is not correct, as there are three large quarries producing stone of the best quality in other ownership, namely, Messrs. Marsh, Son & Gibbs, Ltd., of Hartham Park Quarries; Messrs. Yockney & Co., of the well-known Corsham Down Quarries; the Corsham Quarrying Company, Ridge Quarry, adjoining Monk's Park Estate, and several smaller firms.

I should be exceedingly sorry if any statement of mine, however inadvertently inaccurate, were harmful to the interests of others, as it seems this is likely to be, and should be obliged if you will kindly allow this letter of explanation to appear in correction thereof.—Yours, &c.,

(Signed) G. A. T. MIDDLETON.

19 Craven Street, Strand, London, W.C.:

May 17, 1907.

Acoustics of Churches.

SIR,—Could any of your readers inform me of the best way to improve the acoustic properties of a Gothic church with a high roof? It would be a further favour if they would state where the plan referred to was in operation, so that I and my fellow office-bearers might see it.—Yours truly,

INQUIRER.

GENERAL.

The Glasgow Corporation have approved of a recommendation by the committee dealing with the Corporation's proposed building scheme at Riddrie, to allot premiums for plans to the following architects:—1st (75*l.*), Mr. J. B. Brodie, 141 West George Street; 2nd (50*l.*), Mr. John F. Fairweather, 136 Wellington Street; 3rd (25*l.*), Mr. Richard Henderson, 116 Hope Street.

Mr. Charles Tyson Yerkes, of Chicago, the organiser of street railways, and who was mainly instrumental in the electrification of the District Railway, has bequeathed his residence at the corner of Fifth Avenue, to New York, with the paintings, bronzes, works of art, bric-à-brac, &c., and 750,000 dols. is to be applied to the purpose of forming an art gallery. This bequest will hold good on the death of his wife.

The Annual Report of the Church Building Society stated that the past history of the Society showed that it had been instrumental in aiding in the erection of no less than 2,507 additional new churches, and in assisting in rebuilding, enlarging or otherwise improving the accommodation in 6,477 other churches. By these means more than 2,000,000 additional seats had been secured, by far the greater part of which were for the free use of the parishioners.

Mr. James Hardiman has been appointed county surveyor by the Galway County Council.

Commandatore Boni will lecture in the Sedgwick Museum, Cambridge, on Monday, May 27, at 5 P.M., on "The Forum at Rome." The lecture will be delivered in English, and will be illustrated by lantern slides. The admission will be free.

Mr. G. Denholm Armour, the *Punch* artist, will on Saturday next and during the four following weeks hold an exhibition at the Leicester Galleries, Leicester Square, of his drawings in colour and line of "Hunting, and other Sports." Mr. Armour's first exhibition was held in these galleries nearly two and a half years ago, and met with much appreciation from sportsmen and art lovers alike. The present collection will contain some rather more important works, and will include a few oil-paintings.

A Project for the Haussmannising of the ancient streets of Strasburg is now under consideration by the Municipal Council of the city.

The French President has authorised the Minister of Public Instruction and Fine Arts to accept the archaeological collections of the Baron de Baye, which represent researches in the district of Champagne during a quarter of a century. The objects will be placed in the Louvre.

St. Andrew's Town Church, Glasgow, is to be restored at an estimated cost of 21,300*l.*, under the direction of Mr. Macgregor Chalmers.

The Late James Clarke Hook, R.A., has left property valued at 112,108*l.*

The Chelsea Borough Council have invited six architects to submit a sketch and an estimate for building the proposed workmen's dwellings on a site given by Lord Cadogan.

The Dean and Chapter of Canterbury find that the cathedral is in need of further extensive reparation. A sum of 14,000*l.* has been expended on the central tower and some other parts of the structure, but the repairs of the north-west and south-west towers and the renewal of the south transept gable and pinnacles of the nave will cost nearly 18,000*l.* more.

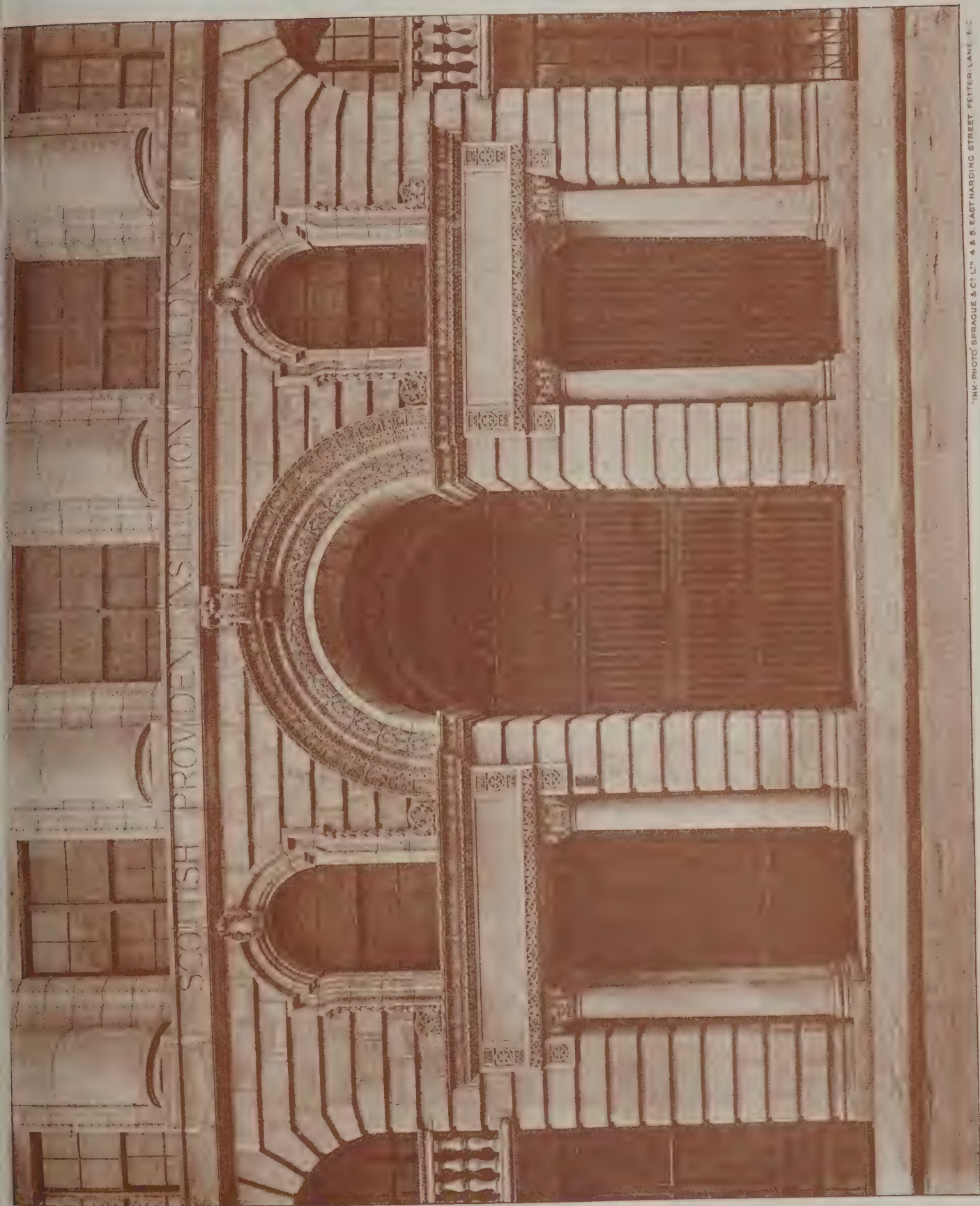
The Trustees of Silcoates School, Wakefield, having decided to build a new school, invited eleven architects to send in competitive plans. Mr. John Ely, of Manchester, acted as assessor. He placed first the designs prepared by Messrs. Oliver & Dodgshun, of Carlisle and Leeds. The estimated cost of the new building is upwards of 9,000*l.*, and the work is to be proceeded with at once.

The Value of the property of the late Miss Eleanor Harriet Duncombe, second daughter of the late Dean of York, has been proved at 37,922*l.* 5*s.* 3*d.* gross. Testatrix left 2,000*l.* to her brother, her house and furniture to another brother, and 5,000*l.* between her cousins, Lucy and Evelyn Whitmore. The residue of her property she bequeathed to the Fabric Fund of York Minster.

At the Annual Meeting of the Manchester Society of Architects the following officers were elected:—President, Mr. Paul Ogden; vice-presidents, Messrs. Edward Hewitt and P. S. Worthington; hon. secretary and treasurer, Mr. Isaac Taylor.

Mr. Sinclair, the Secretary for Scotland, answering a question put upon the House of Commons notice paper, states:—The Local Government Board inform me that in February last it was found that eighteen Scotch burghs had bacteriological systems of sewage purification already in operation. In seven cases systems were being laid down, and in the case of fourteen burghs schemes were under consideration.

The Estates Committee of the Birmingham City Council state that the actual income of the department for the year 1906-7 was 82,066*l.* 3*s.* 1*d.*, including rents 62,030*l.* 19*s.* 3*d.* and income from rates 20,000*l.* The expenditure amounted to 86,191*l.* 7*s.* 6*d.*, leaving a deficiency of 4,125*l.* 4*s.* 5*d.* The deficiency is attributable to a change of policy with regard to the upkeep of the property in charge of the committee. The whole of this property is held pending offers being received to take the land forming the sites upon building leases, and only necessary repairs have in the past been carried out. All the property has been in existence for many years, and the committee have felt that it would be unwise to count upon letting an appreciable area of land for some time, and that they should therefore place the property in a structural and substantial state of repair. This course has been adopted and carried through in the greater part of the property, and the work will be continued until completed.

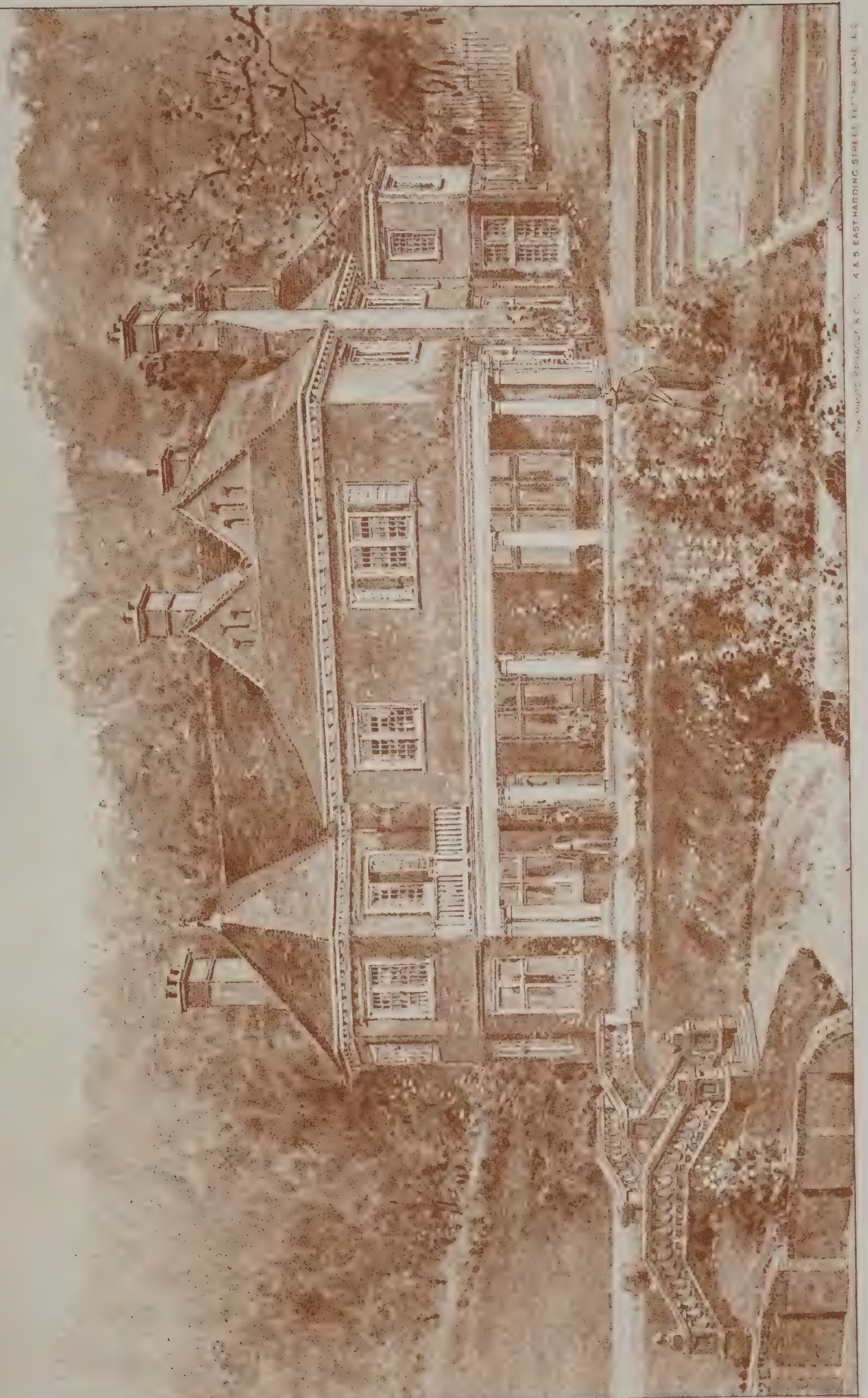


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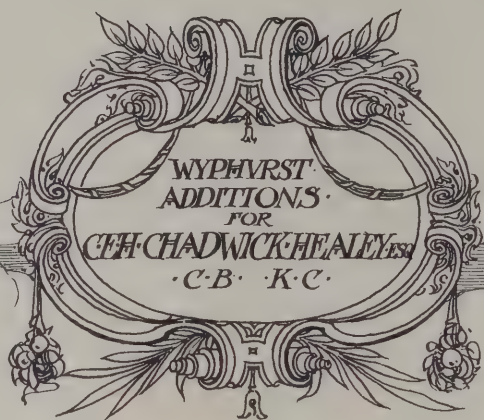




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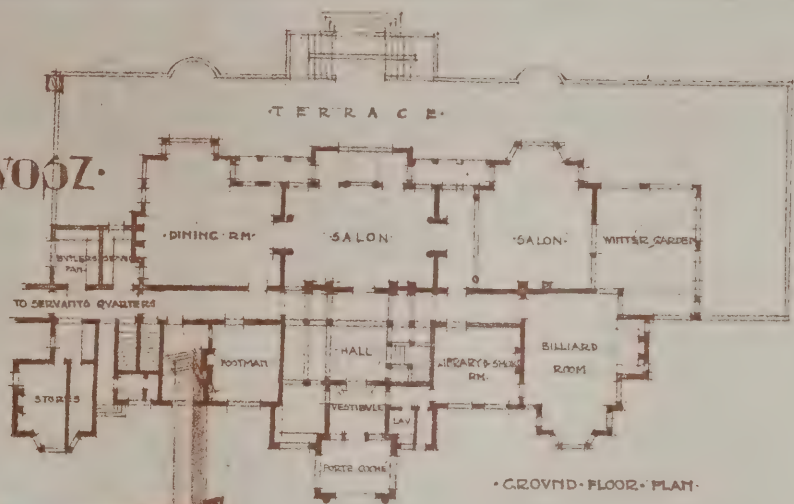
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The Architect.

THE WEEK.

HERE are several interesting objects in the Arts and Crafts Exhibition in the Builders' Exchange, Birmingham, which will remain open until June 20. There are memorials of various worthies whose names are associated with Birmingham, including WATT, MURKIN, BOULTON, BRINDLEY and others. There is a copy of the original design for the town hall by Messrs. HANSOM & WELCH. It has a history. When the design was adopted the committee entered into a contract with a firm of builders who were introduced by the architects. As the price for which they offered to do the work seemed to be too low the committee insisted on the architects becoming security for the contractors. As was to be expected, the architects found themselves in financial difficulties. A Liverpool architect then came forward to supersede Messrs. HANSOM & WELCH. The result was that by winning the competition the architects lost not only three years' labour, but in addition several thousands of pounds. The modern arts and crafts section is most attractive. There are tiles and mosaics by the Art Pavements and Decorations, Ltd.; metalwork by Messrs. CARTLAND & SON, LTD., which manifests how well an old-established firm can realise modern designs; mural tablets, panels, tiles, by Messrs. WOOLLISS & SON, LTD.; beautiful examples of bookbindings and works in the precious metals by the Guild of Handicraft, Ltd., which are worthy to stand in palaces.

A CURIOUS case under the Workmen's Compensation Act has been heard by the Recorder in Dublin. A year ago a man who was employed in the erection of the Iveagh Market fell from scaffolding and his head was injured. Compensation was paid to him regularly until the end of the year. The contractors considered he had recovered. But the man declared he was still suffering from rheumatism and gout, which were the results of his fall. Two medical referees examined him. It, as is not unusual, they took different views of the case. It was, however, ascertained that before the accident the man had been in one of the hospitals as a patient who suffered from rheumatism and gout. The Recorder came to the conclusion that the plaintiff had no case, as he had been subject to an earlier time to the complaints. The case was accordingly dismissed on its merits. But the Recorder recommended that the man should appeal to the contractors to provide for him. The Judge was no doubt inspired by benevolence, and similar recommendations are not uncommon in the Irish Courts. But the question must arise whether in justice there is any obligation on the part of the contractor. And there is also the danger that the alternative will increase the number of claims under the Act. If a workman fails as a suitor he will calculate that the Judge's influence will obtain for him a charity equivalent to the amount he sought as compensation.

THE finances of Italy appear to be in a more hopeful state, especially as the revenue exceeds the expenditure. In the house-tax alone there was an increase of 44,000,000 lire during the year 1906-7. Accordingly the Government have proposed to incur fresh extraordinary expenditure on public works amounting to about 40,000,000,000 lire. Of that amount 24,400,000,000 only—the sum required in addition to the 12,000,000,000 already voted to set the railways in order—would be borrowed. The remainder of the 40,000,000,000 would be furnished from future surpluses and from available Treasury funds spread over a considerable number of years. Part would be employed in improving the ports and harbours of the kingdom (1,000,000,000 lire) and in constructing new lines of railway in parts of the country hitherto unprovided

with them, by means of grants up to the annual amount of 220,000,000 lire; 280,000,000 lire would be spent on improving internal navigation; 240,000,000 lire in regulating the upper courses of rivers and in re-afforestation; 1,000,000,000 lire would be allotted to posts and telegraphs and telephonic service, and 200,000,000 lire would form a first endowment of a fund for the fine arts. Provision would also be made for necessary measures for Sardinia and for Rome and for various other requirements, particularly in connection with national culture and social economy. Finally, the Government propose to set on one side and guarantee henceforward a fund of nearly 800,000,000 lire every year to be expressly and solely used for the purpose of reducing and readjusting taxation, as soon as it should be possible to find a safe and equitable solution of this most difficult question. The favourable condition of the finances may explain the desire to undertake such costly works as the exploration of Herculaneum without the aid of foreigners.

SOME British insurance companies suffered by the destruction of buildings at San Francisco. It is now found the German fire insurance and reinsurance companies which were actively engaged in California experienced serious losses and were financially weakened in the course of 1906 as a consequence of the earthquake. Six of the principal German companies had issued insurances to the extent of 49,253,375 dols., or say ten millions sterling. In view of the extensive participation of German insurance companies in California the indemnifications to which they became liable were prodigious. Several companies were prevented by this loss from paying any dividend; others, after the absorption of reserves, were obliged to encroach upon their share capital and then proceed to financial reconstruction, whilst some could only survive the crisis by giving up their independence altogether and amalgamating with stronger companies. Further losses in connection with the disaster at Valparaiso were avoided through the so-called "earthquake clause."

It was lately announced that the restoration of Holyrood Chapel could not be undertaken, because the legacy of Lord LEVEN was applied to other purposes. The subject came before the General Assembly of the Church of Scotland on Monday. The Presbytery of Edinburgh had formally expressed a desire that the object should be accomplished. The Procurator proposed a resolution to the effect that the Assembly regretted "the difficulty which has arisen in connection with the carrying out of the generous and patriotic proposal of the late Earl of LEVEN AND MELVILLE to restore the chapel of Holyrood, and earnestly hope that means may yet be found for accomplishing the object which he had so dearly at heart." It was stated that the 40,000,000 became the absolute property of young children who were only able to appropriate it to themselves. He said that the suggestion of one of the trustees was that they should wait until the chapel crumbled down, preserving meanwhile the old designs exactly, and that when the building had crumbled away they would have a new chapel according to the old design. The Rev. Professor COOPER advocated, from a religious point of view, that they should seek the restoration of the chapel. Holyrood was the only one of the great palaces which was without a chapel. The nave was 6 feet longer than the nave of Glasgow Cathedral, and by roofing it a magnificent interior could be produced. It remains to be seen whether, when so powerful a body as the General Assembly has advocated restoration, the effort will be more successful than those attempted since the legacy became available. Apparently if the work has to be done it will be necessary to obtain special subscriptions. The Holyrood restoration committee are still of opinion that Lord LEVEN's desire will be realised.

THE DUNDEE FEES CASE.

ACTIONS by architects and engineers for the recovery of fees are not uncommon. It is, however, allowable to assume that one of like magnitude to that brought by the trustees of the late WILLIAM MACKISON against the Town Council of Dundee has never been heard in a Scottish Court. Already four or five busy days have been occupied with the evidence, and it is not certain whether plaintiff's case is exhausted. Unless a compromise is arrived at, the case when it is resumed in October may occupy a still longer time.

We have no intention of expressing any opinion which could be considered as anticipating the judgment of Lord GUTHRIE, who is hearing the case in the Court of Session. But as the proceedings possess interest, perhaps a moral, for those who occupy positions as borough engineers and surveyors, it is allowable, by the aid of the reports in the *Dundee Advertiser*, to describe some of the circumstances which, if we are not mistaken, are not unique in character. Officials and town councils are occasionally disposed to avoid the discussion of claims relating to extra services, and therefore, as in the Dundee case, increase the difficulty of arriving at a settlement. The action may also serve as a warning to men occupying similar positions about the risk of undertaking duties which do not properly belong to them.

The late Mr. WILLIAM MACKISON was exactly the type of man to gain the confidence of the inhabitants of a Scottish town. He was as grave in manner as if he felt he was always a dignitary of the Church. There was no doubt he carried out the varied duties of sanitary inspector, surveyor, engineer and architect in Dundee to the satisfaction of the Town Council. But his manifold duties and his dealings with all conditions of men were insufficient to eradicate a natural timidity which is not usual in officials of his class. His duties, or rather their possible consequences, appeared to have him in their grip, and hence it was necessary for him to talk as well as act with the utmost caution. When such a man found himself in an awkward position through his willingness to exercise his own powers and to promote the welfare of the town which employed him, it is easy to understand that difficulties, especially those of a financial kind, should take from him his power of action. Another man in his place, when he completed extra work for which liberal remuneration would have to be given to outsiders if they were called in, would have sent in his bill without delay, with the consciousness that it would involve him in rows with committees and the town council, that he would be abused by ratepayers in the local newspapers, that he would be threatened with dismissal, but that finally he would not only receive every penny of his charges, but that a precedent would be established and in subsequent years his claims would be met with less and less grumbling, until finally they would be accepted as inevitable. The then town clerk repeatedly urged Mr. MACKISON to prepare his account for extra services, and he warned the committees and the Council that by postponing the settlement of the engineer's claim they were making the task harder for their successors. But all efforts were in vain. After a time the claim came to resemble the proverbial skeleton in the cupboard which neither side care to bring to light, and, as it happened, instead of decaying the dimensions increased as time went on, until it assumed portentous proportions.

When Mr. MACKISON was appointed burgh engineer in May 1868 the population of Dundee was 90,000. The advertisement to which he responded is worth printing as a curiosity:—"The office of Police Surveyor for the burgh of Dundee having become vacant, is now to be filled up. The Surveyor will have to superintend the paving, building and sanitary departments, including cleansing, sewerage and drainage, and the charge of the streets, buildings, &c. He must also be qualified as an architect, and capable to survey and value pro-

perty, and generally to do the duties required. Salary 400*l*." Although the salary is mentioned at 400*l*., it is doubtful for what it was to be paid. Mr. MACKISON considered the amount to refer only to the office burgh engineer. The salary as sanitary inspector was supposed to be 100*l*. in addition, and part of the claim now before the Court is for 3,800*l*., being thirty-eight years' salary for that office, which was never paid. The Local Government Board in 1868 desired to be informed how much Mr. MACKISON was paid as sanitary inspector, and a reply was sent stating that the amount was 100*l*. a year, but his total salary was mentioned. In 1871 there was an increase of salary to 500*l*., but it was not considered by Mr. MACKISON that the sum continued to be irrespective of his salary as sanitary inspector. It will be seen that from the start there was indefiniteness in the financial relations between the official and the Council.

Apparently no higher amount was paid to Mr. MACKISON during his tenure of office. Now let us see what was expected to be done in return for the 500*l*. The total expenditure on works of one class was made out by an accountant as 537,560*l*. Pavements cost 545,319*l*., improvements of streets and roads cost 339,835*l*., and the sewerage 126,075*l*. There were several other items which should be included. For instance, the markets and slaughter-houses cost 57,000*l*. To expect an engineer to become responsible for such a large an outlay and to be contented with a modest salary of 500*l*. a year suggests that men of heroic virtue and limitless self-sacrifice are not rare in Scotland.

If all the works were to be carried out as they were required, or like those for ordinary individuals, it might be said that the proportion between outlay and salary corresponded with what was paid a century before in Scotland. But the works required Parliamentary sanction, and consequently the preparation of plans and estimates which would sustain the closest scrutiny. In these days Parliamentary procedure is familiar to the majority of borough engineers. But in 1871, when an Improvement Act was obtained on the plans of Mr. MACKISON, the steering of a Bill through committees was monopolised by a few men who had to be paid at very high rates. For over thirty years Mr. MACKISON undertook all the Parliamentary work in which an engineer can take part, and, as might be expected from so careful a man, with remarkable success. The Town Council appeared to be unconscious of the labour which was required. On one occasion they offered him an honorarium of 100 guineas, as if that sum were sufficient remuneration. Many years afterwards the reward was increased to 1,000*l*. with an advancement of salary to 100*l*. as a full requital of the long services, but both were declined. The burgh engineer was then an old man, and an actuary would report that the additional amount would not have to be paid during many years. In permitting Mr. MACKISON to undertake duties which it was recognised were outside his official one member of the committee said that all they thought of was whether he was likely to do the work as efficiently as an outsider and more cheaply. In the way year after year was allowed to run without a determined effort to settle the difficulty.

The reason given by Mr. MACKISON for delaying his account was the want of time to prepare so elaborate a document. In making out charges a percentage on estimates or on contracts is the usual basis. In Parliamentary plans and estimates and designing and superintending works which could be regarded as extra to his office, Mr. MACKISON found that his claim amounted to 49,601*l*. The Town Council then offered 4,000*l*. in settlement, which was not accepted; but the claim was reduced to 15,000*l*., which is the sum sought before the Courts.

We believe Mr. MACKISON to have been a conscientious gentleman. But however respectful we may be to his memory we contend that he might have taken

better model than NICK BOTTOM, the weaver. was not considered advisable for a borough council to undertake contracts, but with that exception he was master of the works both architectural and engineering. In connection with the schemes, as any other engineer was employed he must be the leading man in every case. He thought he was qualified for the duties, and his assistants appear to have been of the same humble class. As no question was raised about payment for all his extraordinary services, the Town Council, the good easy men, probably glorified themselves when they compared the cost of architecture and engineering in other towns with that of the burgh engineer's office. In the ordinary course of business had been followed by Mr. MACKISON sent in his bills regularly, the advances of the monopoly would probably be discounted. There would then be a chance for men who are acquainted with construction to find employment in any other way than as draughtsmen or clerks in the office of the burgh engineer.

It is this peculiarity of the case which deserves the consideration both of municipal councils and their engineers. Lord GUTHRIE, in one of his remarks, said:—"I had always the impression throughout the whole time that if Mr. MACKISON had rendered this account he thought it would endanger his position." Why should a reasonable bill for honest services bring such a risk? Mr. MACKISON knew that the Council were living in a fool's paradise, and he lacked the courage to disturb their happiness. If in other cases a similar delusion prevails no time should be lost in putting an end to it. The accounts of the Dundee Town Council were no doubt fully audited and approved. But it was not the accountant's business to inquire into the policy which kept the fees in connection with architecture and engineering out of the books. The Town Council, whatever may be the result of the case, cannot congratulate themselves on their mode of doing business. As regards borough engineers, we need not repeat what we have often said, that the performance of an excess of work is rarely appreciated. Mr. MACKISON was a model official, and the business of the Council, so far as he was concerned, was conducted smoothly. But the offer of less than a tenth the amount he claimed is enough to show how his services were appreciated. That sum we suppose would not have been offered if it were not for the fear of litigation. In dealing with councils it is well for officials to remember how often their constituents are changed, and the new-comers are generally oblivious of the services which were rendered to their predecessors.

DECORATIVE INSCRIPTIONS.

In former days, when "Lucretia Borgia" was included in the repertoire of travelling opera companies, provincial property-men generally found a difficulty in dealing with the scene which represented the palace of the Duke of FERRARA. If it were possible a coat-of-arms appeared on the façade, but generally it was omitted. The inscription beneath it, "BORGIA," was shown in substantial letters, which recalled one of the props necessary for a harlequinade. The hero-tenor is opposed with his sword to remove the B, leaving "ORGIA" as descriptive of the place, and the letter being made of wood used to fall with a thud on the stage. In the Porte St. Martin the incident was, no doubt, better managed, but all old playgoers, at least in the provinces, will recall the familiar sound. It suggested one of the possibilities which await inscriptions where there are thoughtless youths, and it confirmed the wisdom of the English practice in leaving them to be utilised for trade, and for that alone. The neglect of them was typical of our insular character and indifference to the practice of other countries, regardless of its antiquity.

When men found they were able to make records by letters, they were wise in using stone for the purpose. As buildings were supposed to last longer than tablets, walls formed excellent surfaces on which to inscribe the words. It could not have been anticipated that mere tablets of clay were to have a longer duration than the royal palaces of Assyria. But interesting as they are, it must also be remembered that many of the records which have come down to us are cut in stone. Although tablets have been found near temples in some parts of Greece, the absence of inscriptions from the buildings would suggest that it was considered sacrilege by the Greeks to use them even for historical purposes. The Romans were not so fastidious; and an emperor or a private individual who erected or repaired a temple or a bridge, a theatre or a bath, was permitted to announce his liberality on the structure itself. The resemblance between the phraseology of all those inscriptions suggests the fixing of some formula in Rome from which departure was not allowable. At the present time the lapidary style is beyond the resources of many scholars. When we find the Christians in the catacombs or their friends recording their existence and place of burial in long lines of capital letters, we can understand the extent of the desire for remembrance among ordinary Romans. Although he possessed great powers of imagination, HOMER dared not look forward to a longer duration of his fame than was to be found in the lives of his contemporaries. In the verses ascribed to him he implored the women who heard him to mention his name as the sweetest of minstrels, if anyone asked such a question. But at the beginning of our era the Romans were enabled to look forward to a much longer future, and good people desired to have their names associated with it.

The monumental inscriptions of the Romans, and more especially those to be found on temples and triumphal arches, suggest that letters were coming under a law of decoration. Occasionally we find instances where towards the close of a line the letters are not spaced in the same way as at the beginning. But we may pardon the carelessness and insufficient foresight for the sake of the striving after symmetry. Under the best of circumstances Roman letters, when left to themselves, can hardly form an artistic whole, and this fact should be borne in mind when criticising the early efforts to gain attraction for them.

The art of the illuminator imparted a new interest to lettering. A well-written page at first sight seemed to be a triumph of uniformity. But in reality there was a difference between the capitals and the other letters, and greater liberty was allowed to the calligraphists than was possible with stonecutters when dealing with Roman capitals. Memorial brasses continued the principles of the manuscripts, and there seemed no reason why letters should not be employed for other purposes besides those of religion and of memorials of the dead.

According to WARTON, the walls of ancient mansions in France about the fifteenth century were decorated by having love-ditties painted upon them. Besides these and allied compositions, people who took a graver view of life employed Scripture texts and aphorisms from the philosophers. Evidently a third class favoured party cries. We have a survival of the custom in German taverns, especially those in basements. There we can see many old and new compositions in German text. The Germans continue very partial to ornamental lettering, and studious people, when taking their ease, like to be surrounded by something that will recall literature. Germans, however, appear to be as far as ourselves from appreciating inscriptions on the exteriors of buildings unless there are peculiar reasons to justify them. They sanction more often than we do the carving of an architect's name on his building. The German architects are so proud of the distinction that they object to the introduction of contractors' names alongside their own.

The seriousness of the Scottish people was favourable to the employment of inscriptions on buildings, a practice they may have derived from the French. What better advice could be offered to students about indifference to the world's opinion than the words on a stone in a wall of Marischal College, Aberdeen, "Thai say: Quhat say thai? Let them say!" In the kitchen at Abbotsford WALTER SCOTT adopted the old custom of making the stones preach by means of the words, "Waste not: want not." In Edinburgh he could not have failed to see precedents for the practice. On the architrave of a house in the West Bow used to be engraved "Heyt tholis overcummis," which signified that in the end patience conquered; or "to grin and bear it" was sound philosophy. In the Cowgate was another wise inscription, "Gif ve deid as ve sovld, ve micht haif as ve vald," or in Southern English, "If we did as we should, we might have as we would." Over the gate of Craigievar Castle, Aberdeenshire, was inscribed a suggestion which has been widely accepted, "Doe not vaiken sleiping dogges." It is not improbable the advice was familiar before it appeared on a stone slab. The Regent of Marr for his house at Stirling begged kindly criticism, "I prai al lukaris on this lugin with gentil ee to giv thair juging," and the words might often be used in connection with modern residences. The verse which was engraved on Forglen Castle suggested a more firm spirit in the owner, for it announced that envy was a test of worth, and if a man was afraid of censure he should retire to a desert:—

Do veil and dovpnt nocht,
Althoch thov be spyt;
He is lytil gvid vorth,
That is nocht envyt;
Tak thow no tent
Quhat everie man tels;
Gyve thov vald leive ondemit,
Gang quhair na man dvells.

Sermonising is so common in Scotland, both masons and their employers readily adopted the practice. But useful as may have been the intention, it cannot be said the results are decorative. The aim of all art is to afford pleasure, and an attractive house need not warn us it is a pulpit in disguise. Count THIBAUT, of Champagne, apparently was inspired by a truer idea of a host's duties, for, according to the Chronicle, he knew that profound thoughts engendered melancholy, and therefore in his castles at Provins and Troyes he had the walls of the room where his guests assembled painted with the words of the "plus belles chansons" and the most delightful legends. As Gothic lettering was employed in France up to the end of the sixteenth century, those who were able to read the songs and legends probably imagined that such decoration was traditional.

We have no knowledge of any people who utilised inscriptions for decorative purposes with more skill than the Moors or Saracens. The Kufic, Naskhy and Thuluth characters lent themselves to stuccowork and wood-carving as well as to penmanship. Kufic especially, from the preponderance of straight lines and the preference of angular junctions to curves, was adapted for usage in buildings. We cannot suppose the words were as legible as those in Roman characters. Even scholars may have found a difficulty in deciphering long poems when ornamental forms were commingled with them. But patience and ingenuity were rewarded by sentences which recalled the Koran, or praises of some great man, or the self-satisfaction with its beauty which the building or other work expressed in that way. The representation of animal forms was not approved, but it was allowed to describe and suggest them, as, for instance, when a vase says it resembles a devout man turned towards Mecca and about to begin his prayers.

The influence of architecture on minor objects is observable in Moorish work. Similar inscriptions to those found in buildings are to be seen on examples of metal-

work, glass, caskets in ivory, wood coffers, &c. In many of them the name of the person for whom they were made was introduced. Most of the warriors, in addition to their family names, had titles which were supposed to be characteristic conferred upon them, and when these were introduced on any object it became a valuable record. Many instances are to be found in the museum at South Kensington.

The Moorish inscriptions upon the walls of buildings generally consist of verses from the Koran, praise of the owner, the builder or the building and original poems. There are several volumes in which translations more or less exact can be found. For instance in the Alhambra the following inscription is several times repeated in various forms:—"Honour to our master the Sultan, ABOU ABD, ALLAH, ALGANY BELLAH. May God strengthen his rule and increase his happiness." It is remarkable that the Christian artists sometimes adopted a similar formula for the Spanish king. For instance, in Seville there is one to this effect:—"Honour to our master, the Sultan DON BEDR. May God protect him." It is needless to say Sultan BEDR was PEDRO the king. Another favourite inscription for capitals was "There is no other conqueror than God"—words which warriors would be wise to remember.

In the Alhambra there is an inscription on the Gate of Judgment which, if translated, would occupy a dozen lines. And in other places the records are still longer. One of the translators who has attempted to express the meanings was a Mr. SHAKESPEAR. But his interpretations are not accepted by French scholars. Here is one from the Hall of the Two Sisters, translated by Señor. GAYANGOS:—

Praise to God! Delicately have the fingers of the artists embroidered my robe, after setting the jewels of my diadem people compare me to the throne of a bride, yet I surpass it in this, that I can secure the felicity of those who possess me. If anyone approach me complaining of thirst he will receive in exchange cool and limpid water, sweet without admixture, as if I were the bow of the clouds where it first appears and the sun of our Lord Abu-l-hajaj. A monarch whose hands distribute gifts to the needy as often and profusely as the waves succeed each other. May his court be revered and visited as long as the house of God (Mekka) shall continue the resort of pilgrims.

In the inscriptions justice was often done to the artists who created the building. For example, in the mosque of Cordova, after praise of the IMAM, and the Commander of the Faithful, it is announced that the works were completed by DJAFAR, a freed man, the son of ABD-EL-RAHMAN, under the inspection of MOHAMMED the son of AHMED, the son of NASR and of KHALED, the son of HASCHEM, &c., and the inscription terminates with a verse from the Koran. Sometimes the Kufic characters are placed in bands, sometimes they are mixed with the ornament, but however used they do not disturb the general effect of the decoration. It was the aim of the Moorish artists by a diversity of forms to attain a certain evenness both of colour and of form. In other words, the effect sought in tapestry was not ignored in decorations for walls. In that way they produced that neutralised bloom which, according to OWEN JONES should be the aim of every decorator. It was difficult to reconcile that end with the expression of prayer, thanksgiving, flattery, admiration, history and poetry. Indeed, inscriptions with Roman letters always appear prosaic if compared with those in Kufic characters. Attempts were made from time to time to alter Roman letters in various ways and by introducing forms which were more than points for stops. But uncial characters, although perhaps the most successful, never attained the decorative effect of the Moorish lettering.

In our time the excess of business announcements which so often conceals the architectural details of buildings in towns has created a prejudice against the old practice which has been adopted by varieties of people. It is now difficult to imagine that letters could ever become

decorative elements. Single letters, and especially those of Roman form, cannot count for much in that way, but it is possible to produce adaptations which, with the aid of ornament, will give pleasure to all who look on them. But as there are records of a different kind which can convey any information about a building which is desired, it must be acknowledged that not even Egypt or Turkey show any need for decorative inscriptions like those which at one time gratified believers.

LEGAL BOOK REVIEWS.

The Law of Building, Engineering and Shipbuilding Contracts, and of the Duties and Liabilities of Engineers, Architects, Surveyors and Valuers. With precedents and reports of cases. By Alfred A. Hudson, of the Inner Temple, Barrister-at-Law. Third Edition. Two vols. (London: Sweet & Maxwell, Ltd. Price 2l. 12s. 6d.)

The London Building Acts, including the London Building Acts of 1894, 1898 and 1905. A text-book on the law relating to building in the Metropolis, for the use of architects, surveyors, builders, &c. By the late Professor Banister Fletcher, J.P., D.L., F.R.I.B.A., F.K.C., &c. Fourth Edition, revised by Banister F. Fletcher, F.R.I.B.A., F.S.I., and H. Phillips Fletcher, F.R.I.B.A., F.S.I., of the Middle Temple, Barrister-at-Law. (London: T. T. Batsford. Price 6s. 6d.)

THE first of these books is already as well known to members of the building, engineering and allied professional trades as to members of the legal profession. The fact that it has already reached a third edition speaks for it more eloquently than the words of a reviewer. The first volume is a careful treatise upon the principles of the law relating to the subject. The first chapter deals with the question of building contracts generally, and their peculiarities, their construction and the position of the builder. Chapter two is divided into three parts. The first part deals with the authority of architects and engineers, the second part with their duties and liabilities, the third part with the charges of engineers, architects and surveyors. Chapter three deals with quantity surveyors and bills of quantities; chapter four with tenders and contracts generally; chapter five with contracts with public bodies; chapter six with performance and payment; chapter seven with approval and certificates; chapter eight with extras; chapter nine with price and charges; chapter ten with vesting of material, lien and forfeiture; chapter eleven with assignment of contracts; chapter twelve with guarantee and sureties; chapter thirteen with arbitration and award; chapter fourteen with the liability of owners and contractors for nuisance and negligence. The second volume contains a useful collection of reports and precedents. Throughout the book the most recent cases are cited, and the index makes the large mass of material digested readily accessible. So far as we have tested the book the statements in the text are accurate, and fully borne out by the authorities cited. When necessary convenient references are given to text-books which deal specially with outlying portions of the subject. The thorny subject of the Statute of Frauds is very clearly dealt with, and the special rules affecting contracts with the Crown and other public bodies are usefully summarised. We should have liked to see a somewhat fuller consideration given to the effect of the Public Authorities Protection Acts, 1893. The exact extent of that Act is not, perhaps, as yet wholly free from doubt. We should also have liked to see some attempt made to extract the principles (which are not altogether consistent) underlying the various decisions which have been given upon the extent of its application. A very clear account is given of the subject of suretyship, and assignment of rights under a contract, so far as it applies to a subject in hand. On the whole the book is an able summary of the general principles of the law in their application to the whole subject of building contracts. It gives to the lawyer the information necessary to connect his legal knowledge with the operations of building; and to the builder, engineer

or architect the information necessary to enable him to see the point of view from which the law regards the various operations of his trade or profession.

The second of these books is also well known to all builders and architects. The London Building Acts and by-laws are printed on thin paper in a form which renders them portable; and the index enables any point arising under them to be easily found. The explanatory notes and cases generally cover the points upon which difficulty may be likely to arise, or, at any rate, provide a reference which will put the inquirer on the track of the decisions which may enable him to solve his difficulty. The plans and diagrams contained in the book add greatly to its value, both to the architect and the lawyer. We have no doubt that this work will be found an improved edition of an already good book, and that it will meet with the success of its predecessors.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. T. E. Colcutt, president, in the chair.

Mr. ALEXANDER GRAHAM (hon. secretary) announced the decease of the following members:—David Jenkins, elected Associate 1888, Fellow 1894; W. Hewson Lees, Associate 1865; George Saunders, Associate 1856, Fellow 1869; W. Wood Robertson, elected as Fellow in December last, and Sir Benjamin Baker, elected hon. Associate 1896.

Reinforced Concrete.

A provisional report of the committee consisting of Sir Henry Tanner, Messrs. Walmisley, Dunn, Max Clarke, Searles-Wood, Watson, Dru Drury, Greenwood, F. May, Collins, Cockrell, Colonel Mayne, Major Paul, Colonel Winn, Professor Unwin, Messrs. Colson and Marsh was presented. It stated:—

1. Reinforced concrete is used so much in building and engineering construction that a general agreement on the essential requirements of good work is desirable. The proposals which follow are intended to embody these essentials, and to apply generally to all systems of reinforcement. Good workmanship and materials are essential in reinforced concrete. With these and good design structures of this kind appear to be trustworthy. It is essential that the workmen employed should be skilled in this class of construction. Very careful superintendence is required during the execution of the work in regard to—

(a) The quality, testing and mixing of the materials. (b) The sizes and positions of the reinforcements. (c) The construction and removal of centring. (d) The laying of the material in place and the thorough punning of the concrete to insure solidity and freedom from voids. If the metal skeleton is properly coated with cement, and the concrete is solid and free from voids, there is no reason to fear decay of the reinforcement in concrete of stone, gravel, cinder, coke-breeze, &c., made with clean fresh water.

2. The by-laws regulating building in this country require external walls to be in brick or stone, or concrete of certain specified thicknesses. In some places it is in the power of the local authorities to permit a reduced thickness of concrete when it is strengthened by metal; in other districts no such power has been retained. We are of opinion that all by-laws should be so altered as to expressly include reinforced concrete amongst the recognised forms of construction. A section should be added to the by-laws declaring that when it is desired to erect buildings in reinforced concrete complete drawings showing all details of construction and the sizes and positions of reinforcing bars, a specification of the materials to be used and proportions of the concrete, and the necessary calculations of strength based on the rules contained in this report, signed by the person or persons responsible for the design and execution of the work, shall be approved by and submitted to the local authority.

3. *Fire Resistance.*—(a) Floors, walls and other constructions in steel and concrete formed of incombustible materials prevent the spread of fire in varying degrees according to the composition of the concrete, the thickness of the parts and the amount of cover given to the metal.

(b) Experiment and actual experience of fires show that concrete in which limestone is used for the aggregate is

disintegrated, crumbles and loses coherence when subjected to very fierce fires, and that concretes of gravel or sandstones also suffer, but in a rather less degree.* The metal reinforcement in such cases generally retains the mass in position, but the strength of the part is so much diminished that it must be renewed.

Concrete in which coke-breeze, cinders or slag form the aggregate is only superficially injured, does not lose its strength, and in general may be repaired. Concrete of broken brick suffers more than cinder concrete and less than gravel or stone concrete.

(c) The material to be used in any given case should be governed by the amount of fire resistance required as well as by the cheapness of, or the facility of procuring, the aggregate.

(d) Rigidly attached web members, loose stirrups, bent-up rods, or similar means of connecting the metal in the lower or tension sides of beams or floor slabs (which sides suffer most injury in case of fire) with the upper or compression sides of beams or slabs not usually injured, are very desirable.

(e) For main beams a covering of $1\frac{1}{2}$ inch to 2 inches of concrete over the metal reinforcement appears from experience in actual fires to afford ample protection to the structural parts. In floor slabs the cover required may be reduced to 1 inch.

All angles should be rounded or splayed to prevent spalling off under heat.

(f) More perfect protection to the structure is required under very high temperature, and in the most severe conditions it is desirable to cover the concrete structure with fire-resisting plastering which may be easily renewed.

Columns may be covered with coke-breeze concrete, terra-cotta, or other fire-resisting facing.

Materials.

4. *Cement.*—Only Portland cement complying with the requirements of the specification adopted by the British Engineering Standards Committee should be employed; in general the slow-setting quality should be used. Every lot of cement delivered should be tested, and in addition the tests for soundness and time of setting, which can be made without expensive apparatus, should be applied frequently during construction. The cement should be delivered on the work in bags or barrels bearing the maker's name and the weight of the cement contained.

5. *Sand.*—The sand should be composed of hard grains of various sizes up to particles which will pass a $\frac{1}{4}$ -inch square mesh, but of which at least 75 per cent. should pass $\frac{3}{8}$ -inch square mesh. Fine sand alone is not so suitable, but the finer the sand the greater is the quantity of cement required for equal strength of mortar. It should be clean and free from ligneous, organic or earthy matter. The value of a sand cannot always be judged from its appearance, and tests of the mortar prepared with the cement and the sand proposed should always be made. Washing sand does not always improve it, as the finer particles which may be of value to the compactness and solidity of the mortar are carried away in the process.

6. *Aggregate.*—The aggregate, consisting of gravel, hard stone or other suitable material, should be clean and angular, varied in size as much as possible between the limits of size allowed for the work. In all cases material which passes a sieve of a $\frac{1}{4}$ -inch square mesh should be reckoned as sand. The maximum allowable size is usually $\frac{3}{4}$ inch. The maximum limit must always be such that the aggregate can pass between the reinforcing bars and between these and the centring. The sand should be separated from the gravel or broken stone by screening before the materials are measured.

7. *Proportions of the Concrete.*—In all cases the proportions of the cement, sand and aggregate should be separately specified in volumes. As the strength and durability of reinforced concrete structures depend mostly on the concrete being properly proportioned, it is desirable that in all important cases tests should be made as described herein with the actual materials that will be used in the work before the detailed designs for the work are prepared. In no case should less dry cement be added to the sand when dry than will suffice to fill its interstices, but subject to that the proportions of the sand and cement should be settled with reference to the strength required, and the volume of mortar produced by the admixture of sand and cement in

the proportions arranged should be ascertained.* The interstices in the aggregate should be measured and at least sufficient mortar allowed to each volume of aggregate to fill the interstices and leave at least 10 per cent. surplus. For ordinary work a proportion of one part of cement to two parts sand will be found to give a strong practically water-tight mortar, but where special watertightness or strength is required the proportion of cement must be increased. The amount of cement added to the aggregate should be determined on the work by weight. The weight of a cubic foot of cement for the purpose of proportioning the amount of cement to be added may be taken at 90 lbs.

8. The metal used should be steel having the following qualities:—

(a) An ultimate strength of not less than 60,000 lbs. per square inch.

(b) An elastic limit of not less than 50 per cent., or more than 60 per cent. of the ultimate.

(c) An elongation of not less than 22 per cent. in the lengths stated below.

(d) It must stand bending cold 180 degs. to a diameter of the thickness of pieces tested without fracture on outside of bent portion.

In the case of round bars the elongation should not be less than 22 per cent., measured on a gauge-length of eight diameters. In the case of bars over 1 inch in diameter the elongation may be measured on a gauge-length of four diameters and should then be not less than 27 per cent. For other sectional material the tensile and elongation tests should be those prescribed in the British Standard Specification for Structural Steel. Before use in the work the metal must be clean and free from scale or loose rust. It should not be oiled or painted, but a wash of thick Portland cement grout is desirable. Welding should in general be forbidden; if it is found necessary, it should be at points where the metal is least stressed, and it should never be allowed without the special sanction of the architect or engineer responsible for the design. The reinforcement ought to be placed and kept exactly in the positions marked on the drawings, and, apart from any consideration of fire resistance, ought not to be nearer the surface of the concrete at any point than 1 inch in beams and $\frac{3}{8}$ inch in floor slabs or other thin structures.

9. *Mixing: General.*—In all cases the concrete should be mixed in small batches and in accurate proportions, and should be laid as rapidly as possible.

Hand-mixing.—When the materials are mixed by hand they are to be turned over and thoroughly mixed on a clean platform until the colour of the cement is uniformly distributed over the aggregate.

Machine-mixing.—Whenever practicable the concrete should be mixed by machinery.

10. *Laying.*—The thickness of loose concrete that is to be punned should not exceed 3 inches before punning, especially in the vicinity of the reinforcing metal. Special care is to be taken to insure perfect contact between the concrete and the reinforcement, and the punning to be continued till the concrete is thoroughly consolidated. Each section of concreting should be as far as possible completed in one operation; when this is impracticable and work has to be recommenced on a recently laid surface it is necessary to wet the surface; and where it has hardened it must be hacked off, swept clean and covered with cement grout. Work should not be carried on when the temperature is below 34 degs. Fahr. The concrete when laid should be protected from the action of frost, and shielded against too rapid drying from exposure to the sun's rays or winds, and kept well wetted. All shaking and jarring must be avoided. The efficiency of the structure depends chiefly on the care with which the laying is done.

Water.—The amount of water to be added depends on the temperature at the time of mixing, the materials and the state of these and other factors, and no recommendation has therefore been made. Sea-water should not be used.

11. *Centring or Casing.*—The centring must be of such dimensions and so constructed as to remain rigid and unyielding during the laying and punning of the concrete. It

* For convenience on small works the following figures may be taken as a guide, and are probably approximately correct for medium silicious sand:—

Parts Cement.		Parts Sand.		Parts Mortar.
1	+	$\frac{1}{2}$	=	1'20
1	+	1	=	1'50
1	+	$1\frac{1}{2}$	=	1'90
1	+	2	=	2'35
1	+	$2\frac{1}{2}$	=	2'70
1	+	3	=	3'00

* The smaller the aggregate the less the injury.

must be so arranged as to permit of easing and removal without jarring the concrete. Provision should be made wherever practicable for splaying or rounding the angles of the concrete. Timber when used for centring may be advantageously limewashed before the concrete is deposited.

12. *Striking of Centres*.—The time during which the centres should remain up depends on various circumstances, such as the dimensions or thickness of the parts of the work, the amount of water used in mixing, the state of the weather during laying and setting, &c., and must be left to the judgment of the person responsible for the work. The casing for columns, for the sides of beams and for the soffits of floor slabs not more than 4 feet span must not be removed under eight days; soffits of beams and of floors of greater span should remain up for at least fourteen days, and for large span arches for at least twenty-eight days. The centring of floors in buildings which are not loaded for some time after the removal of same may be removed in a short time; the centring for structures which are to be used as soon as completed must remain in place much longer. If frost occurs during setting, the time should be increased by the duration of the frost.

13. *Testing*.—Before the detailed designs for an important work are prepared and during the execution of such a work test pieces of concrete should be made from the cement, sand and aggregate to be used in the work, mixed in the proportions specified. These pieces should be either cubes of not less than 4 inches each way, or cylinders not less than 4 inches diameter and of a length not less than the diameter. They should be prepared in moulds and punned as described for the work. Not less than four cubes or cylinders should be used for each test, which should be made twenty-eight days after moulding. The pieces should be tested by compression, the load being slowly and uniformly applied. The average of the results should be taken as the strength of the concrete for the purposes of calculation, and in the case of concrete made in proportions of 1 cement, 2 sand, 4 hard stone, the strength should not be less than 2,400 lbs. per square inch.

Loading tests on the structure itself should not be made until at least two months have elapsed since the laying of the concrete. The test load should not exceed one and a half times the accidental load. Consideration must also be given to the action of the adjoining parts of the structure in cases of partial loading. In no case should any test load be allowed which would cause the stress in any part of the reinforcement to exceed two-thirds of that at which the steel reaches its elastic limit.

Suggestions are also given in the report about methods of calculation, with papers by Professor W. C. Unwin and Mr. W. Dunn.

SIR HENRY TANNER, chairman of the joint committee on reinforced concrete, said the Admiralty, War Office, municipal and county surveyors, district surveyors, Institute of Builders and the Royal Institute of British Architects were all represented on the committee. The reference to the committee was in the following terms:—"To draw up rules for the guidance of architects for the use of reinforced concrete." The result of the committee's deliberations was in the provisional report, which it was hoped would be adopted that night. There had not been hitherto in this country any authoritative pronouncement on the necessary rules to be observed in such construction. In many ways this had prevented the employment of reinforced concrete, such employment being practically prohibited for complete buildings under the ordinary building rules and regulations, and it was only those bodies who were free from these restrictions, such as railway and dock companies, who had been able to avail themselves of so economical and space saving a method of construction, and on these points he spoke from experience. Other countries had been more lenient, and in consequence those countries were far in advance of this, both as to general knowledge of the material and skill in its use. However, they hoped that if the meeting adopted the rules which had been prepared this country might not for long occupy the backward position that it now did. It was found desirable to form sub-committees for the consideration of special branches of the subject, and these were three in number, viz.:—(1) Fire resistance, Mr. T. H. Watson, chairman; (2) materials, Colonel Mayne, R.E., chairman; and (3) formulæ, Professor Unwin, chairman. These committees had to consider an enormous mass of literature, including the regulations in force in other countries, and only those who had studied the subject were aware of the innumerable experiments,

theories, writings and reports of discussions which were available. To begin with, Messrs. Cubitt kindly put at the disposal of the committee seventeen beams, plain and reinforced, for testing to destruction, the direction of the tests being undertaken by Professor Unwin. These were the only tests made under the supervision of the committee, it being found that the available records of all kinds of accurately tabulated tests by various public authorities, technical colleges and other bodies had largely removed the material from the unknown, and that what was required was rather a reasoned theory, based on the recorded experiments than on a further series of experiments of their own, the latter, indeed, being beyond the means at their command. There were, of course, various disputed points which must be settled by further experiment, such as the width of flange in beams, but to these the report drew attention without laying down definite rules. The aim of the committee had been the production of a good working guide, the laying down of the necessary conditions and settling safe rules for a proper disposition of the parts. Hitherto every specialist in this country had made his own rules, perhaps more or less approximately accurate, but the margin of safety had been occasionally cut too fine. It should not be enough that a structure bore its working load without apparent distress, because a specially well-made floor might stand loads far beyond the average without breaking down; but they had to provide such a margin of safety as would cover ordinary inattention or ordinary defects of workmanship. The difficulty had been to determine the merits of rival systems, each specialist naturally regarding his own system as the best; but the report and rules before them would enable an accurate judgment to be arrived at by the architect himself if he had the requisite knowledge, or with the aid of a consulting engineer if he preferred. The rules proposed were by no means revolutionary, and the same principles were being adopted abroad, but with some variations of detail. They could be adopted as the basis on which tenders might be obtained, and so insure that these shall be prepared on equal terms; and it was hoped that they would be of considerable service in placing building construction of this type upon a recognised footing and serve to explode the idea that there was anything of an occult nature connected with the necessary calculations. For some fifty years past, viz. from the date of Wilkinson's patent in 1854, the attention of many men had been directed to improving the theory and adding to the practice of building in concrete reinforced in various ways, and it could not be said that the present state of knowledge was due to the efforts of any one man. Special skill was, of course, needed owing to the limited practice, but in the preparation of the report a preference for any feature which was claimed as patent had been avoided. Therefore special forms of bar or peculiar arrangements were not referred to, and they had confined themselves to the laying down of principles for all kinds of structures reinforced with ordinary bars. The report itself, although short, was the result of many lengthy discussions and investigations. It was not claimed to be final, but simply a reasonable guide in the present state of knowledge. In conclusion, Sir Henry moved the adoption of the report, and that copies with explanatory letters be sent to the Local Government Board and the London County Council.

Mr. JOHN SLATER seconded the adoption of the report, and suggested that the deliberations of the committee would do much to encourage the advance of construction in ferro-concrete. A great deal of the report was of a very abstruse nature, but he thought they could endorse the recommendation of the committee that the existing by-laws ought undoubtedly to be so modified and altered as to allow of the extensive use of the new material.

Mr. E. F. ETCHells, while congratulating the Institute as the pioneers of reinforced concrete construction in this country, suggested alterations to some of the mathematical solutions set forth in the report, which are to be further considered by the committee.

The other speakers were Mr. H. D. Searles-Wood, Mr. Wm. Dunn, Major E. M. Paul, R.E., Mr. Matt Garbutt, Mr. C. F. Marsh, Mr. E. T. Hall, Mr. J. J. Burnet and the President.

A hearty vote of thanks was passed to the committee for their investigations, and the meeting terminated.

The Hearing of workmen's compensation cases, of which there is a list of thirty-six, was proceeded with in the Appeal Court on Wednesday last and will be continued until further notice.

NOTES AND COMMENTS.

THE announcement of the sale of Crosby Hall naturally excites alarm about the fate of the building. To some extent the public should be considered as having an interest in the property, for in 1832, when it was on the eve of demolition, subscriptions were obtained not only for the restoration of the building but for securing an interest in it which was to be equal to a freehold. It was then proposed to use Crosby Hall as a museum of national antiquities—for which it was hardly of sufficient size—or as the theatre for the delivery of the Gresham lectures. What we see at present is no more than a portion of the mansion which was erected in 1465 by Sir JOHN CROSBY, grocer and woolman. It was built of stone and timber, and was the highest at the time in London. Afterwards the Duke of GLOUCESTER, who subsequently became RICHARD III., purchased the property and used it as a residence. Succeeding tenants altered the house, and it seems to have been utilised as a dwelling by foreign ambassadors. Sir JOHN SPENCER, alderman, purchased the house and kept his mayoralty in it in 1594. He, however, allowed "Monsieur DE ROSNEY," Great Treasurer of France, with his retinue, which was very splendid, to be there harboured. In the reign of CHARLES II. the great hall became a place of worship for Nonconformists, and for nearly a century and a half it was used for religious purposes. STRYPE described it as "this large and convenient house now built into a square of good houses and called Crosby Square." Like other buildings in London it was sacrificed to the purposes of trade, and was occupied by wharfingers and packers. At the present time it is a restaurant. But it has been embellished to an extent that would have amazed Sir JOHN CROSBY and the fifteenth-century builders. Whether it will be continued in that use or will be sacrificed to make way for a building of a different class—say, a bank—are questions which seem to be insolvable for the present.

THE craze for cheap cottages has had the effect of making people believe that substantial buildings can be erected for small sums and that an architect can anticipate the outlay to a penny. A case which was heard a few days ago in the Portsmouth County Court suggests the effects of the belief. Mr. WILBERFORCE COBBETT, of Fareham, architect, prepared three sets of plans and specifications for a client who wished to erect a cheap house. The defendant said that he could not expend more than 300*l.* on the building, but the builder's tender was 364*l.* Then the defendant said he could not use the plans and returned them. Afterwards a cheque for 3*l.* 3*s.* was sent, which plaintiff declined to accept on the ground that the amount was below the Institute scale. A builder gave evidence that the cost of the house as erected from other plans was 283*l.* The Judge decided in favour of the defendant. He considered that when a man asked for plans of a house to cost 300*l.* it was unreasonable to plan a house that would cost 364*l.* Such a difference was too wide to be excused. The plaintiff therefore not only loses his labour, but will have to pay costs. The result is ominous not only for the ignoring of the Institute scale, but for making a tender become the only test of the fitness of a plan. We suppose the builder would not have denied that the house which was to cost 360*l.* had advantages over one costing 283*l.* But the difference was not taken into consideration.

It is reported by Sir PERCY SANDERSON, the British Consul at New York, that there is a considerable increase in the importation of works of art from France, the value in 1906 being nearly three times as great as in 1904. The dutiable value was entered for last year at 852,000*l.* Unfortunately, the value of the imported

works of art from the United Kingdom decreased compared with 1905, and were only fractionally higher than in 1904. British artists and dealers are at a disadvantage in respect of this class of goods, having no reciprocity arrangements with the United States, and have France, Italy and Portugal. Why the United Kingdom should be handicapped is not plain, and inquiry on the subject should be made in Parliament. American amateurs profess to admire the paintings and other works produced in this country, but the price to be paid for them is higher than is expected for French and Italian works, and the heavy import duty accordingly becomes prohibitive.

It is fortunate for the Musée Guimet in Paris that M. GAYET is not under the obligation to hand over the results of his explorations at Antinoë to the Egyptians. Knowing the preference of French people for whatever is directly representative of life, he has given more attention to mummies than is now common with the majority of archæologists. The consequence is that the Musée is becoming a portrait gallery, which has an unique charm. Among the revelations of this year is a Lady DIOUNESAST, who was a favourite with the king. The remains were found in a vaulted chamber lying in a sarcophagus, which was in the Greek style. The figure was clad in a robe of grey silk, adorned with arabesques. The vest was red, and the head rested on a cushion marked by blue, red and yellow stripes. In the sarcophagus were a crown of plaited straw and leaves, ivory figures of bacchantes, a statuette of HORUS, two glass flagons, three vessels of terra-cotta, a thyrsis and a ring. Elsewhere was found a figure which is described as that of a prophetess. During the past year M. GAYET has been fortunate in discovering several painted portraits of a late period of Egyptian art.

THE practice of submitting tenders at prices which are below market rates, and then after acceptance declining to enter into a contract on account of clerical errors, is growing. There can be no question that delay, inconvenience and confusion follow that way of transacting business, and it is sometimes imagined more serious consequences are likely to arise from such a beginning. One of the members of the Portsmouth Town Council at the meeting this week proposed the following resolution in order to put a stop to the practice:—"That in the event of any person or firm submitting to the Council a tender for any goods or work, and desiring to withdraw the tender for any reason whatsoever after its acceptance by a committee or by the Council, no tender subsequently submitted to the Council for goods or work by such person or firm be considered or received by a committee or by the Council for a period of three years from the date of the withdrawal of the previous tender, and that a notification to this effect be appended to all forms of tender." The proposal was not adopted, but it suggests the discontent which exists in many municipal council-rooms. Contractors, like other mortals, are liable to mistakes, and when they are accidental it is right to overlook them, but deliberate errors to gain a purpose and to complicate business should not be readily pardoned.

ILLUSTRATIONS.

CATHEDRAL SERIES.—CARLISLE: VIEW FROM SOUTH TRANSEPT, SHOWING NORMAN ARCH.

NEW THEATRE, CARDIFF.—EXTERIOR—AUDITORIUM.

WOOLWICH HIPPODROME.

COTTAGES, ROBERTSBIDGE, SUSSEX.

HAMPTON COURT.*

THOMAS WOLSEY was born in 1471 and died in 1530. The son of a butcher at Ipswich, he was early sent to Magdalen College, and obtained his degree of Bachelor of Arts before he was fifteen years of age, and thus became known to his friends as the "Boy Bachelor." Showing thus early his aptitude he soon acquired a fellowship at Magdalen and became a master of the college school, where he had as pupils the sons of the Marquis of Dorset, who presented Wolsey to his first cure, the living of Wymington, Somerset. The next step in his career was the post of domestic chaplain and secretary to Henry Deane, Archbishop of Canterbury. Then, after a short period in continental chaplaincy, he was appointed chaplain to the king. He came to the notice of Bishop Fox, Lord Privy Seal, and Sir Thomas Lovel, treasurer of the royal household, and his ability procured for him some diplomatic commissions at the courts of Scotland and Germany. Subsequently he obtained the deanery of Lincoln, was almoner to the king and a royal councillor. Then he received the living of Torrington, in Devonshire, became Registrar of the Order of the Garter, and Canon of Windsor. In 1514 he was consecrated Bishop of Lincoln, and in the same year Archbishop of York. In the succeeding year he received a cardinal's hat from the Pope, as well as a commission as legate. Other benefices were showered upon him through the king's favour, and the proud prelate became rich—not that he neglected the duties of wealth while accepting its gifts. He founded Cardinal's College, Oxford (now Christ Church), and built a new grammar school at Ipswich and has left us also the palace of Hampton Court, which he designed and built in part. His rapid rise was followed by a still swifter fall, delineated by

make a glorious report of it in their country, to the great honour of the king and his realm." Such great preparations were made and the guests sat down to the wonderful feast provided for them, but the cardinal had not yet appeared. The gaiety was at its height when before the second course my lord cardinal came in, booted and spurred, and bade them welcome. All rising in their places he bade them be seated, called for a chair, "and sat down in the midst of the high paradise, laughing and being as merry as ever I saw him in all my life."

It would have been unworthy on entering Hampton Court not to pause and contemplate for awhile the singular story and fate of the great man who raised it. These ancient towers and courts are full of the memory of that strange fortune, and will be for many a long generation yet; and now that the great mass of the people is at once admitted to education and to this place, the history of Wolsey—at one time said to be a butcher's son, at another stretching his lordly hand over this realm, making foreign princes tremble at it, reaching it out even to the papal tiara, and then again a poor and sinking suppliant, exclaiming,

"O, father abbot,
An old man broken with the storms of state
Is come to lay his weary bones among ye;
Give him a little earth for charity."

—will be more widely known and wondered at. (Howitt, "Visits to Remarkable Places.")

The original design of Wolsey, who was a born architect in addition to his other attainments, was a building with five courts, wholly of brick, ornamented with an interlacing of dark-coloured bricks. He lived here in a way that far exceeded the magnificence of many a sovereign



Shakespeare with all his wonderful facility and dramatic instinct. Retiring finally to Leicester Abbey, there he died and was buried, but no monument remains to mark the place of his interment.

Hampton is recorded in Domesday Book as Hamntone, where it is stated that the whole value of the manor was forty shillings. It passed into the hands of the Knights Hospitallers of St. John of Jerusalem, and Cardinal Wolsey secured a lease for ninety-nine years from Sir Thomas Dewra, the last prior. He commenced to rebuild the manor-house, which is the starting-point of the noble block of buildings now existing. Henry VIII., on his favourite's disgrace, demolished the hall, chapel and other buildings, so that the present hall is the work of the king. Wolsey made a present, probably involuntarily, of the palace to the king, who in return bestowed upon the cardinal the manor-house at Richmond; however, he frequently visited Hampton Court, for we find that at Henry's direct command he entertained the ambassadors of the Court of France in 1527. Wendish, in his "Life of Wolsey," says that "he called before him his principal officers, to whom he declared his mind touching the entertainment of the Frenchmen at Hampton Court, commanding them neither to spare for any cost, expense, or travayle, to make such a triumphant banquet as they might not only wonder at it here, but also

He had two thousand persons in his suite, and there were beds for two hundred and eighty visitors of high rank.

Entering the palace by the western gateway we note the western quadrangle, occupied chiefly by Government pensioners, and the barracks are adjacent. The principal gateway is flanked with octagon towers with a fine pointed arch; above are the Royal arms and a large stone bay window. The Great Hall was built by Henry VIII., and is a grand building, possessing one of the finest roofs in the kingdom, ranking with those of Eltham, Crosby Hall and Westminster. The stained glass is modern, but in excellent taste and keeping with the hall itself. The hall was originally tile paved and had the open hearth, which had the fire to supply both light and heat. The wonderful tapestries upon the wall, illustrating scenes in the life of Abraham, were taken in an inventory in 1548, with other effects of Henry VIII. Again in 1649 an inventory of Charles I.'s goods included the tapestries, which were estimated at 10*l.* a yard, totalling 8,260*l.* They were retained for Cromwell's use, and we can realise that they have passed through all these years from Henry VIII.'s time till now, and are in a wonderful state of preservation.

The king's great staircase is approached through the interesting colonnade, and here we enter the domain of Sir Christopher Wren's work, which was finished about 1700. The decoration of the staircase is impossible of description in a limited space, as becomes so transcendent a theme as

A paper read at a meeting of the Upper Norwood Athenæum by Mr. Charles Wheeler on May 4.

the Banquet of the Gods; Gods and Goddesses, Nymphs and Satyrs, Muses and Bacchanalians, Æneas and the Twelve Cæsars, Juno, Romulus, Ganymede, Hercules, Flora, Apollo. All these and many more are represented in coloured magnificence. We reach the fine collection of arms arranged for William III. by a gunsmith named Harris, who also marshalled some of the arms at the Tower and Windsor Castle.

Of the royal personages who have left signs of their association with Hampton Court, Henry VIII., of pious memory, comes first. Jane Seymour died here after giving birth to Edward, who became the sixth king of that name and lived here during his earlier years. Queen Mary and Philip of Spain spent their honeymoon here, and Queen Elizabeth occupied the palace frequently. Here she kept Christmas in right royal fashion, and received the news of the defeat of the Spanish Armada on Michaelmas Day. Charles I. spent his honeymoon here, and took refuge in his wanderings in the Civil War. John Evelyn, whose house at Wotton we visited together last year, writes under date October 10, 1647:—"I came to Hampton Court, where I had the honour to kiss His Majesty's hand, he now being in the power of those villains who not long after murdered him." Cromwell used the palace, and even, it is said, the king's bedroom. He acquired the buildings, and his daughter Elizabeth was married from here to Lord Falconberg in 1657. Later kings who utilised the palace as a residence were Charles II. and William III., and it was in the park that the latter king met with the accident that caused his death.

SIR F. BOURGEOIS AND THE DULWICH GALLERY.

THE numerous references in Ruskin's "Modern Painters" to the paintings in the Dulwich Gallery are enough to suggest that the collection is deserving of more attention from students than it receives. It is true that some examples are imitations instead of originals. Desenfans, although a collector and dealer, was often duped, and in gathering the paintings which are now at Dulwich he was not more infallible than at other times. But it is doubtful whether there is one gallery in Europe in which all the works are beyond doubt. There was, however, an element which some would call Fate in the history of the Dulwich collection which compensates for occasional shortcomings. To find pictures which were purchased for a royal gallery in Warsaw in the possession of the authorities of an English school as gifts is an almost unique incident in the history of collecting.

Sir Francis Bourgeois, whose name is mainly associated with the transaction, was one of those mortals who, though not blessed from their birth by any rare endowments of the mind, are placed by the caprice of fortune in situations to become the envy of even the most able of the children of genius. "There is a pleasure in painting which none but painters know," said an enthusiastic votary of the art. There is also a pleasure in possessing, which painters seldom know, but which the true collector would not exchange for any which might arise from mere mechanical labour. It was the good fortune of Bourgeois to share both pleasures; and if he had not the power to hand down his name to posterity on the one side as the inventor of great works, he has done that which is almost tantamount as the founder of a gallery from which thousands may continually receive lessons in taste and enjoy hours of delight in perusing works of far more varied character and excellence than could have been put together by the unaided exertions of almost any individual.

Bourgeois was descended from a Swiss family which was said to have held several respectable offices in the State in their original country, but which had sunk into obscurity, and, like many others, sought in England the means of retrieving their fallen fortunes. He was born in the year 1756 in London, his father having pursued there the occupation of a watchmaker in St. Martin's Lane. When about eight years of age, Noel Desenfans, whose name must be ever connected with his, came to lodge at the same house. This gentleman was a teacher of languages, in which capacity, being moreover a man of great natural ability, he gained the means of acquiring powerful connections. He had also a great predilection for the arts, and was consulted by many of the nobility in the formation of their galleries. His taste and knowledge in matters of art became at length known to the unfortunate Stanislas,

king of Poland, who remitted to him a considerable sum of money for the purchase of paintings for the Royal Gallery at Warsaw. The subsequent ill-fate of that monarch prevented this destination of the pictures which had been bought, and they remained in the hands of Desenfans.

Such a prize was sure to excite the jealousies of his fortunate fellow-adventurers, and all sorts of surmises were spread about him, and the world forgot—what should have expected the experience of 4,000 years might have taught it—that in our actions we are as much slaves as the masters of circumstances. What might be the singularity of the acquirement, the session of such treasures became a matter of considerable notoriety, and the destination of them by the collector one of as considerable speculation. Even the curiosity of royalty was excited, and George III., with a degree of *bonhomie* which led him to inquire into the private circumstances of many of his subjects who lived in thought of such inquisitorial surveillance, condescended to make himself master of the secret. It was after an audience with the king that Bourgeois said to a friend: "His Majesty has congratulated me on being Desenfans's heir. I assured His Majesty it was the first intimation I had of such good fortune attending me." This good fortune, however, did await him.

Having early showed a predilection for the arts, Bourgeois was placed as pupil with Louthembourg at the instance of Desenfans, whose example and conversation perhaps was which had awakened the feeling originally. Under Louthembourg's instructions he paid considerable attention to his art, and made himself master of the elementary principles. He afterwards travelled on the Continent, and proceeded through Germany to Poland, where, with letters from his friend Desenfans, he was favourably received by the king, who conferred on him the knighthood of the Order of Merit. This honour was, on his return to England, confirmed to him by George III., when he was appointed landscape-painter to the king. Thus he afterwards continued the practice of his profession with great perseverance, but though his works displayed a strong feeling for art and met with many admirers, they must be pronounced crude and sketchy, and not such as in the present day would be thought to entitle an artist to the honours of the Academy. He was, however, elected an Associate in 1791, and an Academician in 1793, but he soon after retired from the more active pursuit of art, M. Desenfans having in 1818 bequeathed to him his property, with the paintings before referred to.

This was, perhaps, in some measure due to him, having given very considerable assistance in the selection as M. Desenfans, though a man of considerable shrewdness and some taste, had not that tact and knowledge of which is always necessary for a collector of pictures. Before the death of Desenfans a sale of his pictures was made. The best were reserved and bequeathed to one who had the good sense to leave them in such a manner as enabled the public to receive the full advantage of such a collection. Sir F. Bourgeois having been placed in a situation to enjoy the pleasures of a cultivated taste and refined society was in the habit of visiting the Master and Fellows of the Charitable Foundation or College at Dulwich, for the maintenance of which estates had been left in the reign of James I. by Alleyn, the actor. On one of these occasions it was incidentally suggested that to that body his collection would be an appropriate gift, as they already had a gallery, and were not shackled with any onerous duties which might divert them from the due care of the paintings; the distance from London also was not inconvenient for visitors, while it would operate favourably in preserving them from the atmospheric and other evil influences of the Metropolis. The idea remained in his mind, and after an ineffectual offer of the collection to the Government upon certain conditions of building a gallery, which was refused, he determined to bequeath them to the Master and Fellows of Dulwich College, with such a sum as should insure their proper preservation. This he duly carried into effect, leaving with the paintings (above 350 in number) the sum of 10,000*l.* for their better kept in order, with another sum of 2,000*l.* to build or add to a gallery for their disposal. He also bequeathed 1,000*l.* each to the Master and Chaplain, and left the Master and Fellows his residuary legatees.

The collection though containing, as may be supposed, among so great a number, many inferior specimens of school of the masters, among others presents some of unrivalled excellence. It is rich in specimens of the Dutch and Flemish schools. The specimens of Murillo also

uable, and some of the Italian school (where, however, deficiency is principally to be perceived) very brilliant. There are a few additions by Sir F. Bourgeois from the pencils of modern artists, and among them a portrait of Desenfans by Northcote. A portrait of Bourgeois by his friend Sir W. Beechey was completed only a few days before the fatal accident occurred—a fall from his horse—which was the cause of Sir F. Bourgeois's death on January 8, 1817. He was buried by the side of Desenfans in the chapel of the college at Dulwich, according to his own wish.

In private life Bourgeois was universally esteemed, and the public owe him a debt of gratitude which is not the less just for its not having been more ostentatiously demanded or more thankfully acknowledged. Some of his own works are placed by his legatees among the paintings he bequeathed. They prove him to have been not only extremely mannered, but also, as far as his aptitude for art allowed, a close copier of his master Loutherg. Bourgeois was an exhibitor at exhibitions of the Royal Academy from 1779 to 1810. Besides landscapes he painted some figure-pieces, one being a portrait of John Mable as "Coriolanus."

JOINERY AND FURNITURE-MAKING.*

JOINERY is one of those crafts which have to do with the building or fitting, the decoration or furnishing of solid and permanent structures. In this architectural process it is found that certain materials are better adapted than others to certain purposes. The upright walls of the structure, for instance, can be built of almost anything; but stone or brick are generally used because they are better adapted for the purpose and much more abundant than any other material, and by reason of their weight and fragility are useless for non-architectural purposes. But to use stone or brick for the roof or the upper floors of a building is more questionable and difficult matter. The difficulty consists in carrying the heavy and brittle material under the downward action of the force of gravity from any one point to another which is not vertically above it. With stone or brick this can only be done, if the two points are a considerable distance apart, by the use of the arch or vault, and this is always an expensive process, whilst in the case of floors it involves a great waste of space and material between the floor and the vaulted ceiling.

But there is another material, wood—light and fibrous, strong in the direction of its grain, which can easily be carried in a straight line, and therefore with the least possible waste of space or material, from one point to another some distance off in a horizontal or an oblique direction; and, since this material is also fairly abundant and quite easy to work, it is generally the best material to use for roofs and floors. Iron (or other metal), the third material available by the architect for structural purposes, differs from stone and wood in that it is much stronger, even in proportion to its weight, though it is also heavier, and in that it is equally strong, whereas stone, as a rule, is equally weak in all directions, wood standing between the two as being strong in one direction alone. For this reason iron differs from wood and stone in that it can assume not only the curved and the rectilinear, but the hanging or catenary form, as in a suspension bridge, between one point and another in the same vertical line. These important properties of the three materials may thus be represented by the following diagram:—

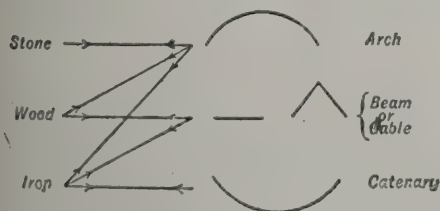


FIG. 1.

From this it appears that the most characteristic, though not always the only possible, use of each material in solving a given problem is indicated by the corresponding form. It is a principle of the first importance in the archi-

tectural crafts that no material should be put to any but a characteristic use; so that in the spanning of apertures, where the catenary for architectural purposes would be worse than useless, iron should have no use at all. A good instance of the violation of this principle may be seen in the entrance hall of the Natural History Museum, South Kensington, where the proportions of the arched system are utterly spoiled by the use of iron, on a scale quite insufficient to have been of the right material in the uppermost series of arches.

It is in accordance with this principle, to which I shall refer again, that wood may be used, though not in that arched form which is characteristic of stone, for the roof and floors of a building. But the art of using wood thus for structural purposes is the art of the carpenter, not that of the joiner, with which I am dealing to-night. The work of the joiner only begins when the shell of the building is finished; it consists in providing doors, window frames and sashes, handrails and other permanent fittings. And though in roofing a building we may sometimes hesitate between the stone vault and the timber gable, there is no doubt whatever that for doors and handrails, as also for such portable furniture as chairs and tables, wood, by reason of its strength, lightness and beauty, and of its pleasantness to the touch as compared with stone or metal, is very much the best material.

Now the nature of each of the building crafts is of course very largely determined by that of the material used, and wood has several peculiar properties in addition to those which I have already described. One of the chief requirements of a door, which has exactly to fill a given aperture, is that it should remain constant both in size and shape. And one of the most characteristic properties of wood, the material which in other respects it is most convenient to use, is its natural disinclination to constancy either of shape or size. Wood is a fibrous material any prism of which cut with its axis parallel to the grain will be usually of constant length but of variable cross-section. The area of its cross-section, that is to say, will continually decrease as the wood dries, and even after the wood is dry it is sensitive to changes of atmospheric condition, swelling or shrinking as the moisture of the atmosphere becomes more or less. And not only is the cross-section of such a prism variable in area, but also in shape. This is due to the fact that thin laminæ of shell-like cellular tissue are distributed through the substance of the tree at small and fairly regular intervals in planes which pass through the heart, and that these laminæ or medullary rays tend to resist the shrinkage of the wood in the direction in which they lie. These laminæ, that is to say, draw together as the wood dries, but do not very much contract in their own dimensions. As seen in cross-section, where either to the naked eye or under a microscope they appear as radii of the annual rings, these rays tend to close upon one another like the ribs of a lady's fan. Some of the results of this tendency are illustrated in my first slide (fig. 2). The card fan is to represent the cross-section of an oak tree out of which have been cut, whilst the wood is still green, the three flat boards, AA' BB' and CC', and the two square posts, P and Q. As the wood dries the medullary rays—the leaves of the fan—close upon one another thus, with the result that the boards, AA' and BB', contract in width

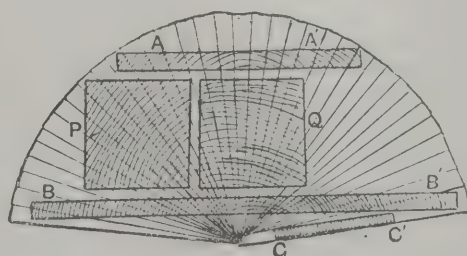


FIG. 2.

and become convex towards the centre or heart of the tree. These deformations are more pronounced in AA' and in the middle of BB', where the rays cross it obliquely; whilst CC' and the outer parts of BB', which lie in the direction of the rays will hardly be deformed at all. The square posts, moreover, are no longer square, P, which the rays cross in the direction of its diagonal, being further deformed than Q, which the rays cross in a direction parallel and perpendicular to its sides.

My second slide shows two actual cases of these

deformations. It also shows a square post which contains the heart of the tree and in which, since the medullary rays cannot close up all round the heart without somewhere opening a crack in the log, we find the expected crack opening, as we should expect, between the heart and one of the nearer surfaces. There are cracks also on other sides of the log, but these are due to the fact that the

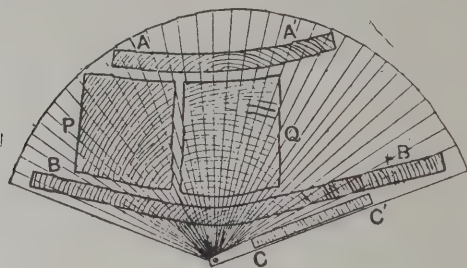


FIG. 3.

log dries from the surface inwards, and they will close up again, whilst the other shake will open still further as the log continues to dry, and there are cracks called "heart-shakes," starting from the heart but not reaching the faces of the log, which would have been there when the tree was first cut down and which I will not try to explain.

From these examples of the curious behaviour of wood we can draw some important morals. If, for example, a post which the rays cross diagonally is to form the leg of a table it should be set so that the rays are tangential, and not normal, to the circumscribing circle; for on this will depend whether the outside shoulder-joints between the leg and the rail open or not as the leg dries. But the most important moral of all is that which relates to the cutting of a flat board, especially when it is most desirable, as in the case of a table top, that the board should neither warp nor shrink. In this case, as you see on reference to the model, the board should be in a plane which lies as near as possible to the heart of the tree, though on one side or other of the part nearest the heart, so that the medullary rays are as nearly as possible parallel to its surfaces, as they are in this illustration. For when thus cut the board will have little inclination to warp, and its shrinkage, as the rays close upon one another, will affect the thickness, where it cannot be great, rather than the width of the board. And here is an admirable instance of the poetic justice of nature, which generally contrives that what is rightly done from any one point of view shall be rightly done from every other; and in particular, that the requirements of use and beauty shall be satisfied at the same time. For it is when the board is cut in this way that the rays, if they are visible at all, crop out most beautifully on the surface, as they do here, in great flakes and splashes of light; and, strangely enough, there is one wood, oak, in which the rays are much more plainly visible than in any other, and it is just this wood which is more liable than any other to warp and shrink when improperly cut. Moreover, the board is more easily sawn out or rent, and very much more easily planed up, when it is cut in this way; so that there are three important reasons, any one of which would be alone sufficient, for cutting as many boards as possible out of an oak log in this way rather than in any other.

I will show you, then, how this may be done, assuming that we wish, as we naturally should do, to cut boards of various thicknesses out of one or any number of trees. But first let me show you how an oak tree is generally cut up by an English timber merchant as an example of how it ought not to be done. We are justly proud of our English oak as the finest timber in the world, but I am sorry to say that if we see an oak tree cut up in the right way we may be almost certain that it was not cut up in England. One thick plank, containing the heart shakes, is cut out of the middle of the tree, because, they say, boards cut here would be useless on account of the heart shakes, and the rest of the log is cut into boards parallel to this plank. The consequence is that only two or three boards on each side of the plank—only five or six altogether out of the whole tree—are cut in the right way, and that the thick plank, though it may be used for fencing or other outdoor work, is almost useless to the joiner as it is penetrated with shakes throughout; but it is just where they take this thick plank that we can cut the best figured and, but for the heart shakes, the most valuable boards, and since a long heart shake, which may

spoil half the thick plank, will only spoil a small part each of the thin boards, this is clearly the right thing to do—cutting the thinnest boards we want for door panels &c., out of this part of the tree and so making the best possible use of it. As soon as we are clear of the heart shakes we can cut thicker stuff to be used in larger pieces for table tops, &c. Above and below these we cut two sets of boards in the vertical plane, narrow but beautifully figured, and exactly suitable for the stiles and rails of doors or other framed structures, and outside these again, we can cut table legs or other posts, though remembering their tendency to deformation as the wood dries. This is merely an intelligent variation of the ordinary continental and American method of cutting wainscot or cutting it, as they say, "on the quarter."

I will now return to the question of door making, in connection with which I can illustrate most of what I have to say on the subject of joinery. From what I have said you will see that it is impossible to make a good door of a single board, even when sufficiently wide stuff is available. It would shrink, it would warp, and it would be very liable to split longitudinally if subjected to a violent shock or slamming, or by a determined house-breaker. The problem here, as in every wooden structure, is to obtain the strength and constancy of dimension in all directions whilst the material possesses in one direction alone. This may at first be attempted by screwing or bolting other pieces of wood with the grain horizontal—ledgers, as they are called to one side of the original wide board. But even so the tendency of the latter to shrink will probably result either in its splitting or in its buckling the ledgers, for the strength of this tendency is almost inconceivable till one sees the effect of it. The next attempt, therefore, to solve the problem will be by making the width of the door in several pieces bolted, as before, to horizontal ledgers, but with tongue and grooved or overlapping edges, so that the pieces may shrink separately without buckling the ledgers, showing daylight between their joints. In this case, however, the door will obviously require bracing, the lap-joints of the vertical members will afford a good opportunity for moulding, and we get at last a door such as that shown in the following slide. This is the first type of thoroughly good door. It will always be popular on account of its cheapness, and is actually often preferred for its intrinsic merit to the next and more elaborate type. I have one objection to it is that on the side on which I cannot see the construction I wish that I could, and on the side which I can see it is generally so clumsy that I wish that I could not. The fact, moreover, that its construction involves the use of bolts or screws gives it just the same inferiority to the next kind of door that a packing-case has to a chest of which the sides are dovetailed.

The great virtue of the framed and panelled door is that its construction is visible on both sides, that it is highly characteristic of the material, and that it does not involve the use of any other—it can be made without screws or nails. The most elementary form of such a door consists of five pieces of wood, four thick narrow pieces grooved at their inner edges and mortised and tenoned together to form the frame, and one thinner and usually wider piece to form the panel, fitting into the grooved frame. I have here a sample of such a door in process of being put together. The mortises are usually cut on the vertical members—the frame, the stiles and the tenons on the horizontal rails. Here, if the groove is deep enough and the panel does not quite touch its inner surface, it is clear that the panel is free to shrink or swell without leaving or deforming the frame-work, the inner edges of which will form a rectangle of constant size; and if the stiles are sufficiently narrow to prevent the tendency to alteration of the whole width of the door, the width will be much less than that of a single board of the same width.

Before describing the possible elaborations of the simple form, I must call your attention to certain small points which should be observed in construction. The tenons may either be carried right through the stiles and fastened with wedges, as in the specimen, or carried only part way through, when they are called sub-tenons, and fastened with wooden pins. The former is the stronger, and in modern joinery the most usual method; but it is subject to this danger, that if the stiles are not quite dry they will shrink away from the shoulder, leaving an open joint which disfigures and weakens the door. The usual recipe for providing against the opening of the shoulder-joints is to say that the wedges should be so cut as to fit more tightly at their inner than at their outer ends. A safer precaution

however, is to put saw cuts in the tenon and insert the edges in these cuts instead of outside the tenon as in the ext slide, and either to use glue on the wedges only, or, at events, to see that there is no glue on the upper and lower edges of the tenon at its outer end. In this case the tenon is really dovetailed into the stile instead of being merely held by compression, as it is by the usual method, and if the stile shrinks it is just as sure to shrink towards the shoulder rather than away from it as a ball is to roll down-hill rather than up. If, however, the wedges are placed in the usual way it is a good plan to use glue on their inner surfaces only, so that they become part of the tenon rather than of the stile, with the same advantages as are obtained by the other method.

By the use of intermediate members of framework, vertical, horizontal or oblique—rails and muntins, or struts and braces—with the requisite number of panels, this type of door may be elaborated to any extent.

Here are some examples of doors and other panelled structures from the Victoria and Albert Museum, kindly lent by the Board of Education, which I have arranged in chronological order, with the purpose of illustrating and trying to explain the extraordinarily rapid change in the spirit and art of woodworking, as in the other architectural crafts, which took place between the fourteenth and eighteenth centuries.

All manual or productive work is of two kinds, which may be distinguished as the indirect and the direct, or as the preparatory and the creative. To sharpen a chisel, for instance, is work of the first kind; to use it work of the second; to make a door is work of the second kind; to saw the door, or to make any mere instrument of production, such as a mitre-board, is work of the first kind. And corresponding to these two kinds of work there are two extreme types of workmen. There is the enthusiastic and hot-blooded, the foolish and poetic type of workman, who is in such a hurry to get to the creative work that he will spend the least possible time over any preliminary operation, and that not till the last possible moment. He will sharpen his tool till he actually needs to use it, and make no working drawing nor waste his time upon any time-saving contrivance if he can possibly do without it. And there is the conscientious and methodical—shall I say the diplomatic or the saucy?—type of workman, who has realised that time well spent in preparation may be more than saved in the actually productive work, who makes sure that his tools are all sharp and in order, his working drawings and templates complete, and every possible labour-saving expedient considered and prepared before he touches the wood at all; who cuts out all his parts before he begins to plane them, and fits them all together before he will carve or mould them, and who adheres strictly throughout to his working drawings, whether they are his own or another's. These are the two extreme types of what I may perhaps call the natural and the civilised craftsman: the one with his attention wholly fixed on the end desired, and working directly to that end with such few and simple tools as he already possesses; the other constantly considering the means to be adopted, and working therefore with continually more numerous and complex instruments; the one wholly possessed by his conception, the other equally content so long as it gives him an opportunity of using his latest and most ingenious tool in working at that of another man; the one, therefore, freely and fully expressing himself in the finished product of his labour, by which alone he is finally judged; the other expressing himself, by the way, in many practically unrecorded activities, and producing finished work of a less human and individual character because of the more specialised and mechanical nature of the tools employed.

The moulding plane which has been so much used on these last two doors is a good example of what I mean by a highly specialised tool. I do not know the date of its introduction, but it was certainly long subsequent to the introduction of mouldings. Look again at the old pew ends at the old pulpit, and you see that they are covered with mouldings for which the moulding plane could not have been used at all. For the moulding plane can only move in a straight line, and cannot very well be stopped until it gets to the end of the wood. It might have been used, for instance, to cut the moulding on this rail, but not that on the stile, which must have been cut with chisels and gouges, in order to turn the corner in that way. Indeed, the whole thing is obviously the work of men who were quite content, on the one hand, with these simple tools, and whose heads, on the other hand, were so full of patterns that no two of

the carved panels, nor of the vertical moulded ribs, are anywhere of the same design. And though you will probably not think that any of the detail is as good as it might be, you will all admit the charm of mingled richness and rudeness, the vast amount of individual character, that there is in the whole effect. The expression of character is direct. It is impossible to imagine that this pulpit was designed by any but the man who made it, or that full-sized working details were drawn out even by him. Rather it grew as he worked at it, and his work was spontaneous and direct. He had not studied nature, this man, nor had he been taught design, but he seems to have been born with the tools in his hand, and ever since to have been dreaming of leaves and feathers, and knotted tree trunks, and half human, half bird-like inhabitants peering at him from between the branches. Except, perhaps, in this one panel, which seems to be of later date, he worked mainly to please himself, with the result that the whole thing is alive and still instinct with the soul of its forgotten author.

This fine old door (South Kensington Museum, 18,261), also French, is of about the same date and of very much the same character, but there is one premonition of the coming change in that the plough has apparently been used on the framework of the door in the capacity of a moulding plane, though the device of making this mechanically-cut moulding continuous by means of mitreing has not yet been attempted.

In this seventeenth-century panelling (South Kensington Museum, 19,305) and in this next (20,041), an eighteenth-century door, it is clear that a complete change has come over the spirit of woodworking. This change may be partly explained, or shall I say more fully described, by saying that the craftsman has begun to prefer the more complex and highly specialised to the simpler tools. He has begun to realise that time spent on the preparatory stages of his work may often be more than saved in the actually creative processes; he has learnt to work with a deliberate and increasingly elaborate adaptation of means to ends in which his genius has more than half expressed itself before the work of creation begins. He has found, for instance, that if he buys or makes himself a moulding plane he can cut mouldings of a certain kind very much more quickly and accurately than he could do with the gouge and chisel. And, since his moulding plane will not go round a corner, he has begun to mitre his mouldings. And for this purpose he finds that he wants a mitre-box and a specially fine-toothed saw; and that even then his mitres have to be planed, so that he must make himself a mitre-board, and for that, again, a particular sort of plane.

Now all this has an effect on the craftsman's character. Between the use of a moulding plane and of a gouge or chisel there is all the difference between work and play. Leave a man with a sharp chisel alone in the same room with a sharp-edged rectangular board, and he will be just as irresistibly moved to attack the sharp edges of that board with his chisel as the boy to notch the edges of the school desk with his knife. To hack with something—with anything—at all sharp edges and corners is an instinct of the human race. But I do not think I ever yet met the natural man who was irresistibly attracted to the use of the moulding plane. The moulding plane is a very different instrument from the pocket-knife or the chisel. These latter a man can use very effectively for a short time in a certain way, and then use them quite as effectively in some other way, or, if he is inclined to be lazy, stop using them altogether. But when he begins to use the moulding plane on the sharp edge of his board, he must either at once or in a succession of strokes go the whole length of that edge; and he must go the whole length of that edge many times, his moulding plane traversing always exactly the same path at exactly the same inclination to the face of his board, to produce an effective moulding. This is something very like hard work; and when the moulding is cut the workman—unless he also made or designed the plane—has not expressed himself, except, if he has been successful, by his fidelity to the conception of another man. His work has been mechanical, and the result is highly mechanical as compared, for instance, with the richly-cut ribs of the French pulpit. And before he can make such a door as either of the two last—for the sake of brevity I will call the section of Jacobean panelling a door—this mechanical operation has to be many times repeated; and, worse than that, his plane will have to be frequently sharpened. To sharpen a knife, a chisel, or a gouge is a simple and by no means a disagreeable task, but to sharpen the iron of a moulding plane so as not in the least to alter the delicate contour of its edge, which

must everywhere project exactly the same small distance beyond the shaped sole of the plane is the task of the mechanic, a slave—or shall I say of a saint?—rather than of an artist and a free man. Of the true artist, as of the poet, we must say that he is born, that he is not made, but the exact contrary is true of the kind of artist who can turn out such doors as these. Not only the cutting of the mouldings, but the mitreing of their corners, whether “stuck” as in the one door, or “planted” as in the other, and the construction of the whole door is mechanical, unimaginative and tedious to the last degree. And it is especially interesting to notice—only in looking at the photograph of these panellings I did not at first notice sufficiently—how this mechanical and unimaginative character of the craftsman which is fostered by the use of such instruments as the mitre-board and the moulding plane comes out also when he handles—or wishes it to appear that he has handled—the superior tools; for his attempts at decoration on the Corinthian pilasters and on the central panel (S.K.M. 19,305), which, as far as the tools are concerned, might have been freehand, are just as hard and monotonous as his plain flat panels and his painfully cut and mitred mouldings. Even his patterns do not express the man, but have obviously been traced and repeated—so at first I thought—from the full-sized drawings of some academic designer. But here perhaps I did an injustice to the academic designer, and I certainly underrated the sophisticated ingenuity of the artisan; for on looking more closely I see that very little of this decorative work has been done with the carving tools at all; it has been cut out with a fret-saw and glued on to the structural members, some of the rosettes only having been afterwards carved so as to heighten the artifice by which I was at first deceived. And here, you see, some of this applied ornament is peeling off, in obedience to the natural law which always at last exposes the artificial and insincere.

So far I have only partly explained this great change which has come over the spirit of woodworking. I have been careful to give the technical explanation only. I have explained it as a tendency to the specialisation of tools, the elaboration of means and methods, the spending of thought and time and energy on preparatory rather than on creative processes. I have said that the craftsman expresses himself in the instruments, the by-products of his activity, rather than in those more enduring results by which alone he is finally judged, since these are all the while the true end of his labours; and that the finished product of his work would be naturally less human, less richly interesting, more formal and mechanical, merely on that account. Whether or not the later work is also less beautiful is perhaps a question of individual taste. A great deal of beautiful work, especially in furniture-making, was done during the seventeenth and eighteenth centuries; and, speaking generally, I do not wish you to think me prejudiced in favour of Gothic as opposed to Renaissance art. I only ask that all art shall be natural and good; not consciously—it can never be that—but quite unconsciously the expression of character, as undoubtedly is the work of the great painters and sculptors of the Early Renaissance period; and as often was that of the eighteenth-century furniture-makers when they used their improved appliances to produce work which was not cheaper, but really better and more useful than that which had gone before. And so far I have only said that the specialisation of tools has a strong tendency to make this expression of character less direct—the finished products of the tool less human and alive. But I do believe, too, that the arts are well called the “humanities” and that the more beautiful of two works of art is always the more human or humane. Everywhere and in everything, in our houses and in our furniture, as well as in our books or our friends, I believe it is life, it is soul, which we look for and by which we live. I believe, therefore, that the change which I have traced in the art of woodworking is decadence—is a change for the worse. And if you agree with me, and if you are content with the explanation I have tried to give—if we assume that the craftsman as a free agent has been himself responsible for the tendencies I have just described—then we must believe that every art contains in itself the seeds of its own destruction. This, however, is not only a most unhappy, but a most unwarrantable conclusion. This rapid decadence of the crafts which has characterised the western civilisation of the last four or five hundred years is anything but a normal phenomenon. In Egypt and Asia the industrial arts have often flourished for untold centuries, or even thousands of years, without any such signs of

diminished life and energy as have been traced in these illustrations. And to come nearer home, here is a Norwegian chair of the tenth century (South Kensington Museum, 23,713) and here a Norwegian butter-tub of the eighteenth century, and the spirit that breathes from these two lovely works, separated though they are in date by 800 years, is so nearly identical, their difference of functions allowed for, that they might almost have been made by the same man. Here, on the other hand, is a French chair (the ugliest thing I could find in the South Kensington Museum, 26,488), of almost the same date as the beautiful French door, but instinct and hideous with an utterly different feeling, which since it is carved all over, and must at that time have been carved by hand, cannot be wholly accounted for by the specialisation of instruments.

MODERN ARCHITECTURE IN GERMANY.*

IT is with great diffidence that I venture to lay before you some views of my own on the modern development of architecture in Germany, feeling that, as it is not possible to give a comprehensive survey of the domain in question, I must be content to submit to you my conclusions without enabling you to judge whether they are sufficiently supported by facts. I am encouraged, however, by the belief that it may be of interest to hear upon this subject the opinions, not of an art historian, but of an architect who has himself passed through some of the phases of modern architecture and who has felt the influences that have led to many of its changes.

Now, the future of architecture as a fine art is inseparably bound up with the vexed question of architectural style, and with regard to the development of style a review of what the past century has produced would not, at the first glance, seem to encourage a very bright outlook on the future. There is no doubt that much of the best artistic power of the nineteenth century was wasted in fruitless search for style in architecture and the industrial arts adapted to the age. Though the great inventions of that century brought about a more rapid and frequent interchange of thought between nations than was ever possible before, we have seen in our own time, as a consequence of these fruitless endeavours, a greater diversity in the architectural aspect of Europe than there was at the beginning of the eighteenth century. No one country has been able to establish an acknowledged supremacy in architecture, as when France at the commencement of the Gothic period, Italy during the Renaissance, and France again in the eighteenth century, took the lead, and was more or less closely followed by the rest of Europe, nor does at present any such supremacy seem to be in prospect.

It seems strange indeed that a century which has contributed more than any other in the world's history to the advancement of science, and which has been so fruitful in inventions that have immeasurably increased the wealth and power of mankind, should have been stricken with barrenness in this one domain of architectural inventiveness. We architects are accustomed to be asked reproachfully why our age has produced no style of its own, as former periods have done, and we are often told that our art has fallen from its high estate, and that the best among us have sunk to the part of more or less conscientious copyists. In my opinion this reproach is unjust, and the chaotic state of modern architecture may be accounted for without assuming that our architects have been lacking in the inventive qualities possessed by former times. The unsatisfactory state of things in the nineteenth century has been brought about by two causes. First, by the destruction of an ancient society and an old accumulation of wealth by the French revolution and the Napoleonic wars, and secondly, by the sudden growth of a new society and new wealth acquired for the world by the introduction of steam-power and the inventions which followed in the wake of this great innovation, bringing about a sudden demand after a long standstill—a demand to which the artistic inventiveness of no age would probably have been equal under the given conditions.

At the commencement of his reign His Majesty decided that the buildings to be newly erected in Berlin for the Crown and for the State should be designed in a style harmonising with the noble architecture of the royal palace and of the arsenal.

* A paper on “The Development of Architectural Style in Germany,” read at the opening of the enlarged Carnegie Institut at Pittsburg by Herr Ernst E. von Ihnen, court architect to the Kaiser Wilhelm.

Not only the designs for these buildings, but all those of great importance, for all departments of the State, are now regularly submitted for his approval and are influenced by his wishes. Continuity of effort I believe to be the principal condition of progress in architecture, and I consider my country to be most particularly fortunate in possessing in this critical period a far-seeing patron of art so powerful as to insure steadiness of purpose as far as monumental architecture is concerned.

It is therefore a hopeful view that I take of the future development of German architecture, and there can be no doubt that in Germany the misfortunes that caused artistic decline in the nineteenth century had a more disastrous effect than in any other country, for none had suffered so severely from the great European wars in England and France. Political unity has brought about greater artistic unity. As far as I am able to judge, the development of style in both countries has been following lines almost parallel to our own, the result of a century's trial given to different styles being a decided leaning towards the Classical architecture of the eighteenth century based, as with us, on a more complete understanding of that style, and therefore on a greater mastery of the possibility of a greater freedom of treatment than ever nineteenth-century architects attained to who attempted to work in the style of a former period.

I may sum up my argument by saying that in my opinion there has been in the history of architecture a progressive, though sometimes interrupted, development of style as an expression of the architectural requirements of society from the fifteenth century up to the nineteenth, and that in order to progress still further we must start from an advanced point that had been reached before the continuity of progress was interrupted. Yet if we would not stand still we must constantly work at the adaptation of old means to new wants which have arisen and are arising in our time. In Domestic architecture much has been done in this respect, especially in England, and of late years in Germany. But in no country is progress more likely to be brought about in this way than in the United States, where architects have already shown themselves well able to grapple with new architectural problems arising from new requirements, as in your admirable libraries, or from new methods of construction, as in your giant commercial buildings, and where the opportunities offered to architects are more frequent and the means at their disposal greater than in any country or in any age. The advancement of art has always been promoted by the peaceful rivalry of nations, and I therefore feel sure that the art of European countries can only gain by our finding, as we certainly shall, in the United States of America, a competitor as formidable in the domain of art as they are in commerce and in industry.

Herr von Ihnen expressed himself as follows to a *New York Times* reporter on the kindred topic of architectural development in this country:—

I see the greatest hope for a magnificent architectural future for America. You are at work meeting conditions. That is the thing that architects have always to do. No nation can achieve a national architecture whose artists say, "Let us build in the Gothic style," or, "No, let us build in Romanesque; that is better." A country has simply to begin and build; it will start with what style it believes best suited to its particular problems, but it will develop just as it appreciates its needs. I have my idea as to what historic style is best suited to be the foundation of your architecture, but you may find another to be the best one. That doesn't matter. The point I make now is that you in America are earnestly striving to meet the particular problems of buildings fitted for dwellings, business houses and public halls in America—problems different in many respects from any hitherto attacked by architects—and you are meeting these problems with a surprising degree of success, considering how brief has been the time during which you have been at it.

New York is most impressive in the daring and unhampered spirit in which it is thrusting up its gigantic fabrics into the air. Consider, whoever before undertook to erect what is almost a city under a single roof on such a plot of ground as that on which stands that "Flatiron building"? And how brilliantly you have dealt with a similar problem in the *Times* building.

You do right, precisely right, to treat these tall buildings frankly as towers. That is exactly what they are. Already you have the campanile of Giotto standing in the most conspicuous point along your thoroughfare, and,

I believe, other great towers reproduced in various parts of the city.

Your problem has been to make the most of every inch of land. The concentration of the people in the city has brought conditions from which architects of former years have been free.

I must say that I believe the limits of high buildings will soon be reached and that their multiplication will soon cease. You are closer possibly than you think to the point at which it will be impossible to transport more people to and from their work. It is all very well to have these immense towers here and there, and perhaps gathered in considerable number in some parts of a town. But if the streets are to become great canyons lined with solid blocks of towers it will be eventually impossible to get their inhabitants in and out. Then the question of daylight will be one incapable of solution. You will, I think, find it advisable and necessary to limit the height of buildings, as we do generally in Europe.

But to return to the question of style. People often ask why we have no style to-day, why we are all adrift as to the most elementary principles of the art and reveal so often the most execrable taste?

The reason, I believe, is this. Until within the last few years architecture has had no chance. The nineteenth century was one of war and of disturbed social and political conditions and of general poverty. All the arts suffered, and especially did those which require large outlay suffer. Not only were no great buildings erected, but men forgot how to build, and when we began again it was in ignorance and forgetfulness. The result was the horrible warnings which exist on every side. If only the tradition of good building had been remembered we should have been spared all that.

Now that we are prosperous again and minded to build, we shall do well if we go back to the eighteenth century and begin again where architects left off. Why begin at the beginning? Why puzzle again over the problems which earlier centuries have definitely settled? I consider that there are certain things pretty well determined in architecture. The sixteenth century definitely discarded Gothic as a style for domestic or commercial architecture. Conditions of life have altered since the days when Gothic was properly employed, and it is mere slavish imitation to build in it now. I do not speak of ecclesiastical architecture. Religion is essentially unchanging, and its aspirations express themselves in forms permanent and stretching from age to age. But domestic life is not to-day what it was in the Middle Ages, and commercial life in its modern sense is a new thing in the world.

My belief is that the world was right in agreeing, as it did, that the Classic form was the one which might best be progressively adapted to the needs of modern life. In the eighteenth century it had reached the highest development, for its purpose, of the Classical style. My feeling is that we are wise in going back to that point, not to rest in its achievement, but to progress from it, having in mind always the necessity of studying our particular problem and in dealing with it freely and creatively, yet with intelligence informed of the history of past architectural endeavour.

The information is acquired. The creative spirit is more a native gift. It is the evidences of it that fill me with confidence that great architectural triumphs will be wrought in this land of the West.



Acoustics of Churches.

SIR,—From a lengthened experience in church work, it is difficult to suggest a remedy for the defect mentioned by your correspondent "Inquirer" without viewing the building. What proves a success in one case is a failure in another. One requires to know the form, height, width and length and seating capacity of the structure.—Faithfully yours,

26 Budge Row, Cannon Street,
London, E.C. : May 28, 1907.

SIR,—It is a pity "Inquirer" is not more precise concerning the "Gothic church with a high roof." Apparently he imagines that acoustics can be treated like ventilation or heating, and that it is only necessary to adopt some

special apparatus in order that the whispers of a preacher should be heard. My notion is that the high roof is too high and that the voice is lost, as it were, among the timbers. There is no doubt that similar defects in old Gothic churches led to the introduction of sounding-boards, which are equivalents for low roofs in particular spots. A high roof suggests a desire to be exalted, and who knows whether "Inquirer's" pulpit is not too high?—My own experience is that there are mysteries about acoustics which are not easily understood. I was once consulted in a curious case. There was a large hall which I tested under a variety of conditions, and found there was no difficulty in making myself heard. But in the committee-room adjoining, if I stood at one end I could not hear the architect at the opposite end and he could not hear me, however clearly I addressed him. I suggested a temporary remedy which answered, and as the building became older there was no difficulty in the room. It is not considered polite to tell a clergyman that the acoustic defects are really owing to his manner of speaking, but I am sure that very often indistinct elocution is the *fons et origo malorum*. Anyone who is acquainted with actors must know many of them who in private conversation appear to have very weak voices, yet without any distress to themselves they can be heard in the standing places at the back of the top gallery and in nooks and corners throughout the house. It matters little whether the building is old or new, expensively or cheaply constructed, they can always conquer the difficulties which may exist. I would advise "Inquirer" before he undertakes any alterations to try experiments with his clergyman. It may be found that the pulpit is far too high, and that by speaking at a lower level more distinctness will be attained. Some clergymen have also a habit of appearing to address the roof instead of the congregation. It may appear irreverent to offer such a suggestion, but there are cases of alleged acoustic defects which would be remedied if a member of a strolling dramatic company were invited to give a few lessons to the preachers.—Yours truly,

A PRACTITIONER.

GENERAL.

Sir Aston Webb, R.A., is to deliver at Cambridge the Rede Lecture on June 8, when the subject will be "The Art of Architecture and the Training Required to Practise it."

Sir Thomas Drew, P.R.H.A., has designed the memorial to the men of the Royal Irish Regiment which has been placed in St. Patrick's Cathedral, Dublin. It consists of a Celtic mural cross 9 feet high, with a background of mosaic and an inscription tablet.

A Congregational Church is to be erected at Ewhurst, Surrey. Mr. Wm. Theobalds, 26 Budge Row, Cannon Street, E.C., is the architect.

The Deschaumes Prize has been awarded by the French Académie des Beaux-Arts to M. Gabriel Aubrée, architect, a pupil of M. Pascal.

Zaccharia Astruc, the artist, who had taken part in the Romantic movement, has died in Paris. He was not satisfied with working as a painter, sculptor and poet, for also he made a business of agriculture.

It is Stated that 136 architectural firms are to submit plans on June 15 for the building for the Bureau of American Republics to be erected at Washington. The cost of the building complete is not to exceed 600,000*l*.

Rutherglen School Board are about to advertise for plans for a new school to be erected in Hamilton Road, in the east end of the town. The building is to hold about 1,500 scholars. The population is at present increasing, and it is expected that this school will be urgently required before it is ready.

The City Board of Guardians received on Tuesday the plans of the new workhouse and infirmary to be erected at Homerton, previous to their being submitted to the Local Government Board for formal approval. The estimated cost was stated to be:—For the main scheme, 67,691*l*.; for lunatic block, which the committee recommend remain in abeyance for the present at the wish of the Local Government Board, 4,660*l*.; total, 72,351*l*.

A Statement having been put in circulation to the effect that a reserve price of 70,000*l*. has been put upon Glastonbury Abbey estate, which is shortly to be offered by auction, it has been officially stated that no such reserve has been contemplated. The reserve, it is announced, will be reasonable and moderate, taking into account the unique character of the property and the fact that it is perhaps the most historically interesting ruin in the country.

In Convocation at Oxford on Tuesday the honorary degree of D.Litt. was conferred upon Commendatore Giacomo Boni, director of excavations in the Roman Forum, and Mr Frederic D. Matthew.

The Glasgow Institute of Architects have unanimously agreed to confer honorary membership of the Institute upon Principal Macalister of Glasgow University.

The Late Mrs. Ismay, widow of the founder of the White Star Line, in her will provides for carrying out her undertaking to furnish the principal window at the chancel end of Liverpool Cathedral as a memorial of her late husband and expresses the desire that in design and execution should be as perfect as possible.

The Kits Coty Estate at Aylesford, near Maidstone, is for sale. It includes the monument commemorating the victory of the Britons over Hengest and Horsa, A.D. 455, and in memory of the British Prince Catigern, who was slain in the great fight on the estate.

The Institute of Archaeology of the Liverpool University has arranged an expedition into Asia Minor to explore the sites of Hittite monuments and to make excavations among some ruins near one of the ancient trade routes, where several Hittite inscriptions have recently been found. The party started from rail-head at Angora on May 11, and expect to cross the Taurus mountains about the end of the month.

The Meeting which was expected to be held in Edinburgh during the sittings of the General Assembly to make representations in favour of the carrying out of the bequest of the late Lord Leven and Melville to restore Holyrood Chapel will not now take place. The money left by the late earl has, it is said, all been distributed, so that the bequest as such does not now exist. Hopes are, however, entertained by some that the question of the restoration may be brought up again in some other way.

As a Memorial to the late Miss Mary E. Christie, the founder of the Art for Schools Association, it has been determined to commemorate her life and work by presenting to a number of schools in the poorer districts of London and of other populated cities a series of carefully chosen pictures, on the frame of each of which there will be a suitable inscription.

A Picture by Domenico Theotocopuli, surnamed El Greco, sculptor, painter and architect in one, was sold last week at Christie's. His *Christ at Calvary*, 64 inches by 38 inches, belonging to Señor Don Alberto Gonzalez-Abreu, of Seville, fell to Messrs. Vicars at 1,900 guineas. The artist was born at Crete between 1545 and 1550.

Mr. John Belcher, A.R.A., will publish in a few days, through Mr. B. T. Batsford, a small book entitled "Essentials in Architecture; an Analysis of the Principles and Qualities to be looked for in Buildings." Being intended for all interested in art it is designed on popular rather than technical lines, and is illustrated by many fine examples of architectural art.

The Society of Architects received twenty-three sets of designs in the Travelling Studentship, 1907, competition, and the Council has awarded the first place to "Mac," and honourable mention to "Celer," who receives a special prize from the president (Mr. Albert E. Pridmore). The names of the successful competitors are:—1. Travelling Studentship (25*l*. and silver medal), Mr. J. Drummond Murdoch Edinburgh. 2. Honourable mention (President's prize), Mr. Hubert Savage, Muswell Hill, N.

The Plans for the restoration of the main building of the Merchant Venturers' technical college, Bristol, have now been approved by the society; they involve very considerable changes in the arrangements of the original building. It is expected that the whole of the work of restoring and refitting will be completed in time for the students to return to the main building in September 1908.

Messrs. Giles, Gough & Trollope, architects, referring to the statement made by Mr. Burns in the House of Commons on May 13, that the cost of the Hammersmith workhouse and infirmary was 335*l*. per bed, state:—"Such a statement without qualification is misleading, unfair to the guardians and calls for a public explanation. This cost of 335*l*. per bed is calculated on the present accommodation for 758 inmates, but with administrative buildings, kitchen, laundries, &c., for 1,456 inmates. The necessary blocks for the additional 698 inmates will cost 80*l*. per bed, and when these are erected the cost of the Hammersmith workhouse and infirmary will be 183*l*. per bed."



NEW THEATRE, CARDIFF: EXTERIOR.
Messrs. ERNEST RUNTZ & FORD, Architects.

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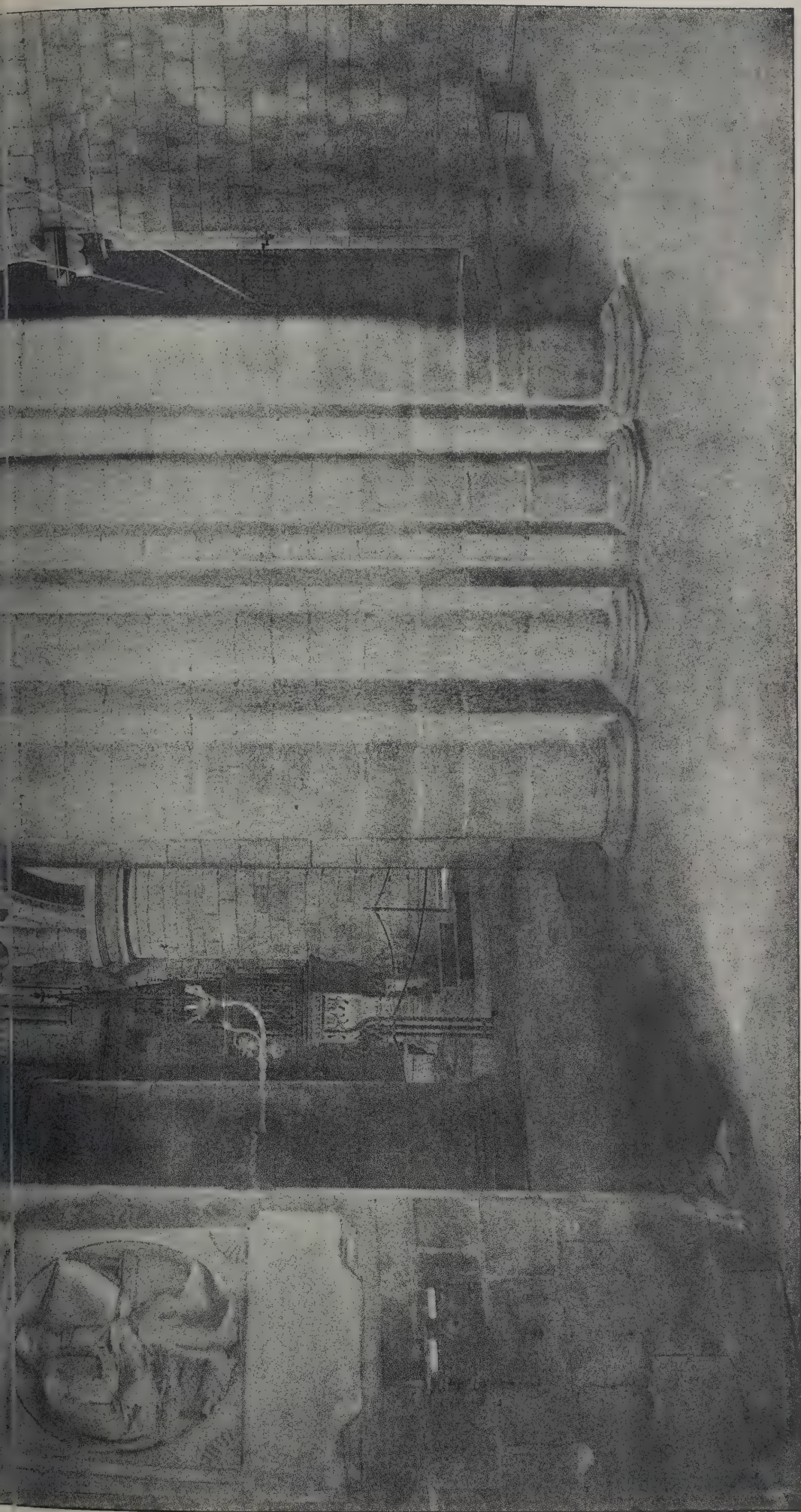


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NEW THEATRE, CARDIFF: AUDITORIUM
Messrs. ERNEST RUNTZ & FORD, Architects.

The Architect, May 31st 1907.





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CATHEDRAL SERIES, No. 601.—CARLISLE: VIEW FROM SOUTH TRANSEPT. SHOWING NORMAN ARCH.

The Architect, May 31st 1907.





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COTTAGES, ROBERTSBRIDGE, SUSSEX.
PHILIP TREE, F.R.I.B.A., Architect





"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

The Architect.

THE WEEK.

THE exhibition of Spanish pictures at Messrs. WARING'S Antique Galleries consists of about ninety works, varying in merit. The Guildhall exhibition of Spanish painting was most successful, for to many it was a revelation. But the Waring exhibition, although on a smaller scale, may be considered as supplementary to it.

In both the influence of VELASQUEZ is apparent. In CHICHARRO, in his *Cupletista Española*, rivals the French painters in expressing the weird effect of the spotlight on a performer. *La Feria de Santiponce*, by FERNÁNDEZ NAJERA, suggests the joy which is still retained in fairs as an occasion for merrymaking—their itself is wisely kept in the background. Sheep are often represented by English painters, but none of them have attained the peculiar decorative effect of Don JORRA in his *La Vuelta del Rebaño*—the flock extends right across the picture, and the difficulties of foreshortening are courageously overcome; the artist is a master of animal painting. *Puesta del Sol*, GÓMEZ GIL, shows the effect of sunset on a desolate landscape; the colour is laid on with great vigour. SOTOMAYOR'S *Corrida de Pueblo* is interesting as a representation of the pleasure of villagers in a bullfight on a small scale. The water-colour paintings, though differing in treatment from English drawings, are most effective. For architects the collection of antique furniture, tapestries, silverwork and ecclesiastical accessories by Spanish and Italian craftsmen is likely to have greater attraction. All the examples have been selected with judgment. A few lead figures are admirable specimens. In fact, the whole of this part of the exhibition deserves to be bodily removed to one of our museums. The Spaniards were not sparing of money when a work was required in a church, and many of the specimens must have cost originally large sums to produce. The catalogue from its numerous illustrations is worth preservation. Several precious examples of early Flemish art are also to be seen in the series.

ONE of the committees of the Liverpool Corporation are now a delicate subject to consider. The art gallery provided by the late Sir A. B. WALKER is one of the best-known buildings in the city. If a building can be regarded as a success it is this; for the wall-space is now insufficient for all the paintings which the Corporation possess. But the gallery has to serve a twofold purpose. Every year there is an autumn exhibition, in which many of the most successful pictures in the Royal Academy and other London exhibitions are brought under the notice of the citizens. There are also occasional exhibitions of a special kind. To accommodate the temporary occupiers the permanent collection has to be disarranged. Mr. E. P. THOMPSON, recognising the inconvenience, has offered 500*l.* towards the erection of galleries at the back of the Walker Art Gallery, which would be used mainly for the autumn and similar exhibitions. The cost is estimated at from 600*l.* to 20,000*l.* It appears the WALKER family must have a special interest in the existing building, as they are not disposed to favour such an addition as is suggested. Besides, the addition could hardly pass as a part of the Walker Art Gallery, and the familiar title would then become a misnomer. There is, however, a great inconvenience caused by the want of sufficient space to display all the pictures which are forthcoming, and the only way to meet it is by the erection of additional galleries.

DURING several years the *Norwich Mercury* has given a description every week, with an illustration, of one of the old churches in Norfolk. The work has been done

by Mr. T. HUGH BRYANT with a care that is remarkable in times like ours. It is not only the peculiar features of the church which are described, but its history is investigated, and the whole will therefore form a collection of ecclesiastical annals of a unique kind. Archaeologists must envy the enthusiasm which has done so much for Norfolk, and it is to be desired that a similar series could be produced in all the remaining English counties. Already 444 churches have been described. A large newspaper is not adapted for reference, and the proprietors of the *Norwich Mercury* have brought out the "Churches of Norfolk" as a separate publication, in parts of a size which is adapted for ordinary libraries. But the enterprise has not received the support which it merits. At the annual meeting of the Norfolk and Norwich Archaeological Society it was announced that unless 100 regular subscribers are forthcoming who are willing to pay 3*s.* 6*d.* a part the publication in book form must be stopped. That would be nothing short of a catastrophe in archaeological literature. The work is of unquestionable importance; the churches possess historic as well as architectural interest, and the accurate records of whatever relates to the history of families which appears in the parish books should appeal to people in all parts of the world who claim relationship with Norfolk worthies.

ALTHOUGH the disposal of the site occupied by the Manchester Infirmary is not yet finally settled, there is little doubt that eventually the place will be an ornament to the city. A quarter of the site will have to be utilised for the widening of the streets, which at that particular point will serve for the junction of tramway lines. The special committee of the Manchester Corporation who are investigating the subject consider that a building should be erected at a cost of about 250,000*l.*, which would serve as an art gallery and a public reference library. About one-half of the site would thus be occupied, and the remainder will probably be laid out as a public garden, which would be a desirable variation from the streets of Manchester. The special committee before coming to a final decision will consult other committees, and in that way may be able to obtain suggestions which will produce a result satisfactory to all.

It is astonishing under what various circumstances the name of LEONARDO DA VINCI is referred to as an authority, although with a man of such extraordinary versatility nothing ought to surprise us. One of the last places where we should expect to have him introduced would be at a meeting of the Indian section of the Society of Arts, with such a subject for discussion as "The Applicability to India of the Italian Method of Utilising Silt." Yet we find Sir E. C. BUCK, K.C.S.I., the author of the paper on the subject, when describing how the Italians use the waters of a river as a weapon of defence against the destructive and pernicious influences of the very river itself, acknowledging the obligations of irrigation engineers to him. He says:—LEONARDO DA VINCI, whose genius as an engineer was even more remarkable than his skill as a painter, had been among the first to point the way. The heading of the fifty-third chapter of his great treatise on the "Movement and Measurement of Waters" is "How with the running waters we ought to carry the earth of the mountains into the valleys, so as to render them fertile and to purify the air." In his letter of application for employment with the Duke of MILAN, DA VINCI suggested his practical acquaintance with hydraulics, for he said he was able to drain the ditches which were filled with water for defensive purposes. The Italians have long utilised silt, but hitherto its value has not been sufficiently recognised by official engineers in India. Apparently it can only be employed with advantage in certain districts.

AN ARCHITECT'S COSMOGONY.

EVERYONE remembers Dr. PRIMROSE's surprise when an old man in the little back-room of an ale-house said to him:—"The cosmogony or creation of the world has puzzled philosophers of all ages. What a medley of opinions have they not broached upon the creation of the world! SANCONIATHON, MANETHO, BEROSUS and OCELLUS LUCANUS have all attempted it in vain. The latter has these words, *Anarchon ara kai atelutaion to pan*, which imply that all things have neither beginning nor end. MANETHO also, who lived about the time of NEBUCHADON-ASSER (ASSER being a Syriac word usually applied as a surname to the kings of that country, as TEGLAT PHÆL-ASSER, NABON-ASSER), he, I say, formed a conjecture equally absurd; for, as we usually say, *Ek to biblion kubernetes*, which implies that books will never teach the world." If an imitator attempted to pose as EPHRAIM JENKINSON in our days he would be likely to include the name of DANIEL RAMÉE with the ancient speculators.

RAMÉE was the son of the architect of the colossal Autel de la Patrie which, amidst the excitement of the French Revolution, was erected in fifteen days in the Champ de Mars of Paris. At least 15,000 Parisians of all classes were engaged on it under the elder RAMÉE's direction. In spite of his patriotic services, he had to fly from the guillotine to Germany, and his son, the cosmogonist, was born in Hamburg in 1806. As a deep scholar in all that related to architecture, the Commission of Historic Monuments utilised DANIEL RAMÉE's services. If the truth were known, PROSPER MERIMÉE, VITET and others got the whole credit for archæological works in which he largely co-operated. His position is the more remarkable because although as an official he endeavoured to preserve examples of French Gothic and to create interest in them, he maintained that the thirteenth-century cathedral was not a Christian conception nor was it, except in very rare cases, the work of bishops or monks, but of laymen. DANIEL RAMÉE was the author of a general history of architecture and of several other treatises on the art. For the present, however, we propose to consider only his "Théologie Cosmogonique, ou Reconstitution de l'ancienne et primitive Loi," and that only in connection with some of the author's views concerning architecture.

Unlike many of those who have attempted to investigate the most difficult of problems, RAMÉE declared that the world owes its origin to an act of the will of God and His unspeakable love. The first manifestation was a "Voice," which appears to have corresponded to some extent with the "Word" of the Evangelist and of the early Christian metaphysicians. RAMÉE is not, however, so much concerned with the creation of the material globe as with the creation of society, and his work is sociological rather than theological. As regards man, he is indifferent to theories of development like those of LAMARCK, or of DARWIN at a later time. Unlike some recent theologians who have followed SPINOZA, he avoids identifying the Creator with His creations. The Superior Principle, he says, is not identical with matter; it simply is connected with it as the architect is with the monument, in order to impart to it the characteristics which it is to manifest.

Having started in this way, with created man at what would now be considered an advanced period of evolution, RAMÉE has faith in the Divine government. He sees it exhibited not only in material things, but also in the continued existence of the three great families of the human race, viz. the Caucasian, the Mongolian and the Ethiopian. It is with the Caucasian alone RAMÉE professes to occupy himself. That race—or the "race blanche"—is said to have two varieties, viz. one consisting of Indians, Egyptians, Germans, Celts, and especially Greeks and Etruscans, who were and are laborious, peaceful, gentle, obedient, self-denying, and to whom we are indebted for all the inventions and improvements found to be most useful to men. The

second great variety of the Caucasian race is inferior kind. It detests manual labour; it is unceasingly irrational, impetuous by intervals, warlike by moré, careless of exact observation, disposed to mysticism, fanaticism, superstition. One time it carries religious excess, another time it is atheistical. It prefers a life of living which recalls the wandering life of the nomads to the settled occupations which belong to civilisation. In this peculiar variety he includes the different Semitic races. All through his cosmogony, whenever Semitic influence is mentioned, it seems to be introduced by the spirit of AHRIMAN endeavouring to obstruct, not to confound, the organised life of the rival Caucasian race.

One of the results of the opposition is traced in RAMÉE in the history of architecture. The family of the earliest constituent element of the universe, and the Golden Age as exhibited by the early Greeks and early Germans consisted of a large number of independent families or units living peacefully apart, with or less free space between the constituents of organised settlements. As the world became more populous the intervening spaces were diminished. The early cities were, however, made up of habitations which resembled cottages erected within boundaries that were laid out on geometric principles, and were believed in consequence to resemble the heavenly bodies in their regularity. They were intended to establish a relation with remote parts of the universe. The ancient Greeks and the Etruscans, as shown, adopted a square form; it was repeated by ROMULUS in "Roma Quadrata"; it determined the form of the temple and its enclosure, and even the life adopted it. Unfortunately for the peace of the world there was an inroad of the Semitic race, whose houses of four and five storeys were erected for the shelter of men of disorderly habits, and who, through their perfidious egotism, preferred independence to a common life in a big outhouse.

RAMÉE is positive that the early Greeks and Etruscans, while having a reverence for the sky, did not believe in the rotundity of the earth, although such a theory is not supported by HOMER or other ancient authorities. He points out that the subterranean treasuries in Greece, in which the wealth of the people was deposited, were on a circular plan and vaulted, and were as nearly globular as possible consistent with utility. The keystone of the vault was called *harmonia* in order to suggest the universal harmony in which all things were united by the Deity. The Temple of Vesta in Rome, which NUMA erected, was also of a spherical form.

There was one class of people in Greece which never assimilate itself with the others. The Dorian or Spartans—and the Thessalians may be added to them—were, according to RAMÉE, Semite invaders who were able to impose their will upon the native peaceful inhabitants, and to hold them in slavery, compelling them to provide whatever was needed for the support of the tyrants. Their influence was pernicious, for although an order of architecture was introduced after them, all the researches in the region occupied by the Spartans have failed to discover a work which has any value for its beauty.

As we have said, RAMÉE was the son of the architect who directed the enthusiastic Parisians in the construction of the mighty Altar of Federation. It is remarkable that when speaking of the great buildings of antiquity he contends they were merely expressions of the same spirit which animated the preparations for the fête of July 14, 1790. They were, he says, but simple amusements of populations, *diapasons* of architecture which were combined to produce edifices which would serve for the general pleasure. The Egyptian paintings which represent workmen labouring under the lash, overseers who used sticks and scourges vigorously, do not support RAMÉE's theory; and it is doubtful whether with such grim rulers as are represented in the Assyrian

efs the populace would dare to give way to hilarity the Parisian patriots. But in working out a theory o vast a kind allowances should be made if the laws vidence are not strictly observed. Moreover, it is dly fair to a theory which is supposed to be mainly logical to consider only one application of it.

The Etruscans probably were more free than the ptians. According to RAMÉE they came from ace and Thessaly. They find great favour with him, they inherited and preserved ancient customs which e much to do with his theology. The Etruscan soil solemnly consecrated to God, and severe punishment ited all who violated the rights of property. Under direction of an augur the plough on a farm traced eular furrow, recalling the form of the earth. Three rs were formed in the buildings in honour of the ecting divinities, and in other ways ancient rites ailed. When the younger TARQUIN erected a ple of Jupiter in Rome, there were three divisions rder to commemorate also JUNO and MINERVA. WÉE asserts that Etruscan theology was identical a that of the Greeks, as well as that of the Germanic s. About the skill of Etruscans in the arts, there e no question, and there was a manifest resemblance in their style to that of Greece. The appearance he Romans as neighbours was not without its effect n the Etruscans, as the Etruscan manners and oms were influential in Rome. RAMÉE takes ure in describing the resemblances and the differ- es between the ritual of the two peoples. He is otical about many of the Roman legends which are avourable to the Etruscans. He denounces, for ance, the legend of LUCRETIA as a fable; and he en- vours to show that many of the Roman writers were mpetent to understand the ways of the Etruscans. s needless to say that he enlarges on the debt of the nans to the Etruscan architects and engineers, and seems doubtful whether the temple of the Capitol, work of TARQUIN THE YOUNGER, did not surpass the thenon of PERICLES.

With all its greatness Rome was doomed to decline. n came into operation the influence of Christianity, it seems astonishing to RAMÉE that a hundred ions of men of the Caucasian race should allow nselves to be subjected to a Semitic code, which t arose amidst sterile plains and seemed to be oired by them. One cause of his objection is that many early temples, which he looked on as sym- cal, were superseded when Christianity gained ver. The Druidic monuments found in France, ough consisting of detached stones, were not, he says, rary in their planning. They were circular, and gestive of a sanctuary. Stonehenge he regards as a el which would enable the stones of Karnac and bihan to be arranged in the original manner. re was, he says, in the centre of Stonehenge one t stone, the stone of CROM, the supreme deity. A al line on the wall of the cavern of New Grange, Meath, which is repeated three times, served for a lar symbol, for it has an ogham inscription, which nslated as A E, which nearly corresponds with the of the temple at Delphi and signified the Supreme g. The pre-Christian Gauls and Germans are to RAMÉE as superior tribes like the ancient Greeks. But influx of Phœnician, Carthaginian and other Semitic s could not fail to cause deterioration. Not even ARLEMAGNE at the height of his power was able prevent the Jews from having the control of merce, which included the buying and selling of es. Yet RAMÉE has to acknowledge that the Arabs Spain, who were Semites, had erected in Cordova 000 houses, 60,000 monuments of various kinds, mosques, 50 hospitals, 80 schools, 900 public as and 85,000 places of business. Cordova was, he e, the largest and most populous city of Europe in Middle Ages, although it had one defect in its great e market.

We must not, however, forget to notice what RAMÉE

says about the Mediæval cathedral. He finds fault with Gothic in general because it is only an adaptation of Roman work of the period of decline. Any beauty which was found in the style was, however, owing to the lay masters of works, who belonged to masonic lodges in which the traditions of antiquity were preserved. Geometry was recognised, and the triangle, the square, the circle, the cone, the cylinder and the sphere were adopted in the determination of forms, as well as the ratios of one to three, nine, twenty-seven, and so on. The proportions of the universe were respected, and a universal law rather than any Christian rule prevailed. But much was done to satisfy the uninitiated, for, according to RAMÉE, the Gothic architect when a layman did not wish the world to know that he had employed unity, or the triangle, or the circle as sources of inspiration, and he therefore veiled what was geometrical by various subsidiary forms. It is only in France that the thirteenth-century Gothic was carried towards perfection. It became less elegant in England and Germany, and it could never acclimatise itself in Italy. As an example of what can be done by concealing the original idea, RAMÉE points to the church of St. Eustache in Paris, where the abstract and scientific idea is similar, if not identical, with that of the thirteenth-century cathedral, but evidently the exterior robe is entirely Latin or Pagan. As a lay architect he ascribes much disbelief which arose to the fact that, from the beginning of Christianity, the clerics who controlled the churches, not being trained architects, copied basilicas, temples and other pagan buildings which were without any suggestion of spiritualism or mystery. He quotes FÉNELON's condemnation of Gothic as a product of the Arabs, in order to prove that the antique, in spite of its associations, continued to have its votaries among the higher clergy who willingly accepted the influence of the Renaissance.

According to RAMÉE the Renaissance has been for humanity in the west of Europe a second creation of the world. It would perhaps be more correct to say that it was a revelation of the aims of the Greeks, especially in the arts. But our cosmogonist has to own that however gracious and elegant was the architecture of the Renaissance, it was not genuine or veritable because it was mainly superficial. It was an exterior envelope often without any connection with the interior of the edifice. It gained success because when compared with Gothic it seemed to be joyous, varied and capricious. As practised under Louis XIV. it appeared to be grandiose, but it was essentially "bourgeoise." It was well adapted to serve as a spectacle for the masses, and if the cost of Versailles had not been one of the causes of the revolution of 1789, the French people could have glorified themselves on the possession of a palace which was imitated on a small scale in various parts of Europe. In sculpture and painting spiritual subjects were abandoned for realities by the Renaissance artists, and ordinary human nature in that way became a valuable artistic asset.

It is a difficulty with all those who have endeavoured to classify the past to go forward a step and predict for us something about the future. RAMÉE has to own that the Revolution of 1789 was too premature by twenty years. The Revolution of 1848 was in his eyes still more a failure, because those who took part in it were without any idea of a new social synthesis. He sees in France habitations of many storeys, and large areas which are without any. In such dwellings he traces the influence of Canaan, Phœnicia and Arabia, which in a much earlier age had brought contagion on the world in the early cities. What would he have said if he had seen the vertical villages in Atlantic cities? In lofty tenements he believes there is a fatal element, and until the world goes back to the simplicity of a primitive age in its dwellings, there is little hope for it. The Arab or Semitic race he condemns as the chief causes

of the evil which surrounds us, and until the people belonging to it lose their influence, synthetical systems and revolutions will not be efficacious for good. It is a melancholy conclusion and is fit to be classed with the ancient statement that things have neither beginning nor end. RAMÉE was an able man, but his wide study of universal history made him a pessimist, and filled him with a racial hatred that was more suited for a savage than a scholarly architect. He died in 1887.

THE ACCESSORIAL GARDEN.*

THERE are several kinds of gardens, and the horticulturist, like the old apothecary, considers one of them simply for its productive power. Owing to the limits of language the word has to be used as well to describe grounds which are laid out with little regard to commercial fertility, except in the production of flowers and shrubs which give pleasure to all who look on them. For that end it is necessary to supplement nature by something which is artificial. There was truth in the lines of the "Heroic Epistle to Sir WILLIAM CHAMBERS":—

For what is nature? Ring her changes round,
Her three flat notes are water, plants and ground;
Prolong the peal, yet spite of all your clatter,
The tedious chime is still ground, plants and water.

CHAMBERS was supposed to have expressed the Chinese theory that nature affords gardeners but few materials to work with, and that art, therefore, must supply the scantiness. In saying so, the architect was right. Some gardeners have tried to compensate for that scantiness by disposing of vegetation according to extremely regular geometrical figures, by which the grounds assume the appearance of a superior sort of nursery. But the human mind is so peculiar it soon grows tired of the spectacle of applied mathematics. SYDNEY SMITH tells us that when he first saw in some grand country-place grounds which were laid out with perfect taste he was altogether enchanted, but after three days he became tired to death. "I used to escape," he said, "from the made grounds and walk upon an adjacent goose-common, where the cart-ruts, gravel pits, bumps, irregularities, coarse, ungentlemanlike grass and all the varieties produced by neglect were a thousand times more gratifying than the monotony of beauties the result of design, and crowded into narrow confines with a luxuriance and abundance utterly unknown to nature." There are some people who will say that the genial Canon was exhibiting his want of taste. But the majority of honest men will agree with him, although they may lack the courage to own it.

The truth is nature is at its best when it is allowed to follow the courses which are dictated by its manner of creation. The only excuse for drill sergeants in the form of gardeners is when natural forms are made subservient to human needs as expressed by artificial forms. The grounds which overcame SYDNEY SMITH probably did not contain any architectural example of which they might enhance the interest, and which would in turn explain the arrangement. Art must supplement nature, and although CHAMBERS'S attempts to introduce Eastern accessories at Kew could not be considered successful, and were ridiculed out of popularity, yet there can be no gainsaying that the little gardens of China and Japan acquire from the introduction of structures in wood and stone a piquancy which cannot be denied. The miniature bridges and temples have not the beauty of those to be found in Italian gardens, but the principle which dictated their use is the same. We should always remember that such artists as MICHEL ANGELO, RAPHAEL,

GIULIO ROMANO and others knew all about the need of congruity, and yet they found no difficulty in operating with skilled gardeners, hydraulic engineers and builders in laying out the villas of their friends and patrons. It is particularly true of them and of those who humbly endeavoured to imitate them, that "nature is made better by no mean, but nature makes mean," for the artist if not the art was made by nature.

We can see in the majority of the numerous illustrations which adorn Mr. MAWSON'S volume how interest is gained by the combination of what is artificial with what is natural. It may be only a country carpenter's lattice-work, a simple timber pergola, a balustrade, a small garden house, or even a rough boulder wall. The vegetation near it then seems to have gained an interest from becoming an auxiliary effort. The greater variety, and the monotony caused by the repetition of similar forms is not felt.

What increases the interest of the illustrations is that so many are photographs taken from existing examples. This fact, and also the issue of several editions of Mr. MAWSON'S book in the course of a few years, are enough to show that the principles which are advocated by the author as well as by other architects are gaining recognition in this country. It is hoped the success of the book is not mainly owing to the amateurs, for the advice which is given about fences and gates, summer-houses and garden furniture, fountains, lakes, streams and ponds, conservatories, greenhouses, vineries and fruit houses, as well as chapters on the selection of ferns, plants, trees, &c., having been derived from experience can be turned to account by those who, although their lives may have been spent in gardenless houses in London streets, may be called upon to lay out grounds.

Men of that class, however, are not likely to be troubled by grievous faults. The common sense which is necessary to adapt buildings in town to varied uses if applied to garden-making will produce satisfactory results. The countryman is likely to connect land with utility, and is therefore liable to think of a garden in the same way as an horticulturist, instead of recognising that it must be sacrificed to the agreeable if the garden is to become the accessory of a house. In fact, a beautiful garden must possess many of the characteristics of a town house. The country is associated with freedom, and no men are so appreciative as genuine country holiday-makers when they find themselves in a domain where fences are practically ignored and a man may follow his own sweet will in his rambles. But in a garden accessory to a house privacy ought to be recognised, and gates and screens should be introduced which will suggest that even in the open air there can be privacy. That it should be respected equally with the privacy of the rooms of a mansion in Belgrave Square. What is called pleasing intricacies, artful wildness and so on, means to that end.

Another quality which is desirable in the large garden, and in the smallest garden is an expression of repose. This is hard to attain when a garden is new. Something can be done to alleviate the uncomfortable feeling which yesterday the place was but a naked sod. At once much could be gained by using old statues and columns and other things which belonged to older houses. It is possible to obtain aids of that kind, but people are becoming too knowing and too fastidious to appreciate them. If we believe SHAKESPEARE, the world has been deceived by ornament, that is to say, by outward appearances. But deception now must be replaced by another form.

If the garden is to be recognised as an accessory to the house then the relation between it and the house to which it is attached should be manifest. This can easily be done by having some resemblance between the garden's features and the house itself. No doubt in architecture forms which at one time were opposed are now coming to be regarded regardless of style. But unity has value in all kinds of decoration, and it should be sought after in garden decoration.

* *The Art and Craft of Garden-Making.* By Thomas H. Mawson, Hon. A.R.I.B.A. Third Edition. Revised and enlarged. (London: B. T. Batsford.)

The last building described in Mr. MAWSON's book could by itself be sufficient evidence of the skill which has been attained in treating the surroundings of a house and the advantages which a building has gained from the additions and alterations. Foots Cray Place at Hampstead is represented as it appeared in 1787. It is a favourable example of many buildings of that period, which suggest that they arose complete from the grounds on which they were dropped from the clouds. As the basement is above the ground, it is not so illogical as many with subterranean basements. It was on the way to ruin when it was discovered by Mr. S. J. WARING, and a number of illustrations show how it has been altered by Mr. MAWSON. Terraces have been constructed which have had the effect of suggesting that the house stands upon an extensive base, and the gardens have been laid out in such a way that the house now appears under a variety of aspects. Before we had a Classic building surrounded by a park, as if the architect wished to suggest a resemblance to some antique building standing in a landscape. Now we have a dignified residence surrounded by dependencies furnished by nature as well as by art. Examples of various other gardens are given, and in each case it must be acknowledged the additions enhance the value of the building. The examples form a most persuasive chapter on the benefit derived from accessory gardens. What is also worth consideration is that, though there is so large an addition of beauty, there is no loss of anything which can be regarded as utilitarian.

As a practical man, Mr. MAWSON enters into particulars which writers who consider effects alone would be disposed to pass over. The following paragraph on laying out the wing-walls is an instance of the author's regard for details:—

Nothing could be more deceptive to the uninitiated than the effect of curves. Somehow, even when they have had much care bestowed upon them in planning, curves lose the flow of line which on paper looks so pleasing; there is all the difference between a scale drawing which can be comprehended at a glance, and the lines as laid down and viewed in perspective. When dealing with a long curved wing-wall to an entrance a good method is to have the ground roughly levelled and a rope line laid down. For is obtain an old cart rope, or any rope free from stiffening; at one end to a peg fixed at the point where the wing-wall is to strike the pillar, and fix a second peg at the extremity of the bulge; having thrown out the line between these two points, from the first peg with rope in hand walk along the proposed line of fence, allowing the rope to pass lightly through the half-closed hand, repeating the operation until the line is pleasing to the eye. Having decided the line, ranging poles at regular distances along it, and imagine the interspaces brick or stone wall, when the result will generally be to make the curve longer or flatter by carrying the first peg further along the road, as curved lines always appear more full and rounded when viewed in perspective. The future purpose is to give the walls architectural character and dignity, from these actual lines make a survey, and afterwards design the necessary elevations.

Mr. MAWSON's book deserves recommendation from the interest of the subject and the beauty of the illustrations, which show architecture in union with fine landscapes. But it is also a practical work containing sufficient information to enable a young architect to carry out a commission for garden-making with advantage to his client as well as to himself.

The Dean of Winchester states that although the works of preservation at Winchester Cathedral are proving much more costly than was at first anticipated, a published statement that 100,000l. will now be required is an exaggeration. It is difficult at this stage to say what the exact amount necessary will be, but it appears likely that the original estimate of 30,000l. will be doubled. A report upon the recently discovered defects in the north transept and other parts of the building is in course of preparation, and when this is in the hands of the authorities a more definite statement as to the financial requirements can be made.

THE QUANTITY SURVEYORS' ASSOCIATION.

THE annual general meeting of the members of this Association was held at the Holborn Restaurant on Friday, May 31, the president, Mr. A. J. Gate, F.S.I., in the chair.

Formal work having been concluded, the President read the Council's report upon the work done during the preceding year, as follows:—

The Association is to be congratulated upon a steady increase of membership. Since our last annual meeting many new members have been elected, whilst we have lost four by resignation and three by death. It has been necessary during the past year, as in former years, to reject many applicants for admission as members, as their qualifications are not such as meet with the approval of your Council; in fact, were we to elect some of those self-styled quantity surveyors who apply for membership the very object for which this Association was formed would be defeated. As may be seen from the balance sheet, which has been in the hands of the members for some time, the financial situation for so young an Association can only be regarded as satisfactory. Since the issue of the balance sheet a certain sum of money has been set aside for investment. A small sum has also been transferred to a benevolent fund, and to this fund your Council will always be glad to receive donations. Our examinations were again held at King's College by kind permission of the Governors in April last. In the direct final or the professional examinations the following candidates satisfied the examiners:—Messrs. R. A. Churchward and W. Morris Evans.

In the preliminary examination held at Leeds qualifying for admission as students one candidate only sat and failed to satisfy the examiner.

In the examination for admission of members held last year in Pretoria, one candidate, Mr. H. A. Adams, in the office of the chief quantity surveyor for the Transvaal, passed.

The Council note with regret the comparatively elementary knowledge of "taking-off" and "pricing" some of the candidates display, and take this opportunity to remind intending candidates that in these two subjects, which are regarded as "typical," a very high percentage of marks is required.

Your Council wishes to express the thanks of the Association to those members who kindly undertook the duties of examiners, and also to those who acted as moderators.

The thanks of the Association are also due to the authorities of King's College for kindly granting us the use of their rooms in which to hold the examination.

The Council would again remind members that a register of assistants (not necessarily members or students of the Association) seeking employment has been opened, and has already proved of some considerable service. It is hoped that this register will be used as far as practicable by members who require assistance. Those assistants who wish their names enrolled on this register must be recommended by a member of the Association.

The committee on professional practice has devoted several meetings to the consideration of the Prevention of Corruption Act, 1906, and its effect upon the relations in some cases existing between the architect and the quantity surveyor. Some of our members having made inquiries on the question, the committee has been in communication with the Council of the Royal Institute of British Architects, and has taken the opinion of an eminent K.C. It is hoped shortly to issue a circular to members on this point.

Your Council has within the past year again been approached by the Transvaal Society of Quantity Surveyors with a view to their affiliation with us.

Under our by-laws no provision at present exists for affiliation with any society; the Council, however, having considered the question, expressed its willingness to call a general meeting of members with a view to obtain the necessary powers, making the condition that the by-laws of any affiliated society and any amendment thereto should be subject to our Council's approval, and that the by-laws providing for the admission of members should be more stringent. These conditions proving unacceptable to their Council, the matter has been allowed to drop.

In view, however, of the number of applications for admission as members which we receive from South Africa, and the Council feeling that those applications could be better dealt with by a committee on the spot, a small committee of this Association for South Africa has been appointed, with Mr. A. T. Babbs, of Cape Town, as hon. secretary.

Your Council note with satisfaction, from the correspondence it has received, that the scale of charges which the Association issued last year has met with some considerable acceptance, and is likely to prove of inestimable use to our members in the future.

Your Council noted also that under the Labourers' (Ireland) Act passed last year, the appointment of a surveyor in connection with any buildings erected under this Act is subject to the approval of the Irish Local Government Board.

In view of the probability of more stringent control being in the future exercised over the expenditure of local authorities than has been the case in the past, including those matters which immediately concern the quantity surveyor, *i.e.* the cost of public buildings and the settlement of builders' accounts, your Council considers the present a favourable opportunity to approach the English Local Government Board on the subject. Some correspondence has already taken place between your Council and the Local Government Board on the question of the employment of quantity surveyors on public buildings, and your Council hopes that the result will be of benefit not only to the members of this Association, but to the profession generally.

The scrutineers report that the following have been elected members of Council for the ensuing year, in addition to Messrs. Lawrance and Gate, who are, under our articles, life members:—

London Members—Messrs. T. J. Carless, H. T. A. Chidgey, S. Chatfield Clarke, F.S.I., H. W. Crickmay, R. L. Curtis, jun., R. C. Gleed, F.S.I., W. R. Hood, F.S.I., and Henry Riley.

Provincial Members—Messrs. H. Curtis-Card, F.S.I., S. W. Doyle, A. Harris, F.S.I., and W. Hoffman Wood.

Mr. R. G. Bare congratulated the Association upon its eminently satisfactory financial position, and also upon its increase of membership. In his opinion the affiliation with kindred associations, both in South Africa and other parts of the world, would mean greater strength for the London Association; and at the same time, however, the Council were acting wisely in insisting upon the by-laws of any professional society contemplating affiliation being subject to its approval. After expressing his regret that the Council had been deprived of the services of a valued member (Mr. Walter Barber) during the past year owing to ill-health, from which he has now recovered, Mr. Bare formally moved the adoption of the report and balance sheet.

The balance sheet having been subjected to some criticism by Mr. H. J. Camp (to which the President replied), Mr. J. Rookwood seconded the motion for the adoption of the report, which was carried.

Votes of thanks to the auditors and scrutineers having been carried, Mr. H. T. A. Chidgey moved and Mr. A. G. Cross seconded, "That the best thanks of the Association be given to Mr. Gate for his services as president during the past year," which was carried by acclamation.

The President briefly replied, and the meeting terminated.

At a Council meeting subsequently held, Mr. W. R. Hood, F.S.I., was elected president for the ensuing year, and Messrs. Arnold Harris, J.P., F.S.I. (Birmingham), and Mr. H. T. A. Chidgey (London) were elected vice-presidents.

ARCHÆOLOGY IN HAMPSHIRE.

AN excursion of members of the Hampshire Field Club and Archæological Society was arranged for Friday last by Dr. S. Andrews, the hon. local secretary for Basingstoke.

At Hurstbourne Priors, says the *Hampshire Advertiser*, Dr. Andrews read a paper, of which the following is a summary:—

Of Whitchurch, where we left the train, I need say little but to remind you that its name, "Witcerce," supports ecclesiastical history in referring the origin of our national Church to early Saxon times. If on your return you have time to spare you may well go into the present church and see a Saxon gravestone standing on the chancel steps. The town, too, was always a point of importance from its abundant water supply, on a much used highway from Winchester to Newbury, for Oxford, &c. Since leaving there we have skirted Lord Portsmouth's park of Hurstbourne by road, just missing the stream where you will have observed numerous black poplar trees with fine bunches of mistletoe on them. In the park once stood a cottage associated with bee-keeping, which, I may remind you, was a valuable

occupation in early days (at least, before we got run and molasses from the East Indies). Here at Hurstbourne we touch a branch valley, bringing considerable addition to the Test from the Bourne (*i.e.* stream) valley. Hurstbourne, otherwise Hursborne and Esbourne, is a water name, Es a Brythonic Celt and Bourne a Gaelic Celt, both referring to water. These notes are almost entirely derived from Dr. Stevens's "History of St. Mary Bourne," a pattern of a local historian. Here I must ask the club members to wake up and do some genuine original research work, lest we as a club merit mere graceful epitaph (Hampshire Field Club, 1909, Appendix) and here is one chance. . . . Hurstbourne Priors, which includes St. Mary Bourne, which we do not visit to-day, distinguished by its second name from Hurstbourne Tarrant which lies higher up the valley, that is also called Hurstbourne Regius, as held by the king, and guarding another prominent road out of the Hants and Wessex country over the passes of the northern hills. Of Hurstbourne Priors we gather some information in that in 1086 it was held by the bishop for the monks of St. Swithun; not an episcopal manor, but belonging to the convent, "and it always was," says the Domesday clerk, leaving to later scholars to learn that it had become so by the gift of King Edgar to Bishop Denewulf, 802. We also learn that it had, what was a frequent acknowledgment of such ownership, a payment or reduced taxation of thirty-eight hides, when it really possessed the equivalent to fifty-one. Of four tenants of a large manor I am unable to tell you the predecessors of this particular part now known as Hurstbourne Priors. I have detailed history from the Conquest to the Dissolution we must await the chronicler of St. Swithun's Abbey, which had been the overlord for that time, but at the latter date, say 1535, was leased by the convent to its bailiff, one Ellis Wynne, who continued to retain it under the Crown. In 1547 King Edward VI. gave it to Edward Duke of Somerset and Earl of Hertford, the "Protector," but on his being attainted in 1552 it went again in the hands of the Crown. By 1553 Sir John Gage held it, when he also was beheaded. It was bought in 1560 of the representative of Sir John, or of the Crown, by Sir Robert Oxenbridge, for 2,790*l.* 13*s.* 9*d.*—ten to twelve times as much now—and held by his family about three generations. It is this Sir Robert Oxenbridge whose tomb lies before you, possibly at first placed within the north annex as a mortuary chapel, and later put where you see it, possibly, as at Basing, originally placed here, and afterwards repaired later by the great nephew of the same name. Sir R. Oxenbridge was a member of a family of that name in Sussex. He had been Constable of the Tower of London for Queens Mary and Elizabeth, and was buried here in 1572. He had married a Kent lady named Fogge, whose arms he impales on his shield, and although she was from the well-known family of Fiennes, Lord Saye and Dacre, her quarterings are not either of them (in this I differ from Dr. Stevens's history). . . . The tomb strongly resembles one at Broxbourne in Herts, to the memory of Sir Henry, father of Elizabeth Cock, with its recumbent and kneeling effigies (he died in 1606, and his wife Ursula in 1612). The inscriptions on the north side are much defaced, recording the names and dates of Sir Robert Oxenbridge and his wife. On the south side the earliest inscription refers to the restorer. Of the other features of this church I feel unfitted to remark, but to note that the restoration of 1870 made use of some small north arcades possibly in their present site, and that a north arch gives access to the north chapel. A yew tree in the churchyard is said to be 700 or 800 years old.

Tidbury Ring.

At Tidbury Dr. Andrews read another paper. The place (he said) is known as Tidbury Ring; it is an unusual large camp, although not the largest of those so frequently found on these North Hants hills. That this ridge of hills is so numerous marked by Celtic camps is generally supposed to indicate an extensive population among them. Doubtless this was so to some extent, although possibly they were not all occupied at the same period, but according to fashion dependent on propinquity to the dwelling localities of those using them. Their use was distinctly exceptional and not constant; few would have any permanent occupation, although the vital necessity of water would well be met by dew ponds, which are frequent, and possibly by wells in some known instances. Yet original occupation is sometimes suggested by the fact of there occasionally being a modern farm or other dwelling in or close by them. But their primary use was defensive. When the ancient

out man, with his deep-set eyes aiding his distant view, gave notice to his home-folk of the near approach of a jealous and warlike enemy, the cry would ring through the settlement, "Away to the camp." Thence could be hurried the cattle, the wives and children, and much as could be carried of the household stuff. Meanwhile the men would be ready to meet the foe, and the clash of arms would ring out. . . . Now, please patiently follow me as I attempt a sketch of the origin of our section ancient and modern social life. You unconsciously form a picture in your mind of the modern corporation of a town, large, like Southampton, ubiquitously active, or small, like Chichester and Whitechurch (at our feet), that have lost their ancient franchise, or Basingstoke, that never possessed a national one. A body of citizens of more or less repute, with the power and duty to tax themselves and their community for local purposes. In some instances charters granting this privilege in various shapes were granted by a large landowner near, a baron or a Church magnate, sometimes by the Crown; notably in Stuart times was this in the care of the king for his people displayed, but charters of much earlier date are known (or referred to even as early as Henry I.) showing the existence of the self-taxing power of communities. Thus I would take you back to medieval times, where (pardon me for the personality of an example) we find Basingstoke as held not by a manor lord, as Whitechurch and many another which yet retains individual independence, but by a Corporation acting as such, called "The Men of Basingstoke." Then I would ask you to step back again to such as this camp, with one inquiry of why they had this power, and would point out the fact of an important camp there, with its primary duty of maintenance and defence placed on the shoulders of such men, and so recognised, acknowledged and rewarded with corporate power of a sort. Here, also, in Tidbury Ring we find an important military camp of Saxon times, similarly giving rise to the borough of Whitechurch, whose men in corporate capacity have the charge of this camp, and I have no doubt the same origin could be easily traced in every ancient borough, even to Edinburgh itself. On a lesser scale we find it in the three Cleres of North Hants—Kingsclere, Highclere of the Bishop and Burghclere, the latter the latter given to the men of the burgh, or borough, or burg, who had the responsibility for repair of the fine camp known as Beacon Hill, which is situated, northerly, on the same road as this is placed. All this refers, of course, to the modern as derived from the Saxon charge or use of the camp, and is quite independent of the Celtic origin of the camp itself as a local defence for those earliest structures who lived close round on the higher ground, above the valleys, which now team with human life, were conquered from the bog, morass and forest of nature.

Freefolk Chapel.

Sir William W. Portal, who received the party at Laverstoke, described the chapel at Freefolk, and gave an account of the manor.

Later in the day Dr. Andrews said they had listened with great pleasure to the instructive description of the neighbourhood given by Sir W. Portal, but he would like to see the members generally and individually to supply some specific information about the member of the Pawlet family whose tomb they saw so well cared for, as removed from the lesser building, although at one time it seemed destined for oblivion. The Pawlet family, now in Hampshire represented by the president of the club, the Marquis of Winchester, was formerly a Somersetshire one, one branch of which continues as the modern Earl Poulett or Powlett. A member of the other branch married the daughter and heiress of Sir John Munney, of Munney Castle, and his grandson married the heiress of the Barony of St. John of Basing, the instance Poynings. It was their grandson that had a notable family (murally speaking):—William, later Baron John of Basing, first Marquis of Winton, whose tomb of his father and descendants is in Basing Church; Thomas, known as to issue; George of Itchell, whose tomb is in the chancel of Crondall Church; and Richard (or John) of Herriard, of whose descendants they had this monument. The Herriard branch married the heiress of Richard Andrews of Freefolk, and seemed to prefer this locality, the daughter and co-heiress marrying the ancestor of the present Jervoise family of Herriard. The Paulet monuments in Basing give heraldic quarterings showing the connection of Paulet and St. John connections by marriage, eight in number. The Crondall one gives the same, perhaps differently grouped, partly instead of quarterly, and with a heavy impalement of thirteen quarters from one of

the three wives. His own quarterings are easily comparable with Basing. Here, however, the Herriard-Freefolk branch shows a more full achievement of twenty-eight quarterings of Paulet himself; the wife's shield is separately represented. In this shield the arms represented at Basing appear without consecutive order. What he would like to discuss would be the names of the other families referred to, and possibly collect from various sources their relationship to the Paulet before them.

THE VILLA PALMIERI.

UNUSUAL interest attaches to the sale of the beautiful and historic Villa Palmieri, in Florence, by the Earl of Crawford, the premier Earl of Scotland, to the New York plutocrat, Mr. James W. Ellsworth, who, it is said, intends to go back upon ancient times by furnishing the villa in the manner of the fifteenth century.

Tradition fixes upon the Villa Palmieri as the palace in which, during the great plague in the city of Florence, Boccaccio took the company of his immortal tales of the "Decameron." The tales were told, of course, with the object of whiling away the time while the great plague raged, but since that time they have been read by succeeding generations, and time has failed to stale them or to rob them of their interest. This historic association with world literature gives the sale of the villa unique and universal interest.

But this Palace of Tales has a peculiar interest to all Englishmen from the fact that it was here the late Queen Victoria stayed on more than one occasion, for the ancient Florentine palace, with its wonderful and glorious gardens, was greatly beloved of her, and it has further a special interest for Lancashire folks, because for more than a generation it has been the home of the courtly and stately Dowager Countess of Crawford.

The late Earl of Crawford, who, like his son, the present Lord Crawford, of Haigh Hall, Wigan, was bibliographer and bibliophile, purchased the historic villa in 1874, and probably its traditional connection with literature, as well as its beauty of situation, had some influence in determining his choice. Queen Victoria was the guest of the Dowager Countess of Crawford for some time in 1888, and again she stayed at the villa in 1893, always cherishing kindly memories of these Florentine visits.

It may be mentioned, says the *Scotsman*, that it is just twelve months since the villa was placed upon the market, when a bid of 30,000*l.* was invited by the auctioneer, but ultimately the property was withdrawn, the reserve not being reached.

The Villa Palmieri is the Palace of Tales. The beautiful scenery all about is enshrined in the writings of the great Italian master. Boccaccio knew this house beautiful and all its ancient glories. At one time the place belonged to Cioni de' Fini, from whom the Tolomei bought it at a later date, and later still in the fifteenth century it was sold to Matteo Palmieri, and it was by a descendant of this Italian worthy, whose name it has for so very long borne, that it was rebuilt. This rebuilding of the historic fabric took place in 1670. From this time forth it was known by the name of the Palmieri. Originally the high road to Fiesole, traversed the place where now the grand terrace is located and, in fact, this was only cleared away after the late Lord Crawford had bought the villa in 1874.

But the fame of the villa with the English people has not been confined to recent times. For two centuries and more it has been a great favourite with the natives of old England, and its history during this period has only to be quoted in proof of this statement. Thus, so far back as 1766 Lord Cowper came to the place with his lady, who had been known as the beautiful Miss Gore, and the pair were so enamoured of it that they resolved to make it their home, which they did, and in his letters Sir Horace Mann describes their brilliant entertainments, and speaks of the admiration of the Italian people, high and low, for the young and lovely countess.

Then, again, it is recorded that from 1824 for nearly thirty years Miss Mary Farhill, an eccentric lady, lived here. This lady left the mansion to the Grand Duchess Maria Antoinette de Bourbon, and later still in 1874 it passed into the possession of the late Lord Crawford, scholar, poet and book collector.

On the death of the Earl of Crawford the beautiful and historic home descended to the present Lord Crawford, whose ancestral seat, Haigh Hall, near Wigan, Lancashire, is renowned the world over for its private library, worth many fortunes in itself.

NOTES AND COMMENTS.

THE annual report of the Council of the Royal Sanitary Institute states that they were not able during the past year to lay before the members any definite proposition with regard to new premises, but the matter has engaged the attention of the special committee, and their deliberations may be expected to result shortly in a satisfactory proposal for rehousing the Institute on a more adequate scale. For examination in sanitary science as applied to buildings and public works ninety-five candidates presented themselves, and thirty-six of them obtained certificates. Colonial examinations have also been held in Bloemfontein, Cape Town, Hong Kong and Sydney. An additional centre was established in New Zealand. Arrangements are in progress for examinations in Canada, Queensland, Western Australia, Tasmania and South Australia. There is a steady and satisfactory improvement in the financial position and stability of the Institute. Notwithstanding an increase in the general establishment charges owing to the extension and development of the Institute, the regular receipts from subscriptions and dividends have increased at a greater rate, so that the Council have been enabled to devote nearly the whole of the income derived from the teaching and examination work of the Institute towards the improvement of its courses of training and its examinations and other work.

At the last meeting of the Cambrian Archaeological Association held at Shrewsbury, the committee, having had its attention directed to the dispersal of certain articles from the public museum of the Bangor City Council, as well as to the disappearance of articles from the museum formerly in Carnarvon Castle, expressed their regret that sufficient care does not appear to have been exercised in the instances in question in the custody of articles of historical and archaeological value, and begs to impress upon both public bodies and private individuals the importance of the safe preservation of all such relics of the past within their charge. The removal of archaeological objects is a genuine grievance, and Welshmen especially have reason to complain, for the Principality is not too rich in relics. But of late there seems to be an epidemic of kleptomania which is at its worst in the presence of the cabinets of museums. The annual meeting of the Association is to be held in August at Llangefni, in Anglesea, when we suppose the subject will be discussed and measures proposed for the greater security of archaeological collections.

DISCONTENT is showing itself in many places where it is found that officials who are paid a fixed salary are allowed to perform other duties under favourable conditions and at special rates. They resemble the case of the late Mr. MACKISON in Dundee, only that more courage is shown by English officials in respect of payment. A late instance has been afforded in Lancashire. Mr. LITTLER is architect to the County Council at a salary of 500*l.* Application having been made to the Council, he assisted the Asylums Board in the selection of a site for a new asylum. His advice was adopted, and next Mr. LITTLER was appointed architect for the building. At the last quarterly meeting of the Board there was a proposal to pay him 500*l.* for his services in selecting the site. Some of the members objected to the payment on the grounds that Mr. LITTLER was receiving a salary from the county and that he was to receive between 15,000*l.* and 20,000*l.* as commission on the proposed building. It was stated in defence that the usual commission for architects should be 5 per cent. plus 2 per cent. for quantities, while Mr. LITTLER was only charging 4 per cent. The matter was, however, thought unsatisfactory, and was sent back for further consideration. It is not to be expected that an able architect would give his entire services to a county council for 500*l.* a year, for

with public works there is generally much contention which is more exhausting than any arising in private practice. But we do not consider that a man who possesses a safe position by having a regular salary and opportunities for suggesting his eligibility should give his services on lower terms than ordinary architects. At the present time, from the large number of architects and the rarity of commissions, there are risks of unprofessional competition, and if any men are duty bound to avoid taking part in the game of underselling, they are officials who, if they have not the means of becoming wealthy, are secured against the pains and penalties of actual poverty.

PRINCES STREET is of so much importance in Edinburgh, few people of the unofficial class were surprised when it was announced that the Town Council declined to allow the Post Office authorities to lay underground wires along one side of the picturesque thoroughfare. The Post Office is at one end of the street, which it was desired to connect with the western extremity of the city. The most direct route would be along Princes Street. The Town Council proposed an alternative course that the telegraphic wires should be laid along the Waverley Bridge, which would mean carrying them across the Old Town and around the Castle Hill in order to reach the point indicated. Although the Post Office could lay wires from one part of the city to another, the Town Council maintain they were to decide upon the routes. At the last meeting of the streets and buildings committee it was proposed that the wires should be laid along the south side of Princes Street, and apparently the "cut and cover" method will be adopted. The formal sanction of the Town Council has to be obtained.

WE have already described some of the efforts made by the University of Illinois to promote the study of scientific construction. They have been successful. The Board of Trustees have, as a fitting recognition, agreed to increase the number of resident Fellowships. Ten will be offered this year, each having a stipend of 500 dols. a year. One of the objects is to induce engineering graduates to resist the offers for their services, in order by matured study to attain the degree of master. The testing-station of the University offers desirable opportunities for research, and as the results of inquiries and experiments are published, the Illinois University will in that way do much towards the increase of knowledge of materials and structures. The proposal suggests the organised efforts which are making progress in America to attain the highest reputation in applied science.

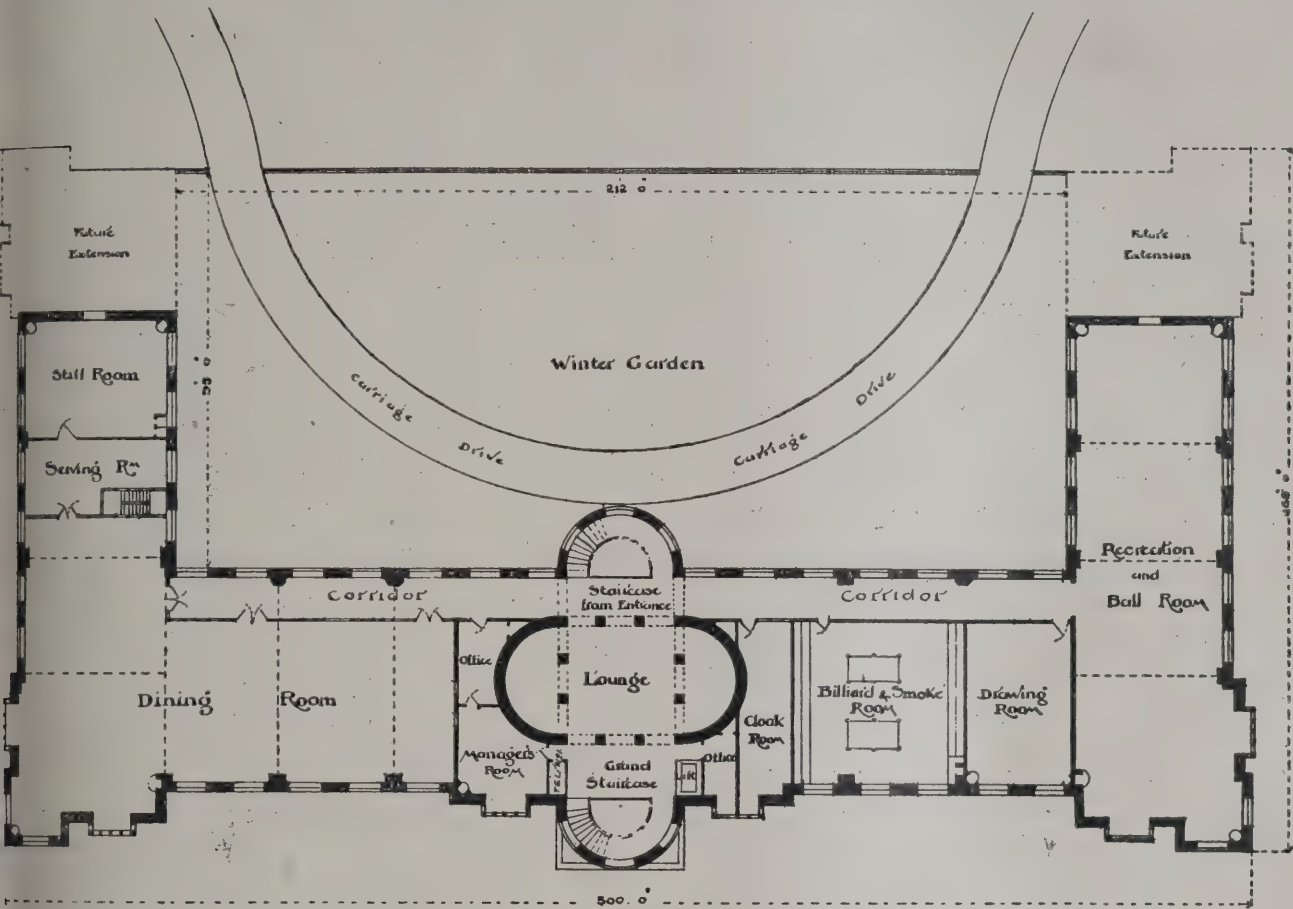
THE twentieth annual report of the Devon and Exeter Architectural Society states that the membership has been maintained, and that sustained interest is still shown in the affairs of the Society. After removing the names of five by resignation and transfer, the roll of members now stands at ninety-four, viz. members fifty-two, associate members fourteen, and associates twenty-eight. Since the last annual meeting eleven meetings have been held, seven being of the Council and four general, and the Council have discussed several matters of importance under discussion. They fear that the younger members have overlooked the advantage offered in connection with the London Architectural Association, by which students of the Society can join the school of design, and therefore book prize of one guinea offered by the Society has not been awarded. For the prize of one guinea offered by the Society for measured drawings one sheet only was submitted, but being deemed worthy of the prize, was accordingly awarded to Mr. G. B. SELLECK, Plymouth.

ILLUSTRATIONS.

MESSRS. DEBENHAM & FREEBODY'S PREMISES, WIGMORE STREET, W.

THE PALACE HYDRO, HARROGATE.

THIS building is to accommodate (when wings are completed) 250 visitors and staff. It will be built of stone from the celebrated Pateley Bridge quarries. A roof promenade is a feature, and from here views



GROUND PLAN.

or twenty miles will be obtained. The hoist will convey visitors to the roof by the central tower. The hydro is to be erected by a private syndicate. Mr. J. ELLIS MARTEN, of Harrogate and Bradford, is the architect.

GLEBE COURT, GORING, OXON.

THE residence of the late Mr. JAMES SINCLAIR is beautifully situated on a terrace surrounded by three acres of grounds. It has a southern aspect and commands extensive views of the surrounding country, being within a few minutes of the river Thames. The locality in which it is built is much noted for the beauty of the river and splendour of the surrounding country. The architect is Mr. H. J. DODD, F.G.S., Reading.

RATHORNE HALL, YORKSHIRE.—ENTRANCE FRONT, GENERAL VIEW

The Committee of Management of the Belfast district asylum have during the last five years erected at Purdysburn four villas to accommodate fifty patients each at a cost of 5,000l. per building. These buildings, which are intended to form the nucleus of a new city asylum on the villa colony principle, provide maximum accommodation at minimum cost, and have proved most satisfactory. It is now proposed to provide villas for the patients at Grosvenor Street asylum and Ballymena, with administrative buildings, &c., at a total cost of 110,000l.

NORWICH CHURCHES.

THE annual meeting of the Norfolk and Norwich Archaeological Society was held last week under the presidency of General Bulwer, C.B. The report referred to the efforts for the completion of the restoration of St. Peter Hungate, and the commencement of the restoring of St. Mary's Coslany.

After the meeting, says the *Norwich Mercury*, the members walked to St. Mary's Coslany Church. Mr. J. T. Hotblack said that practically the whole of the church, with

the exception of the tower, had been rebuilt in the Perpendicular period, probably about 1400. With one exception all the windows were Perpendicular, and he thought that originally the stonework was all of clunch, a great deal of which still remained. The window over the vestry in the north end of the chancel was Decorated and probably formed part of an earlier church. In the east of the church they hoped to put a three-light Decorated window in memory of the three great artists of the Norwich school who were connected with that parish. John Crome was married there, John Sell Cotman christened there, and the Rev. E. T. Daniel was for a time minister. R. Ladbroke was also married there. Continuing his description of the church, Mr. Hotblack said that in the west wall to the north of the tower was perhaps the oldest memorial-stone in the city, dating from 1298. He then mentioned the finding of four ancient windows in the round tower, all identically alike. He thought he might correctly call them Saxon and put the date of their construction between twenty years before the Norman Conquest and twenty years after, and claim that they were the oldest wrought stones in the city.

After lunch the company reassembled at St. Peter Hungate Church, where the Rev. C. W. Baker said about 700l. had been given and spent, but the restoration was not completed. They still wanted more money with which to fit the church so that it might take its place in the religious life of the parish.

Mr. G. A. King read a long and technical description of the old stained glass in the church, which he has examined minutely. Prior to the initiation of the successful effort made in the year 1904 to restore the church, the glass was removed into safe keeping, and later was entirely releaded and refixed in the church, and the portions that remain are of considerable interest. After quoting Kirkpatrick and

Blomefield, Mr. King said that the glass is of two quite distinct dates, as evidenced by draughtsmanship, method of shading, colour of enamel, conventionality of treatment or otherwise. More than one-half of the glass is work of the middle part of the fifteenth century, and is no doubt the remains of the stained glass provided for the church at its rebuilding by John and Mary Paston in 1458-60. One piece of glass, a crown now in the north window of the north transept, is probably a survival of the older church, dating from about 1350. The existing glass of the period of the rebuilding includes the following interesting pieces. The tracery in the west or tower window has in the centre openings a coronation of the Virgin, unfortunately imperfect. In the north window of the north transept the heads of the four lights are filled with representations of demigods holding scrolls. Portions of canopywork still remain in the heads of the four lights of the east window of the same transept. The centre opening in the tracery of the first window on the north side of the chancel contains part of the story of Peter's acknowledgment of the Messiahship of Our Lord. The window next the altar has remains of canopywork in the heads of its three lights, and in the tracery above are four-winged figures. After further details, Mr. King went on:—Turning now to the east window of the chancel we find that not a particle of heraldic glass now exists. Sir John Paston, second son of John Paston (born in 1444), married Margery Brewse, and in the east window there is a piece of glass, originally part of the floor in one of the pictures, and having a portion of a scroll painted upon it. The name "Margery" is written on the scroll in black letters, and may relate to Margery Brewse, whose arms were still in the window in Blomefield's time. There are two heads in the window which are of interest. The first is all that now remains of the four Doctors of the Church, who once adorned the four-light window on the north side of the chancel. The head of St. Gregory is not complete, but sufficiently so to give an idea of the character of the original work. It looks like glass of a slightly later date. The mitre issues from a coronet, and the Holy Spirit is represented as a dove speaking in the right ear of the saint. The nimbus is rather elaborately ornamented, and on the left side of it are parts of the crozier held by the saints. In the east window of the chancel in East Harling Church there is a head of St. Gregory of about the same size, but the position of the head is reversed and faces to the left. There is a very close resemblance between these two heads; they are evidently of about the same date and probably from the same atelier. The head of St. Gregory has unfortunately no proper connection with the drapery forming the figure to which it has been attached, which is much later in execution, and mainly a patchwork of various fragments of painted glass. Blomefield, in his note on the stained glass, makes no mention of an Annunciation, one or two fragments of which still exist. The head of Gabriel, very delicately painted, is, like that of St. Gregory, attached to the body of a figure of later date. The head bears a striking resemblance to that of the Angel of the Annunciation in East Harling and Ringland churches. A charming figure of about 13 inches high, painted on one piece of white glass, represents St. James the Greater. The saint, of venerable appearance, wears a long-sleeved fur cloak, which is fastened in front by some kind of spiral-shaped shells and loops. His hat hangs on his shoulders, and is retained in position by a cord and tassel; his wallet is suspended on the right side by a strap coming over the left shoulder. The left hand holds a clasped book, and the right a pilgrim's staff and rod secured by a narrow band crossed and recrossed down the length of the staves. St. Bartholomew is represented with a flaying-knife and book, and wearing a red tunic and white cloak. St. Simon carries a large fish and wears a cloak of soft white with stained border. St. Agatha holds a four-pronged hook in her left hand, in her right a book. Her kirtle is green, open in front and showing the breasts. There is another female saint in white, carrying a book, but the emblem is missing, and there are parts of two or three other figures, but there is no means of identification. With these figures of saints there is also a fairly complete representation of a patriarch, with green turban and white cloak, while on one of the two centre openings in the tracery of this window there is another patriarch with pale blue turban, green tunic and white cloak. Facing him is a king crowned, but without a nimbus; he holds a sceptre, wears an ermine tippet on his shoulders, and a red robe. It is possible that this figure is intended for Henry VI.,

who was reigning at the time the church was reopened, or perhaps it is intended for King David. Turning now to the rest of the glass in the east window, we find that there still remain portions of the four Evangelists mentioned by Blomefield. The most perfect figure is that of St. John, easily identified by the ruby-coloured dragon issuing from a cup held in his left hand. St. Luke is identified by part of a nimbus of a russet yellow, showing the horns of an ox, and part of a wing still in their original position at the feet of the figure. The next figure may be taken as representing St. Mark, for among the patchwork drapery is part of the body of a lion, but not in its original position. Of the remaining figure, St. Matthew, practically little remains except the head, which is worse drawn than the others. The drapery appears to have been fairly well designed, but the work as a whole will not bear comparison with the earlier glass. The date appears to be about 1535. We have now to consider the panel of stained glass, perhaps of as much interest as anything in the window. The figure represents a priest kneeling in the attitude of prayer at a prayer-desk. His vestment is purple, and the desk an altar-tomb in the background are yellow, shaded with a mat of enamel, upon which lines of tracery are scratched out. The background above the tomb and desk is made up of pieces of canopy. The drawing and pose of the figure are good. The head is small in profile and tonsured. The hair is black, and lines of the hair are shown by scratching out with a very fine point. Beneath the figure are the remains of an inscription, and the date 1522. The question at once arises whether this is, after all, "the effigies of Thomas Andrews, the rector" (noted by Blomefield), who was buried in the chancel in 1468. A careful examination of the method of treatment shows that the glass is of much later date than the rebuilding of the church, and perhaps earlier than the four Evangelists. If this is a correct opinion, the figure is not that of Thomas Andrews, and a very careful study of the whole of the glass leads to this conclusion. In one of the windows in the north aisle of St. Andrew's Church is a small panel, on which is painted a representation of Robert Gardener, alderman, who died in 1558, and there are points of resemblance between the two figures which indicate a close approach as to date. Mr. King illustrated his remarks with some excellent water-colour drawings, made by himself, of various details.

Mr. J. T. Hotblack also exhibited some drawings of the old glass in the east window, made about fifty years ago by the Rev. C. W. Shickle, F.S.A., of Bath, when he was a youth resident in the parish. These show that, notwithstanding the vicissitudes through which the church has passed, no single piece of glass has been lost and on no one piece had been turned round. This has now been altered.

From Tombland the company proceeded in carriages to the Magdalen chapel, concerning which Mr. J. C. Tingey read a paper, in which he pointed out that from time to time the building in which they were assembled had been known as the Magdalen chapel. Yet until the last half-century it was nothing more than a name except to a few antiquaries. Even now very little was known of its history. The foundation of it must be placed before 1119, which year the first Bishop of Norwich died, for the first register of Norwich Cathedral set out that "Herbert, the bishop, sedulously persisting in deeds of mercy, founded a certain house in honour of St. Mary Magdalen, on the estate of his church outside the city of Norwich, for the relief of lepers; and he gave certain lands and possessions of the said church for their sustenance." It was, therefore, a lazaret hospital, and the doorways of the south and west sides are most likely Bishop Herbert's work. Still there is some ground for suspecting that these doorways are not in their original positions. That on the south side, at least, has recently been rebuilt. There is also a Norman buttress on the north side, and it may be inferred that the walls are of the same period. The building is 99 feet by 21 feet, and a note of Kirkpatrick gives the length as 45 paces, though he (Mr. Tingey) could not make it exceed 40. The point was rather important as helping to determine the position of the east wall, of which very little remained. Taylor says that a small oratory was attached to the hospital. No traces of dividing walls have been discovered, so perhaps nothing more than a screen separated the oratory from what would now be called the ward. This hospital has always been reckoned as one of the five lazaret houses of Norwich. The others were situated outside certain of the gates of the city, but their foundations are very obscure. One was in St. Stephen's

opposite Victoria Station; another outside St. Giles's gates, opposite the north porch of the new Roman Catholic church; another in the corner formed by Barn Road and Dereham Road; and the fourth on the east side of what is now Waterloo Road, just beyond the Board school, its site being still known as Infirmary Square. There were also leper-houses at Lynn, four at Thetford, two at Yarmouth, and various others scattered about the county, where they were not more numerous than elsewhere. On this account it has been surmised that leprosy was a common disease in Mediæval England, but the latest authorities are by no means convinced of it. Most likely true leprosy did exist, but the uncleanly habits of the people, coupled with their enforced diet of salt meat during six months of the year, rendered them liable to diseases of the cuticle, all of which were considered as equivalent to the Biblical leprosy and highly contagious. Leprosy practically disappeared in the fifteenth century. In consequence, the administration of a leper-house became a valuable sinecure, while the sick poor, who ought to have succeeded to the benefits of the foundation, were neglected. In this house, as has been said, the refectory became a chapel, no doubt at the expense of the funds previously allotted to the sick. The scandal went on until the Tudor sovereigns roughly put an end to it. In 1548 Edward VI. granted the hospital to Sir Robert Southwell and John Corbet, and in 1669 it appears to have been an almshouse for poor widows. In recent years Mr. W. Tyne rescued it from demolition, and his successor, Mr. Justice Gurney, has done all that was possible to preserve it and to restore it to its former state.

ARCHÆOLOGY IN DURHAM.

THE first country meeting of the year of the Architectural and Archæological Society of Durham and Northumberland was devoted to visiting Prudhoe Castle, the Grange at High Prudhoe, Ovingham Church, Bywell Castle and the contiguous churches of Bywell St. Andrew and Bywell St. Peter, short descriptions of each being given by Mr. V. H. Knowles, F.S.A., of Newcastle. Prudhoe Castle, says the *Durham Advertiser*, is romantically situated on an isolated mound about 500 yards from the river Tyne and occupies what would in Mediæval days be considered an ideal site for strength and invulnerability. The castle is the property of His Grace the Duke of Northumberland, and the modern dwelling within it is now occupied by Mr. T. D. Milburne, by whose permission the members were allowed to go over it. The castle was approached by a barbican and inner gateway, between which was a drawbridge over the moat before the latter was filled up. This gateway, as Mr. Knowles explained, is the earliest part of the castle and is Norman. The castle was occupied by one of the Umfravilles, who came over with the Conqueror and received as his reward lands in the Redesdale district, these being subsequently augmented by the estate of Prudhoe. The chapel above the old gatehouse is about a century later, probably of Edward I.'s time. It has a beautiful little oriel bay forming the chancel, lighted by two lancets, and forms a very choice little bit of Early English domestic work. The party then passed through the outer wicket and in the wall examined the entrance of what is supposed to be a subterranean passage leading down to the river. The great tower or keep, partially dilapidated, was inspected. It is about the same date as the keep at Newcastle, which was built between 1170 and 1180. Leaving the castle by way of the picturesque gardens the party climbed the hill to Prudhoe to see the Grange, now a modernised residence, but which contains a doorway with Early English mouldings and walls of great thickness, probably forming part of the chantry chapel of St. Thomas the Martyr. The doorway is a very interesting specimen, and was generally admitted to be well worth the climb up the steep bank to view it.

Returning, the company crossed the river and inspected Ovingham Church, being welcomed there by the vicar, the Rev. C. F. Thorp. Mr. Knowles said that perhaps the most interesting feature of the church was the tower at the west end. It was similar in some respects to those at Bywell St. Andrew's, Warden on the Tyne, and Billingham, in Durham county; and there were similar towers in Lincolnshire. The characteristic of them was that they were built without any projections or buttresses, without any offsets most. They were eleventh century and just a little pre-Conquest. Although some people might call them Saxon, they were unlike the earlier Saxon work done by Wilfrid and St. Bede at Hexham, Jarrow and Monkwearmouth.

They were a type by themselves; and no doubt just built in the time of Edward the Confessor. The tower might have been built for defence, as much as for any other purpose, and was divided into four or five stages. The belfry stage at the top was somewhat elaborate, with its double-light window. The tower belonged to a church of which probably there were no remains excepting the west end of the nave, evidenced by the straight lines which indicated a nave without aisles. The church, such as at first existed with its western tower and nave, gave place to considerable addition when the chancel and transepts were built. These followed, no doubt, soon after the energetic church-building period of Bishop Pudsey, of Durham, and was altogether a very simple and effective structure of probably the first quarter of the thirteenth century. The peculiarities are the exceedingly long transepts, the plan being somewhat after the form of a Greek cross. The aisles are on the west and not on the east side of the transepts. The general peculiarity of early churches was their height in comparison with their width, and that accounted for the loftiness of that church. The low side window, the piscina and other antique objects having engaged attention, the party visited the tomb of John Bewick, the engraver, and afterwards took train to Stocksfield.

A pleasant walk of three-quarters of a mile among some magnificent and rare trees, now in their most beautiful garb, brought the company to Bywell Castle. At Bywell, as at Dunstanborough, Bothal and Tynemouth, the gatehouse was the keep, and there they got the entrance into the castle proper. Bywell is first mentioned in connection with Guy of Baliol, one of the followers of the Conqueror, and in Edward I.'s reign it was occupied by one of the Nevilles. The machicolations above the gateway from which to throw molten substances upon an attacking foe claimed attention, as did the aperture over the straight stairway leading to the first floor, used for a similar purpose. The place is full of nice architectural detail in the way of window embrasures and fireplaces and turrets, and the grooves for the portcullis, together with the original iron grille at the foot of the staircase and the oaken gate at the entrance, all attracted the attention of the visitors. The date of the present building is fifteenth century. The church of St. Andrew was then inspected, Mr. Knowles stating that it was another of the early pre-Conquest churches similar to those at Warden, Billingham and Lincoln, and was the smallest of the lot. The wall on the east side of the tower denotes the width and position of the nave that was contemporary with it. One reason why it was supposed to be merely pre-Conquest and not of the early part of the Saxon period was the fact that early stones similar to those of Saxon crosses were built into the tower. With regard to the church of St. Peter being so close to that one, he considered the story of the two sisters who quarrelled, which was given as the reason, to be all fudge. Though its population has now disappeared, Bywell was once a thriving place, the populace being makers of armour and iron workers. They could still see the old market cross, which stood originally between the two churches. The church of St. Peter, the earliest portion of which is thirteenth century, was then viewed, and some very pretty interior architecture, especially in the way of windows, was inspected, this concluding the day's programme.

ARCHITECTURAL ASSOCIATION OF IRELAND.

AT the concluding meeting of the session of the Association there was an exhibition of drawings submitted by members in competition for the prizes offered by the Association and the Royal Institute of Irish Architects.

The Hon. Secretary read the result of the ballot for officers for the ensuing session, viz.:—President, R. M. Butler; vice-presidents, Edwin Bradbury, Lucius O'Callaghan; committee, J. H. Webb, Harry Allberry, H. G. Leask, P. L. Dickinson, G. F. Beckett, F. G. Hicks, A. G. C. Millar, J. Holloway and J. A. Geoghegan; treasurer, F. Hayes; secretaries, R. Donnelly, C. H. Mitchell; librarian and registrar, G. G. Lynes; auditors, C. L. Harrison, L. du P. Millar.

The prize winners were announced as follows:—The A.A. travelling studentship, P. J. Munden; the Royal Institute prize for a design for a country hotel, won by C. G. Ramsay; the President's prize, P. J. Munden; the Downes bronze medal for sketches, H. T. O'Rourke; the Vice-President's prize, C. Keefe; the class design, P. J. Munden.

The annual excursion is to be held in Shakespeare's country from July 9 to 13.

Mr. Joseph Holloway, the outgoing president, delivered a valedictory address. He congratulated the Association on the progress made during the year. Before that Association came into being in 1896 there was very little opportunity for those pursuing the study of architecture to gain knowledge, except by sticking close to the desk of the architect to whom they were articulated, and picking up what architectural crumbs they could, haphazard, from what they saw going on around them during office hours. Now all that was changed. The educational scheme so energetically and enthusiastically nursed into life by the late President had at last received the blessing of the Royal Institute of Architects of Ireland, and it would soon blossom in the forefront of the Association's work under the guidance of their new and energetic president, Mr. R. M. Butler. Continuing, he said:—I am pleased to say that the few words I addressed to you at the opening meeting did not fall on barren ground, and many of the subjects I touched on then are now bearing fruit. For instance, I notice with pleasure a praiseworthy effort being made on the part of architects to use Irish limestone, &c., more frequently than heretofore. While I see an awakening to the advantages of the employment of native materials, there is yet much to desire in this way before "All's well" can be called from our housetops. What we architects really want most at present is to evolve a style more suitable to the hardness of our native stones than that at present in vogue, so that we can get the maximum effect out of the minimum of labour in the way of mouldings and carvings. Carvings and mouldings that could easily be worked in the softer sandstones and such like are quite impracticable and ineffective when attempted in either granite or limestone. It stands to reason that the materials of a country are the best and most suitable for building in that country. Look around you in Dublin and you will be struck with the fact at once. Limestone is the great building stone of this country. It was employed in the Ulster Bank, College Green, and in the stately block of buildings at the corner of Dawson and Nassau Streets, and what could look better? The new Museum and National Library were built of Mount Charles sandstone—a splendid stone for city work. And of granites we have a charming variety, that from Ballyknocken, perhaps, being the flower of them all. Newry granite polishes well, but it is hard to work. The only imported stone (other than marble and granite) that stands our climate in external city work is Portland stone. When it takes on an outer crust it stands admirably. All our fine eighteenth-century buildings are partly built of Portland stone, all other imported stuff especially of sandstone nature fades away after a time. The dressings of the recently-restored Christ Church are going already, and the red sandstone bands in St. Anne's Church, Dawson Street, are in a very advanced stage of decay. I could name many such crumbling stone structures, but all who pass along our principal thoroughfares can see for themselves the way our climate eats into the imported stone. The propriety of the use of native stone is so obvious that it got overlooked, but now that it has been pointed out, the importation of cheap and rapidly decaying stone, I hope, will cease. There is nothing patriotic about the matter. Irish stone is the best in the market for durability in our own land; then why should we go out of our way to import an inferior article? Bad stone is dear at any price, even as a gift. Mr. Lavery, who has carried out much work in granite, told me quite recently that Ballyknocken granite takes the finest mouldings, and referred me to the work on the new arch at Stephen's Green as a proof of his statement. And above all—learn to place confidence in yourselves. It was a wise person who said:—"Never imitate. Your own gift you can present every moment with the cumulative force of a whole life's cultivation; but of the adopted talent of another you have only an extemporaneous, half-possession." How true—quite true. I saw in a paper the other day that "one of the tragi-comic curses of Ireland is of people being afraid to be themselves and follow their bent, lest they hurt the feeling of others just as timid in turn," and I quite agree with the sentiment. My own creed is, that anything that does not serve a useful purpose in a building is not ornamental. They serve no useful purpose, and certainly never look well. It is an age of sham I greatly fear. How to make everything resemble something else is all the rage. I suppose you all have observed that an epidemic of paint has broken out in the city—stonework, brickwork, everything vanishes before its

art-killing sway. Everything must be touched up in glaring, inharmonious colours that would make anyone possessed of a scrap of taste have bad half-hours of agony as he passes through the streets and views the house fronts smeared with all sorts of primitive shades of vile colour. The worst offenders in this paint-everything craze are the lords of the spirit bar. Those art patrons of our profession expend large sums of money each year in having their premises elaborated, and then cover up fine work in crude shades of paint. They who pay the piper may dance or not to the tune they pay for, is their idea, no doubt. They usually pay for the best materials, and then conceal them under paint. I think the painters and decorators of Dublin are to blame chiefly in this wholesale destruction of stonework, brick and woodwork. It would seem that they have discovered that bricks, limestone, granite, mahogany and oak are the best groundwork for the display of paint, and accordingly act upon the discovery. Everything must be covered with paint of the most glaring, vivid and hideously crude shades. You can hardly enter a principal street in the city without your artistic sense receiving a shock. Brickwork is coloured all shades of the rainbow, and limestone and granite receive the same generous treatment at the hands of the destroying painter. Is it a sense of the artistic dead in our city, that the citizens, not to say the profession, stand idly by and see the splendour and dignity of their city ruined by paint? I am old enough to remember our city a noble and sombre thing of beauty; but now we must paint that out and give it the air of a new gin palace. A world without taste is a world without artistic pleasure. That is what it is rapidly coming to, unless you, my fellow students, resolutely put your foot down against what is going on and try to beautify our city and not to destroy its dignified and imposing character by allowing new, inappropriate buildings to be erected at the sweet will of those who conceive only visions of ugliness and horror. If you make a firm stand against such architectural freaks, then Dubliners may look forward to a city ever increasing in nobility and charm under your watchful care. Form yourselves into an ideal committee of taste and control all the improvements, and if only engineers could be taught that architects are their masters, then much would be gained towards the realising and maintaining of our city as a haven where beauty lingers.

Votes of thanks to the President and the class secretaries were carried.

SCOTTISH NATIONAL EXHIBITION, 1908

THE committee of the Scottish National Exhibition, to be held in Edinburgh in 1908, met on Friday last to receive the report of Mr. John James Burnet, A.R.S.A., architect, Glasgow, their assessor, on the competitive plans sent in for the exhibition. The competition was for a building to cost 20,000*l.*, with a margin of 10 per cent. over, and the premiums offered were:—1st, 100*l.*; 2nd, 100*l.*; and 3rd, 75*l.*

Mr. Burnet reported, says the *Scotsman*, that twenty-eight sets of plans had been sent in and that the competition had been of a very high order. The sets of plans sent in were numbered in the order received, and the assessor intimated that his awards were as follows:—1st, No. 17; 2nd, No. 3rd, No. 14. On the sealed envelopes being opened it was found that the architects receiving the awards were:—

1. John A. Campbell, F.R.I.B.A., 124 St. Vincent Street, Glasgow.
2. Walker & Ramsay, 123 Wellington Street, Glasgow.
3. T. Duncan Rhind, A.R.I.B.A., 28 Rutland Street, Edinburgh.

Acting on a power reserved in the conditions of competition, it was resolved, while giving (as awarded) the first premium to Mr. J. A. Campbell, to accept the plan of Messrs. Walker & Ramsay for the exhibition and to appoint that firm the architects. The designs were displayed in three of the rooms on the first floor of the Synod Hall, and the committee adjourned their business for a time in order to give all the members an opportunity of inspecting the premiated and other plans.

Mr. Campbell's Plans.

The main entrance to the exhibition is placed in the design in Balgreen Road. A spacious circular-headed doorway, flanked by campanile (Venetian) towers rising to a considerable height, is a fine feature of the design. The elevation of the range of buildings on each side is broken up with ornamental pilasters and terminates in decorative

gables. The entrance hall, with circular-headed glass roof, is carried forward to meet a long oblong building set north and south, marked "Industrial Hall." On the west side of this hall, but detached from it, is the concert hall, with pleasing elevation, approached by covered corridors on each side, and beyond is a "central (open) square," with main avenues, fairy fountain, &c. The machinery hall is placed on the north of this square, and the fine art gallery with conservatory to the south. In the grounds of the old Saughton mansion-house are shown sites for a castle and Scottish village; the mansion-house itself is utilised for administrative purposes and a museum (it will be that in any case), and at the Gorgie corner, where the car line terminates, and where a new bridge is to be erected, an entrance is placed with avenue leading through the gardens to the exhibition grounds proper.

Messrs. Walker & Ramsay's Plans.

The requirements of the exhibition as set forth in the conditions of competition were an industrial hall of 100,000 square feet, a machinery hall of 20,000 square feet, a concert hall to seat 2,000 persons, an art gallery of 15,000 lineal feet of wall space so arranged as to be easily extended by 2,000 lineal feet, and a winter garden of 3,000 square feet. Having regard to the limit of cost which was specified, the problem set to the competitors was not an easy one. In the design selected it has been solved by the adoption of timber construction throughout for all the buildings, except in the case of the fine art gallery. Messrs. Walker & Ramsay, it may incidentally be stated, did a considerable amount of work in connection with the last Glasgow exhibition, including the Canadian pavilion. They were the architects of the Wolverhampton exhibition of 1902, and of the Coronation Arch in Whitehall, London, for the Canadian Government in the same year, so that they are not inexperienced in this class of work. According to the plan submitted the buildings proper of the exhibition are placed on the north-east section of the ground, as suggested in the conditions of competition. The industrial and machinery halls form one building, with front and main entrance to Balgreen Road. Towards the grounds this building is planned by throwing out two wings (one of which is the machinery hall) to form three sides of a square or courtyard. The fourth side is completed by the concert hall, with connecting covered ways to the wings. Externally the appearance of the buildings depends less on unnecessary details than on their main proportions and outlines. In the front of the main building facing the grounds this effect is attained by placing the concert hall (circular in shape) with its domed roof in the centre, and finishing the ends of the flanking wings with large and imposing towers. This front is opened up with arcadings, which will form tea terraces overlooking the grounds. Altogether the style of architecture is light and appropriate to a building of the kind. Whilst the structural framing of these buildings is of timber with outside walls of fibre, plaster and lathboard, the fine arts gallery is of light steel, filled in with brick and coated externally with stucco to form the walls. This is to make it fireproof. Except in the case of the concert hall, in which board-covered canvas decking is used, all the roofs are of corrugated iron. The fine arts building, with winter garden in front, is placed in the centre of the north-west boundary of the grounds. Its design is simple and pleasing, and the principal feature is the main entrance, topped with a dome. It is rectangular in shape, and comprises seven galleries. In the laying out of the grounds ample provision has been made for the entertainment and amusement of the visitors. A lake with illuminated fountain has been placed in the centre. On either side of this run wide avenues from the tea terraces in the main buildings to the sports enclosure at the opposite end of the grounds. Among the outdoor attractions provided will be a waterchute and switchback railway. Saughton House grounds will mostly be utilised for purposes of amusement.

Mr. T. Duncan Rhind's Plans.

In Mr. T. Duncan Rhind's design the main entrance is placed in the angle of the ground at the north end of Balgreen Road, facing the road from Murrayfield, which will be the principal route to the exhibition from the city. The plan shows a lofty domed entrance hall of dignified proportions, the doorway, deeply recessed, being flanked by square towers with domed tops and finials. The main industrial buildings are arranged along Balgreen Road and the northern side of the grounds, and form a screen from the east and north winds to the central open court, where

the bandstand is placed, and a like service is partially rendered on the west side by the concert hall and by the art gallery, the latter of which occupies a detached site on the south-west side of the park. As in all the plans, the ground for sports is shown to the west of the exhibition buildings. The central open court is suitably laid out with fountain, flower-beds and walks. At the Gorgie side the bridge over the Water of Leith is placed not in the angle at the south end of Balgreen Road, but a little further west, which permits of a straight avenue being formed through the grounds of Saughton mansion-house, and the placing of a winter garden in a circular space in the centre. On the river to the west of the mansion-house are shown a waterchute, rustic bridge, &c.

The plans were on exhibition in the Synod Hall during the week.

AN OFFICIAL COMPETITIVE EXAMINATION.

IN April an examination was held by the Civil Service Commission for four appointments as assistant architect and surveyor in H.M. Office of Works. There were nineteen candidates. The subjects were:—Drawing and design of architectural works—details of construction, 800 marks; specifications, 100 marks; quantities and estimates, 100 marks; use and properties of materials, 100 marks; surveying and levelling, 100 marks; sanitary engineering, 100 marks; principles and practice of valuation, easements, &c., 100 marks.

The subject for design was a building for city offices and shops in principal street, with existing buildings on each side, the site rectangular, length 130 feet and frontage 50 feet. The front elevation to be architecturally treated, without restriction as to style. Accommodation to be provided to consist of two shops, and an entrance to offices on the upper floors to be provided on the ground floor. Each shop to have a parlour and lavatory, &c., with nearly the whole of the basement for storage. Offices to be planned on the first, second, third and fourth floors. The drawings required were ground-floor plan, first-floor plan, fourth-floor plan, longitudinal section, front elevation, to a scale of 8 feet to 1 inch.

(Details of Construction, including Theory of Construction in Architectural Works.)

Four questions only to be answered.

1. Draw, to a scale of 2 feet to 1 inch, longitudinal and transverse sections showing part of a timber-framed roof over a public arcade 30 feet wide. Ventilation to be provided for and a detail of the system of glazing proposed.

2. Draw, to a scale of 2 feet to 1 inch, plan and section showing the construction of a stone staircase from ground floor to first floor for the corner entrance of a public building. It is to occupy a circular space 14 feet in clear diameter, surrounded by a 14-inch brick wall.

3. Draw, to a scale of 4 feet to 1 inch, a transverse section through a one-storey refreshment-room built into the side of a chalk hill where the ground slopes at an angle of 30 degrees. The walls to be of brickwork with windows in the front, the roof to be of concrete arches finished with asphalt, for a promenade.

4. Draw, to a scale of 2 feet to 1 inch, plan and part elevation of the construction of an external escape staircase of open ironwork, 3 feet 6 inches wide, supported upon columns or stanchions, for the upper floors of a four-storey factory.

5. A conservatory is to be formed at the rear of a terrace house, between back additions spaced 8 feet apart. It is to communicate with a sitting-room 10 feet high, through a window opening 5 feet wide. The opening to have a fan-light above and a pair of casements below. Draw, to a scale of 2 feet to 1 inch, a plan, elevation and section.

Materials of Construction.

Group A.—Give the colour, chief characteristics and uses of the following building stones and the principal localities from which they are obtained:—Ackworth, Craigleith, Idle, Purbeck, Anston and Huddlestone.

Enumerate and describe briefly the distinct layers of building stone found in the Portland quarries. Which would you specify to be used, and how would you insure getting the stone you specified?

What are the chief points to be considered in deciding if a stone is likely to "weather well"?

Group B.—Discuss the suitability of making bricks of strong clay, mild clay or loam, and marls.

Describe briefly the process of brick-burning in clamps and kilns and the comparative advantages of the two methods.

Explain the difference between earthenware, fireclay and stoneware drain-pipes and the method of burning them.

Group C.—Give the characteristics of the following kinds of timber, the uses of each and the chief source of supply:—Spruce, pitch-pine, yellow deal, mahogany, elm and teak.

Describe the different methods that have been adopted for the artificial seasoning of timber.

How are plaster of Paris and Keene's cement made and for what purposes are they generally used?

Questions in land surveying, levelling, quantities and estimates were also given.

The four successful candidates obtained respectively 1,104, 1,101, 1,060 and 1,060 marks.

(Details of Construction, including Theory of Construction in Architectural Works.)

Rough Pencil Sketches only.—A brick pier 3 feet by 3 feet on plan has to carry a load of 60 tons. Draw a section of the foundation it requires, assuming that the site is stiff yellow clay. State the materials to be used and give your calculations.

Give sketches of reinforced concrete as applied respectively to foundations, floors, piers and retaining walls; also state the principles of construction.

Draw, to a scale of 2 feet to 1 inch, plan and elevation of a rolled steel stanchion suitable for carrying the floor of a warehouse 11 feet in height from floor to floor with a load of 45 tons upon the stanchion.

Sketch a scarfed joint for a timber beam under compression, also for one in tension, also draw one other method of lengthening timbers.

Sketch detail sections of the construction of the following:—(a) a French casement window to open inwards, (b) ditto ditto to open outwards, (c) a deal lifting skylight in a sloping slated roof, showing the plumber's work.

Sanitary Engineering.

Six questions out of ten to be answered relating to drainage of stable, dryness of building, testing drains, ventilation of hall, sewage purification, &c.

THE ASSOUAN DAM.

THE following report by Mr. Somers Clarke on the proposed raising of the Assouan Dam has been sent to the Society of Antiquaries:—

In January last I wrote from Egypt suggesting that the Society of Antiquaries should formulate a resolution and communicate it to the Egyptian Government in relation to the destruction which would overwhelm the antiquities in Nubia if the dam at Assouan be raised 23 feet above the present level, and to the undertaking which the Egyptian Government had given that the said antiquities should receive every consideration that was possible.

It cannot fail to interest the Fellows of the Society to know that our representations have not been in vain, and that the care already taken to maintain the remains on the island of Philæ is to be extended to those temples and other places of archaeological and architectural interest which will be submerged when the enlarged reservoir is full.

In the *Times* of April 23 some extracts were given from a Parliamentary paper known as "Egypt, No. 2. Despatch from the Earl of Cromer respecting the water supply of Egypt."

In justice to the Government of Egypt it should be stated that these extracts do not by any means give an adequate account of the liberal and enlightened spirit in which the difficulties of the case are being met. Indeed, it might be supposed that around Philæ alone was the fresh work of investigation to be centred. As a matter of fact, in order to avoid if possible the submersion of the antiquities, all parts of the valley between Assouan on the north and Khartoum on the south were carefully examined by a commission especially appointed for that purpose; the geological formation was studied, and the conformation of the valley observed with regard to the capacity (a) for the storage of a large body of water, (b) economy of construction, (c) materials at hand for such construction, (d) safety.

Having regard to the quantity of water that can be impounded with a wall of a given height, it is now proved that no place offers such conveniences as Assouan. Not less than 14,000*l.* were voted for the investigation and necessary survey.

That which especially interests us is the following question, What steps will the Egyptian Government take to examine, survey, and to preserve and, finally, to give to the world the results obtained? We must bear in mind that not only archæology and architecture will suffer; but also ethnology, botany, and, indeed, nearly all kindred sciences.

The swamping of any part of the Nile Valley is, for us, its destruction.

The survey of that part of the valley which will be submerged has, to a considerable extent, been initiated during the examination already referred to.

An archaeological survey is to be taken in hand, no effort being spared to render this as complete and thorough as possible. In this survey will be included all temple and town sites, cemeteries, and all other indications of ancient civilisation. Plans of these will be prepared to a large scale.

Copies will be made of all inscriptions, whether on walls or rocks, beginning with those which will be first submerged. The ancient cemeteries, &c., will be excavated and everything will be recorded.

The temples and other ancient buildings that can possibly be affected by the increased level of the water in the reservoir will be underpinned, fortified, and at the same time measured and drawn.

Lastly, the result of all investigations will be published to the world.

The sustentation of the temples will be undertaken by the Department of Antiquities, under M. Maspero. The rest of the work is placed in charge of Captain Lyons, R.E. Those who have the pleasure of knowing this gentleman are well aware of the admirable method, care and thoroughness which he brings to bear on every work he undertakes.

The organisation of the great work is already begun. The Egyptian Government has voted 60,000*l.* in order that it may be carried out in its integrity. We may be glad that the suggestion for pulling down and re-erecting on another site part of the ruins at Philæ has not been entertained.

LEWES CASTLE.

LOOKING at the stately ruin which towers above the county town of Lewes, it is curious to remember, says the *Sussex Daily News*, that in the time of King James I. the flints of which the castle was composed were actually sold at "fourpence a load." Probably just after the union of England with Scotland there were many jealousies and strifes among the nobles, and it was deemed expedient that such strongholds should not be in working order. The fiat thus went forth for their destruction, and the "simple" inhabitants joyfully availed themselves of the opportunity to get cheap building material for their humble dwellings and for the repair of their roads.

The massive walls, part of the gateway, two towers of the keep, and probably innumerable minor buildings were pulled down, rendering the castle useless as a fortress, but happily enough is spared for one to realise what an important place it originally was. How astonished the builders and the destroyers of those massive walls would have been could they have foreseen the crowd of sightseers who in the twentieth century would cross the moat and climb the steps to the keep to admire and conjecture about the early days of the structure.

From the various landing-places of the stairway an excellent view is obtained of the castle gateway, with its towers and arches, in which may still be seen the grooves in which the portcullis was lowered for safety at night. The walls in early summer are gaily draped with orange wallflowers, ivy-leaved toadflax and dense tufts of wall pellitory, while at their base are clumps of Alexanders with golden-green umbels of blossom, a plant which is more frequently found near ancient buildings, and may have been cultivated by our ancestors either for food or physic.

The first "curiosity" displayed at the top of the steps can but raise a smile from those acquainted with rural Sussex. An ancient plough it may be, but scores of ploughs of this precise pattern are still turning the long furrows of the arable "layings" on the South Downs. We have not altogether turned to the plough which runs to and fro between noisy steam-engines, or even to the iron double-furrow. Within the courtyard of the keep other relics are much in need of better care. Rude and fragmentary as the old canoes cut from a single tree trunk are, they are things most unlikely to be found again, and

it is a great pity that they should be exposed to the humid atmosphere of English winters. Perhaps when the Sussex Archaeological Society settles down in its new home room will also be found for the canoes as well as other things.

Entering the southern tower, what a medley is seen. Curios of all periods in grievous need of sorting are crowded together, and some preventive measures should be taken to arrest the ravages of time. For instance, just opposite the door are some old trenchers and a long-handled wooden strainer—probably a dairy implement. These are riddled with wormholes, and if the insidious little drab woodbeetles hatch out with the summer warmth they will soon spread to the antique chairs, carvings and other valuable wooden relics around. In the tapestry-room of the gateway there is a fine old spinning wheel in the same state. Cannot some enterprising chemist devise a dressing which will check the woodbeetle and the crumbling of age and preserve these interesting instruments of a past age?

Just within the doorway are two rather stumpy alabaster figures, said to have been brought from Hurstmonceux Castle. A vast quantity of curios and works of art were sold there about a century and a half ago, when the Hare family migrated from the Mediæval castle to the more modern residence in the upper park. Over the doorway are hung two large bunches of gilded grapes, which probably swung over the doorway of some inn. With them is a curious little wooden figure, representing an infant Bacchus astride on a barrel, and near by are several specimens of old constable's staves. One is so well accustomed to the sight of the helmeted policeman, even in country lanes, that the rising generation hardly know that within middle-aged memory he did not exist, and some decent man in each parish was sworn in as constable and given a short staff, armed with which he felt himself the repository of all the dignity of the law. When the staff was displayed the evil-doer knew he must behave himself, and the shout, "Just bring me out my staff, missus," has quelled many a petty squabble on the village green. In the glass case below are various mummy fragments, which have nothing to do with local history, including that gruesome nightmare to child visitors, the hand which was torn so cruelly from its arm. It is doubtful if the public exhibition of such horrors serves any good purpose.

The upper rooms of the south tower are surrounded with careful rubbings from many of the best monumental brasses in Sussex and with the coats-of-arms of the leading families of the county, many, of course, now extinct. Numbers of fragments of carved stone and beautiful encaustic tiles are here, brought from the great priory below, whose despoilation seems even more barbarous than that of the castle.

Here, too, is a primitive cheese press, which ought to be displayed with the spinning wheel, rush-holders and other relics of Sussex farm life in the eighteenth century. It is a relief to step from the somewhat musty rooms to the free, fresh air at the top of the tower. But we have by no means exhausted the museum. In the western tower is a really excellent collection of chipped flint implements and much interesting pottery, notably a large jar which was dug up in the foundations of Hellingly asylum. Near by is a very curious relic of the Roman invasion. This is a bronze helmet, to which a pearly, flat oyster-shell is firmly affixed. It was dredged up off the West Sussex coast. It seems most likely that some Roman soldier met his death at the hands of the British, who endeavoured to drive off the intruders, and, encumbered by his armour, was drowned, the imperishable bronze of the helmet lasting on to tell the tale all through these centuries.

Descending to the rooms of the gateway, the first thing to be noticed is the collection of fine old Sussex iron fire-backs and "dogs." In spite of modern inventions, these seem likely to return to use. A gentleman in Essex recently had one cast for his hall, but was astonished to find the founder had copied the antique pattern too literally, even to the seventeenth-century date. It was promptly returned, the owner objecting to having a cast-iron lie always before his eyes.

In spite of the dark and crowded rooms, it is easy to see how fine are the many pieces of valuable tapestry presented by a former Earl of Chichester. The stitches are so tiny and even that they represent a stupendous amount of work done by industrious dames of old. The colours are wonderfully fresh, and the designs, especially those of the incidents in the life of Moses, must have been drawn by no mean artist.

THE BELFAST CITY HALL.

IN the King's Bench Division, Dublin, before Mr. Justice Boyd and Mr. Justice Wright, an application was made in an action brought by Sir Alfred Brumwell Thomas, architect, London, against the Corporation of Belfast.

Mr. Harrison, K.C., on behalf of the defendants, applied for an order for fuller and better particulars as to certain portions of the cause of action, and also for extension of time to plead to the action. The action was one by Sir Alfred Brumwell Thomas, architect, carrying on business in London, against the Belfast Corporation to recover certain moneys in respect of his fees as architect of the new city hall in Belfast. In his statement of claim he sued for 13,708*l.* 15*s.* as still due to him, after giving credit for 8,050*l.* already paid, and he did that without prejudice to any claim which he said he was keeping up his sleeve. His claim was set out in a number of alternative ways in the pleadings, and he claimed not only under the original contract, but also for extras. The particulars given with respect to some of the claims were deemed by the defendants to be insufficient, and hence the present motion. That the details within their power to give might have been more satisfactory was evident from the fact that in the affidavit filed to resist the motion they had given very full particulars of everything except one claim. Plaintiff in framing his action relied in the first place on the original contract, which was arrived at in this way. Architects were asked to compete for a 100 guinea prize for the best design for a new city hall, to be completed within four years, and not to cost more than 150,000*l.* The design which plaintiff sent in was accepted, and thereupon the defendants entered into a contract with Messrs. H. & J. Martin, Ltd., to build the city hall at a cost of 149,864*l.* 5*s.* 10*d.* Plaintiff's first claim was for 5 per cent. on that, and there was no dispute on that part of his case.

Mr. Campbell, K.C., who appeared on behalf of the plaintiff, said he might shorten matters if he mentioned that they would give defendants until the 10th inst. to plead if they agreed to accept short notice of trial.

Mr. Harrison said he would be content with that date, but he could not take short notice of trial.

After some discussion amongst counsel, it was agreed that the trial should be set down for the 20th inst., and that defendants should have until the 10th to put in their defence.

Mr. Harrison said plaintiff had a claim for 3,750*l.* in respect of damages, and they wanted better particulars as regards that. Plaintiff said the original contract was for 149,000*l.* odd, but that with the addition of a great number of extras it was increased by 70 per cent., and he claimed 5 per cent. on that. In the third place he claimed 2½ per cent. on those parts of the original contract which were abandoned. Plaintiff's course was rather peculiar, because after claiming damages for the extended period of the contract he also claimed percentage on the extra money expended during that time. Counsel submitted that plaintiff should be required to give particulars of the damage which he alleged.

Mr. Campbell said the answer was obvious. They had to maintain their office and staff during the extra time at, of course, very considerable expense. The original time was to be four years, and it finally ran up to nine years.

Mr. Harrison said the plaintiff's claim was formulated in this way:—5 per cent. on 120,000*l.*; 2½ per cent. on 149,000*l.*; 3 per cent. on 12,119*l.* for office furniture, and 3 per cent. on 20,240*l.* for other things that were tendered for and not gone on with. If he succeeded on these items he would be getting paid for his delay without at all having this claim for damage about which they complained of the want of particulars.

Mr. Campbell said it was plaintiff's interest as well as theirs that the amount should be expended in as short a time as was possible, and the contract provided that the amount was to be expended in four years. Instead of four years, by alterations in the design and so forth, by fighting amongst themselves and fighting with their contractors, Messrs. Martin, the buildings were not completed for nine years. Plaintiff said that as a result of that he had to keep his office and staff in Belfast for nine years engaged in earning a sum which he should have earned in four, and that, therefore, he was entitled to be paid for his extra time.

The Court, according to the *Irish Times*, made no rule on the motion for particulars, and set down the hearing of the action for the 20th inst., defendants being allowed until the 10th inst. to deliver their defence. Costs were ordered to be costs in the case.

GENERAL.

The Honorary Degree of D.C.L. is to be conferred by Oxford University on M. Auguste Rodin, president of the International Society of Painters, Sculptors and Gravers; Mr. George Frederick Bodley, R.A.; and Mr. Hubert von Herkomer, R.A., Hon. Fellow of All Souls College. Mr. Sidney Colvin, keeper of paints and drawings in the British Museum, is to receive the honorary degree of D.Litt.

Count Plunkett, at the opening of the Irish Home Industries section of the Dublin Exhibition on Saturday, stated that the Arts and Crafts Society of Ireland aimed at elevating popular taste and showing the connection that exists between art and industries. The difficulties in the way of Irish enterprise had been trebled for the craftsmen, but much good work had been done, and the refining influence exercised by the Society had done much to develop the skill and talent of our workmen.

The Competition for the prizes of the French Society for the Encouragement of Art and Industry attracted 242 works. The subject was "A Signboard for the Shop of a Potter." M. Vaudremer, architect, presided at the examination. Of the thirteen prizes four were gained by Paris, three by Lyons, two by Maçon, two by Nantes, one by Tours and one by Rouen.

The Médailles d'Honneur of the Paris Salon have been awarded as follows:—Architecture, M. Louis Jean Hulot; painting, M. Henri Martin; sculpture, not awarded; engraving on medals, M. Frédéric Vernon; engraving and lithography, M. Abel Mignon.

Mr. A. Scott, M.Inst.C.E., who had the control and carrying-out of the new harbour and dock works at Gibraltar for the Admiralty, has been appointed engineer-in-chief and technical adviser to the Chilean Government for harbour works, and will leave shortly for Chile.

The Partnership between Messrs. Colson, Farrow & Nisbett has been dissolved by mutual consent. Mr. Frederic Richard Farrow, F.R.I.B.A., will carry on his practice as architect and surveyor at the old address, 29 New Bridge Street, Ludgate Circus, London, E.C.

The Dean and Chapter of St. Paul's are about to determine by means of a practical test the safety of the cathedral. Metal discs are to be placed in the pillars in the crypt and elsewhere, and later by accurate measurement it will be possible to settle definitely whether or not the building is stable.

At an Auction held last week at Worthing a key, which came into the possession of the late Mr. George Truefitt, F.R.I.B.A., of Old House, Heene, Worthing, was offered for sale with other articles by order of the trustees. It belonged to Mary Queen of Scots, and is believed to be the one used by her to open Earl Darnley's private room in Edinburgh Castle. It was sold to Mr. Rochelle Thomas for 50l.

The Executive Committee of Ayr Auld Brig preservation committee have been informed of the dissolution of the firm of Simpson & Wilson, the committee's engineers. An application was submitted from Mr. W. S. Wilson, one of the partners, asking to be appointed engineer, the other partners being agreeable. The meeting agreed to appoint Mr. Wilson, subject to the acquiescence of other partners, and further resolved to ask Mr. Simpson, one of the partners, to accept the appointment of honorary consulting engineer. The committee agreed to insure the workmen engaged on the preservation work. The hon. treasurer reported further subscriptions, and that the fund now amounted to 10,205l.

A Sub-Committee of the Lord Provost's committee of Edinburgh Town Council accepted an estimate for the cleaning of the Pitt statue and the statue of the Scott monument. Some time ago the statues of George IV. and of Allan Ramsay were treated in a similar manner.

At the Annual General Meeting of the Royal Society of British Artists, Mr. Alfred East, A.R.A., was re-elected president, Mr. Boot vice-president and Mr. Watt Cafe hon. secretary; Mr. Walter Fowler was elected treasurer, and Messrs. J. Finemore and W. M. Palin auditors, Mr. W. Edward Riley, F.R.I.B.A., and Mr. Hodgson Liddell members of Council. Mr. Thomas Brock, R.A., was elected an honorary member. The President has presented to the Society a presidential badge specially designed by Mr. George Frampton, R.A.

The Competition for the Palais de Justice in the Bulgarian capital has been awarded to a French design signed "Lux, Pas, Jus," of which the authorship is not yet announced.

The Late Alderman G. B. Woodruff, the first European representative of the Singer Sewing Machine Co., bequeathed 10,000l. to the vicar and churchwardens of the new parish church of All Saints, Hove, for completion of tower and west porch of that church.

The Dover Corporation have decided to place stained-glass windows in the town hall as a memorial to Dr. Askley, a local philanthropist, who recently died, and during his life had given about 30,000l. to local institutions.

The Foundation of the church of St. Cæsarius has been unearthed in the course of excavations at the Villa Mills, on the Palatine Hill, Rome. It was the private chapel of the first Christian emperor, and existed up to the fourteenth century.

The Hawarden Parish Magazine announces that the present east window in Hawarden parish church is to be replaced by a very beautiful design by Sir Edward Burne-Jones. The subject will be the same, and the new window will have the same memorial character. It is to be the gift of Mrs. Drew. The magazine states that the present window is by no means worthy as a work of art to occupy the most important place in the church.

Messrs. John Boulting & Sons, of Upper Marylebone Street, W., have opened a branch establishment of their business at 51 Bishopsgate Street Within, E.C., under the control of Mr. William Good.

A New Unionist Club is in course of erection at Aston Cross, Birmingham. The architect is Mr. A. G. Latham, of Temple Row, Birmingham.

Mr. W. Bevan, F.R.I.B.A., has removed his offices from Parliament Chambers, Great Smith Street, to 2 Old Queen Street, Westminster, S.W.

The Limited Competition for the Shortlands Congregational mission hall has been settled in favour of designs submitted by Messrs. Geo. Baines & Son, 5 Clement's Inn Strand, London, W.C.

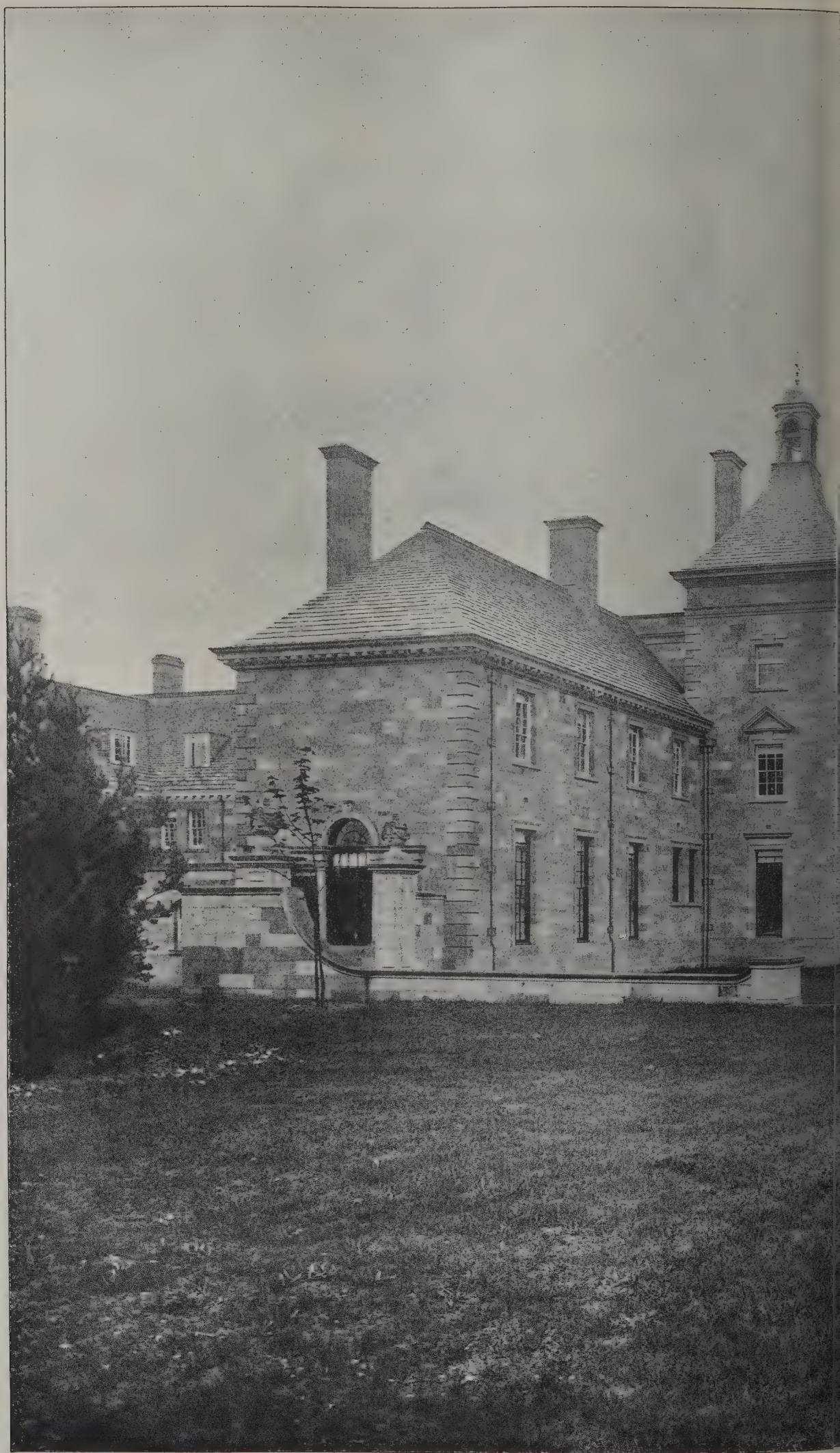
In Opposition to the municipal buildings scheme of the Coventry Corporation a memorial to the Right Hon. J. Burns, the President of the Local Government Board, has been issued, and has been numerously signed. It sets forth that the memorialists object to the borrowing of the sum of 30,000l. for the purpose of erecting municipal offices and shops on the Earl Street site.

The Secretary of the Local Government Board in a letter points out that having regard to the provisions of the Workmen's Compensation Act, which will come into force on July 1, that local authorities generally will be employers within the meaning of the Act, and that to the extent to which in that capacity they will become subject to liability which may be met by insurance, they may properly incur reasonable expenditure in effecting an insurance against their liability under the Act.

The Nottingham Architectural Society paid a visit to Southwell on Saturday, when the members were met by Mr. W. D. Caröe, the architect to the Ecclesiastical Commissioners, who has been instructed to design a new residence for the bishop, incorporating in the building the ruins of the ancient archiepiscopal palace associated with the name of Cardinal Wolsey. The additions to the ancient walls, laying-out the grounds, &c., are estimated to entail an expenditure of 9,000l. There are forty-nine rooms, large and small. When the bishop is entertaining a large party of guests the ancient archiepiscopal banqueting-hall will be used. A new private chapel has been constructed, one side being part of the old wall and having a lofty roof of English oak. The cost of the chapel is estimated at 700l. In the upper storey of the house are dormitories for candidates when spending quiet days with the bishop before ordination. Mr. Caröe showed the party over the Minster and new house. Afterwards the contractor entertained the visitors to tea at the Saracen's Head Hotel, made famous as the hostelry where Charles I. surrendered to the Commissioners of the Scotch Army.

The Directors of W. & T. Avery have decided, subject to audit, to pay a dividend on the ordinary shares of 15 per cent. for the second half of the year, making 10 per cent. for the year.

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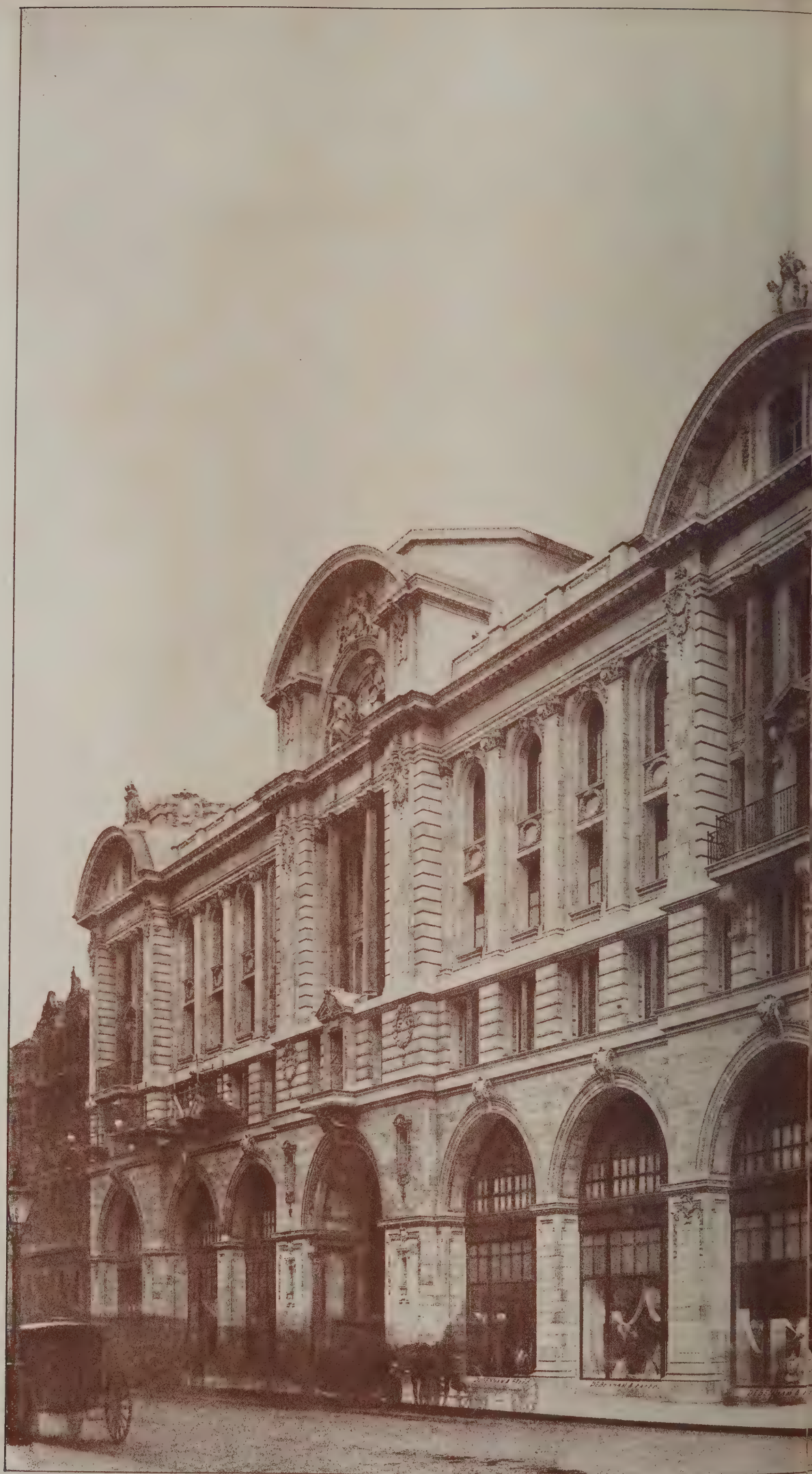


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rohitects.

The Architect.

THE WEEK.

WHEN the late Mr. SLADE founded professorships of fine art in Oxford, Cambridge and London it was arranged that the professor, who was to hold office for three years, should deliver twelve lectures each year, and that no lecture was to be twice repeated. It is now proposed to alter the regulations so far as they relate to the University of Cambridge. The tenure of the chair is to be permanent after a preliminary period of three years, instead of for three years only as at present. The professor will have to deliver at least twenty-four lectures each year, and it shall be also his duty to organise and develop the study of art in the University. The professorship is to be precluded from being held together with any other University professorship, readership or lectureship. The proposals were put forward by the Board of Electors to the Chair with the object of removing the Slade Professorship from the category of occasional lectureships, held often by distinguished men from outside the University, like the Chair of Poetry at Oxford, and making it a permanent post, with the object of extending the study of art in the University. There was opposition at the congregation on the 6th inst., more particularly to the last of the proposed regulations, on the ground that the stipend of the chair (360*l.*) was not enough to justify debarring the professor from holding another University post. A large majority, however, upheld the scheme of the Board of Electors.

ABSURD stories sometimes get into circulation concerning the power which an architect is supposed to have over the financial arrangements connected with buildings. Talk of the kind may be carried on for a long time and may do injury to architects, while they are deprived of an opportunity to defend their character. A case of the kind was heard last week by Mr. Justice PHILLIMORE at the Suffolk Assizes. Mr. WINKWORTH, an architect and surveyor, of Ipswich, brought an action for slander against a Mr. FULCHER, who was a builder's traveller. It appears that in 1902 plaintiff acted as architect for a Mr. NORTHFIELD and a Mrs. WAINWRIGHT, and satisfactorily carried out his duties. In 1906 plaintiff was engaged in some litigation about land with a Mr. HUNT. The defendant at a subsequent time called upon the plaintiff, and asked to have a private conversation with him, but before they were alone said in the hearing of a clerk:—"I have got a serious accusation to make against you. Unless you make the land over to Mr. HUNT on the Roundwood Estate, I shall inform Mrs. WAINWRIGHT, and Mr. NORTHFIELD's solicitors, that you robbed them of 100*l.* over their contract for the Gainsborough Road houses two or three years ago." The defendant in his evidence said that the plaintiff and himself had been good friends, that he called on him respecting an order from plaintiff's brother for slates, and he admitted that he threatened, unless the HUNT business was satisfactorily settled, to reveal that a deficiency in quantities on one set of houses was made up by charging other clients with the difference. After hearing evidence there was a consultation, and defendant's counsel withdrew all allegations against plaintiff, apologised, and consented to judgment for ten guineas and costs. In this case the defendant's indiscretion enabled Mr. WINKWORTH to have the slanders investigated. Otherwise they might have continued to injure him during many years. The defendant imagined there was no witness present to hear his words, and he may have endeavoured to secure immunity on other occasions.

It is always amusing to witness a contest between authorities respecting buildings, especially when the public are not heavily charged for the litigation on both

sides. An instance has occurred in Doncaster. That interesting town has the privilege of possessing an Act one section of which declares that the making of any addition to an existing building by raising any part of the roof or making any projection shall for the purpose of the Act be deemed the erection of a new building. The offices in connection with the local county court required enlargement. The Registrar lodged a plan which the sanitary committee of the Council declined to approve. A revised plan met the same fate. In spite of the opposition the building was altered. Three summonses were taken out against the Registrar and his builders for breaches of by-laws. The defence was that the building was exempted because it was used for public purposes. The Bench, after hearing evidence and speeches, came to the conclusion that the exemption did not apply and they could not regard it as a public building. Regret was expressed that matters should have become so strained between the parties, as an improvement had been made. The premises were very much better than before the alteration, and nothing of a sanitary character had been injured. The small penalty of 1*s.* and costs was imposed and the summonses against the builders were dismissed.

THE Institute's schedule says that the 5 per cent. commission is to include "examining and passing the accounts, exclusive of measuring and making out extras and omissions." But it is also stated that additional charges can be made in the measurement and valuation of extras and omissions. Local Government auditors apparently do not approve of any charges of the latter kind. At the last meeting of the Stoke education committee a report from the auditor was read which stated that it was only with great hesitation and after consultation with the chairman of the committee that he passed a payment of 4*l.* 3*s.* 7*d.* to the committee's architect, which payment was included in the final payment on a building contract. The auditor found that the architect had received 2½ per cent. on the tender from the contractors for taking out the quantities, 5 per cent. from the authority on the whole contract for plans, supervision, &c., and the further payment of 4*l.* 3*s.* 7*d.* from the contractors for "surveyor's charges for settling the final account." That charge was unprecedented in his experience. He thought it most desirable that architects who were employed by the authority should receive all their remuneration, including that for quantities, from the authority and none from the contractors, and he trusted that in future contracts the authority would see their way to enforce that rule. It is considered to be "desirable" that the architect should be paid by the client rather than by the builder for all charges for taking out quantities. But in practice that rule cannot always be insisted on. Government auditors could not prevent payment by a builder, although if it were announced from Whitehall that only the payment directly by local authorities would be recognised, a change in the common practice might follow.

THE Paris Opera House is about to have new directors, who have stipulated that the condition of the building should be improved, which means an immediate outlay of about 24,000*l.* Over 2,600*l.* will have to be expended on sanitary improvements. Upholstery will cost about 8,000*l.* Cleaning of the public parts, such as the foyer, staircases, &c., will cost 1,100*l.* Reparations of furniture will require another 1,000*l.* Renewing a part of the flooring is estimated at 400*l.* The heating apparatus is in such a condition that unless there is a change the house cannot be warmed during the coming season. For that work 1,750*l.* will be required. Repairs of corridors will cost 800*l.* Electric wiring, &c., is estimated at 4,100*l.* Various other repairs will cost 1,100*l.*, and 3,000*l.* is allowed for contingencies, expenses of direction, &c. The Opera House belongs to the State, and it will be necessary for the money to be voted by the Legislature.

DANISH EXPLORATION.

DURING this week London has been welcoming the King and Queen of DENMARK. There are bonds between their country and Great Britain which are of a most interesting kind, and which it is to be hoped will be again and again renewed. But it is well to remember that a century ago Denmark was all but deprived of its existence as an independent kingdom, and mainly owing to the acts of Englishmen. In 1807 the entire Danish fleet surrendered to England, and that event was soon afterwards followed by the ceding of Norway, which was then a part of Denmark, to Sweden. Happily those trials have ceased to cause any bitterness between the two countries. Denmark has regained her position, and it must be acknowledged that the arts had no small share in the recovery. Statuettes after the works of THORWALSDEN have for several years been familiar in London, and indeed in many other European capitals. Other sculptors have followed THORWALSDEN, and by the patriotism of M. JACOBSEN their works have been purchased for the nation, and a fine gallery erected to contain them in Copenhagen.

There is a close connection between sculpture and exploration. As France, Germany, Italy, and we may add America, lands in which sculpture is esteemed, have wished to gain renown by the discovery of ancient masterpieces, it was allowable for the countrymen of THORWALSDEN to imitate their contemporaries. M. JACOBSEN again displayed his liberality in providing the money required. All the most eligible parts of Greece had been already assigned, and the Danes have therefore to accept a portion of Rhodes as a field for their operations.

Rhodes has some fitness for exploration by a people who had so unexpectedly displayed skill in sculpture, and for subjects which were mainly inspired by Greek mythology. The island had at one time gained renown as a school of sculpture. The "Colossus of Rhodes," which was a great figure of HELIOS the sun-god, was supposed to be one of the seven wonders of the world. It may not have passed as a noble work, if judged by a high standard. But it suggested one of the characteristics of Rhodian art. As well as can be made out the Rhodian sculptors endeavoured to produce figures on a large scale and in intricate groups. It is also supposed that they wished to excite terror, or something approaching it, by their representations. The complicated group of the *Farnese Bull*, now in the Naples Museum, but which at one time adorned the Baths of Caracalla in Rome, is regarded as one typical example. The more admired *Laocoon*, which was formerly in the Baths of Titus, is believed to be another Rhodian work. It does not follow that sculpture of a different class was not produced in the island. Portrait statues by Rhodian artists were much sought after. There were also painters; and if one legend can be accepted as evidence they also had a weakness for tragic scenes. A man, it was said, was put to the torture in order to become a model for the figure of the suffering PROMETHEUS.

The Danes have therefore reason to suppose that in an island where so many ancient sculptors lived relics of them shall be found. It was no doubt believed by many inquirers that as traders visited Rhodes during its possession by the Romans, the Byzantines, the Knights of St. JOHN and the Turks, any ancient example which was likely to have value was sure to be removed. The Christian knights were without much reverence for ancient art, and they had no misgiving about using carved stones in walls and fortifications. The city of Rhodes especially was supposed to be clear of pagan remains, and it was doubtful whether other parts of the island were likely to be more fruitful.

The Danes have not the money at command which would allow them to make many experiments. Their operations have been mainly confined to Lindus, which

stands at about the middle of the eastern coast-line. It was formerly one of the three principal cities, and subsequently became a member of the Hexapolis, or six combined cities. CHERES, the sculptor of the colossal sun-god, was a native of Lindus, and it was reasonable to assume a work by him or one of his contemporaries would be unearthed, although the Knights of St. JOHN had erected a castle near the village.

Up to the present no remarkable work has rewarded the enterprise and industry of the Danes. As in other places, the remains of the ancient public buildings have been brought to light. Lindus possessed a temple which was dedicated to ATHENÉ. It has also been found that about the time of HADRIAN importance was attached to the place, for evidently the walls were reconstructed by Roman masons. Numerous inscriptions were also met with, but their value as historical evidence remains to be ascertained.

What appears to be most interesting about the place is that Lindus seems to have been a cultured city. Indeed, it may have had some analogy with an English cathedral town. Many philosophers belonged to the island, and it is easy to imagine they would prefer Lindus to Rhodes, which, as the capital and the principal seat of trade, would not be so well suited for men who gave their days to reflection, and some of whom were likely to be prone to mysticism.

If, however, there is nothing resembling the *Laocoon* left in or about Lindus, the Danish explorers have to the satisfaction of knowing they are endeavouring to extend our knowledge of one of the Greek races. There is the authority of HOMER for the belief that Rhodians took part in the expedition to Troy. The poet says that proud Rhodians came in nine ships, under TLEPOLEMON, a son of HERCULES, who ruled the island in which the people lived in three separate tribes, viz. those of Lindus, Camirus and Ialysus. At a subsequent time the Rhodians, who as islanders knew how to utilize the sea, founded colonies in Italy, Sicily and Spain. From the position of Rhodes it was often open to invasion on all sides, and in consequence the tribes found it advantageous to form a league. But there were internal dissensions from which the islanders long suffered.

It suggests the dangers to which Rhodes was liable when we learn that the Colossus which we have referred to before was paid for by the sale of the war engines which on one occasion were employed against the city of Rhodes without success. The figure is said to have been overturned in an earthquake, and this may explain the omission of it from the inventories of PAUSANIAS.

A people who preferred immense statues must have had lofty buildings to contain them. All that is recorded of Rhodes as a city—and such a town as Lindus may have borne a resemblance to it—suggests wide and straight streets, massive fortifications broken at intervals by tall watch-towers, and an absence of the irregularity in streets and houses which was characteristic of Athens. According to PLINY the statues in Rhodes numbered 3,000, a statement which must now be considered as incredible, unless we suppose the sculptors worked in the open and that many of the works were intended for exportation.

Modern explorations do not support the statements concerning the superabundance of sculpture in the island. But as they belong to a maritime race the Danes must have interest in their efforts to uphold the character of the old Rhodians, who if addicted to piratical expeditions were, like other Greeks, lovers of refinement in the intervals of business. The Vikings also loved art, although they preferred to have it in the form of jewellery, rich robes and other aids to personal adornment. The public spirit of the Greeks, by which a city became of more importance than one's home, was unknown in Denmark as in other northern lands.

It is not only in excavations the Danes are now endeavouring to be successful. On Friday last M.

THEODORE REINACH was able to announce to the French Académie des Inscriptions et Belles-lettres a most important discovery. Professor HEIBERG, of Copenhagen, at present pursuing researches in Constantinople, and he has been fortunate in finding a palimpsest on which was inscribed a treatise on Method by no less an authority than ARCHIMEDES. The value of the work is yet to be determined, and, like other ancient examples, it may be incomplete. But in any case the world must remain indebted to a Dane for a treasure which even as a fragment may lead to important results.

EDUCATION OF THE PUBLIC IN ARCHITECTURE.*

THE small volume on the "Essentials in Architecture," by Mr. JOHN BELCHER, A.R.A., might have been prepared for a course of lectures in the Royal Academy. It has not the continuity of thought or that connection between the sentences which we expect in a book. The majority of them are treated as independent paragraphs, and accordingly assume the appearance of discourses. A discourse prepared in that way allows of repeated reference to diagrams, views and models. If the book was not delivered as Academy lectures, the greater part of it however formed, we believe, the address delivered by the author at last year's Congress of Architects in opening the meeting at which the education of the public in architecture was discussed. The summary which appeared at the time forms an epitome of the "Essentials in Architecture." By referring to that report the reader will obtain a clearer idea of what Mr. BELCHER lays down concerning "truth, beauty, strength, vitality, restraint, refinement, repose, space, breadth, scale, proportion, light and shade, colour, solids and voids, balance and symmetry, stone, wood, metals, brick, terra-cotta, cement &c." than from any words of ours. There are seventy illustrations, of which the majority are photographs of Italian buildings. It would be an advantage to the public to be acquainted with the text and the views.

It is, of course, desirable that people in general should be more competent to appreciate architecture. They would then be able to discriminate between the designs of clever architects and of men who may be pretenders to skill. But it is doubtful whether there could be a larger number of buildings erected if the difference between false and true art was more generally realised. That a little knowledge is a dangerous thing has often been proved by the personal experience of architects with clients. While it is still possible to talk as glibly of principles, qualities and factors as in the days when Mr. RUSKIN's books were popular, the most essential and laborious parts of the architect's duties are ignored. This is inevitable with a business in which a large amount of science is demanded, but it occurs also in other of the Fine Arts. There are few painters who would care to inform purchasers of their features about the processes they employed and what kinds of colour they obtained or how long the picture was in hand. That kind of information, although it might be freely imparted to a fellow painter, is not considered as necessary for patrons, however exalted and honourable. The history of the art contains many series of the efforts made to keep a knowledge of the processes from outsiders. MICHEL ANGELO was a reverential Catholic, but he would not allow a tyrannous Pope to see him at work in the Sistine. LEONARDO, who was innocent enough to allow another Pope to witness his experiments, had to pay for the courtesy by the loss of his commissions.

The arts are not the only callings in which it is considered wise to prevent the public interfering on the strength of possessing partial knowledge. Physicians

and lawyers do not go about the world demanding for something to be done to compel the public to understand law and medicine. They presume they will not be called on for their services unless there is a real necessity on the part of clients. The same rule holds good in building, for a great many years must elapse before a man can be expected to order a costly example to express his admiration for architecture.

We suppose there are few architects who would care about the education of the public in architecture if it were not expected that a large proportion would be able to give commissions. One must be sanguine to expect such a result. Considering the peculiar time in which we live, buildings in general must differ in character from those undertaken in a former time. We are now in an age when the old conditions of life are being transformed. With the aid of motors and electric trams it is easy to transact business in towns and yet live, before and after business hours, in districts which railways could not serve. Locomotion has now gained such an ascendancy, the transformation of cities and large towns in order to accommodate traffic has become a necessity. Some theorists have gone so far as to say that distance is so easily overcome there is little use in side streets. The model town should consist of one long street, with numerous lines of rails, and we may one day see a continuous row of houses extending from London to Brighton.

With the world in what may be described as a state of flux old notions about the necessity for permanence cannot therefore be expected to retain their old power. According to Mr. BELCHER:—"A building should certainly be constructed to endure and survive the shocks of time. It must also have the appearance of strength. Like the everlasting hills (or man's counterpart, the Pyramids of Egypt), it must appear to be solidly planted on the soil, and, indeed, to take hold of it." When there is a possibility in a city or large town that a building will, sooner or later, have to be superseded, it does not become persuasive to tell a man who is about to speculate that he must build in the pyramidal manner.

There is also a "getting-on" of another kind in addition to that in which steam or electricity aids. Success is marked by a change or alterations of residence. It is only necessary to look over a few Academy catalogues in order to discover how quickly painters especially seek out new dwellings when their works gain favour. The same process takes place with other men. Commercial establishments become altered under the influence of prosperity. The queer little shop in the Haymarket which Mr. BELCHER has introduced is appreciated by most Londoners because it is a survival which has been unaffected by an increased number of customers. Why is the confectioner's shop in Cornhill so admired, especially by Americans? They hear of successive owners who attained civic dignities and yet who were courageous enough to resist the compulsory force of time, and continued the modest display of eatables during more than a century. Neither the Eastern nor the Western shop would be of much account in an old-fashioned provincial village; but in two of the busiest streets of London they become phenomenal, for they are the exceptions which prove the rule. What are the Palazzo Quaratesi, the Riccardi Palace and similar buildings but survivals like the two London shops? An Italian palace is now a collection of tenements. And to imitate construction which was intended to withstand civil broils in a London residence is almost as absurd as to adopt DANCE's "Newgate" or the Pæstum Temple as a model. The public are shrewd enough to realise the difference between Italian life and our own, and they will hardly care to admire an art in which the advantages would not be commensurate with the cost.

The public who require to be educated have more personal interest in dwellings than in any other class of buildings. Unlike some other writers on architecture,

* *Essentials in Architecture.* An Analysis of the Principles and Qualities to be looked for in Buildings. By John Belcher, A.R.A. (London: B. T. Batsford.)

Mr. BELCHER does not refer to any of his own designing. But the only modern examples of dwellings which he introduces are an imitation of an Elizabethan hall (which is shown as an example of deception) and a suburban house, of which the rent is about 50% a year and which is used for contrast with an old-fashioned Worcester house. Yet the improvement in English houses during late years has astonished foreigners. The majority of the buildings which Mr. BELCHER presents are of a grandiose character—Greenwich Hospital, the Louvre, the Doge's Palace, the Chiesa Della Salute in Venice—all admirable examples of art, but beyond the resources of ordinary clients. Then again Englishmen set greater value on the interiors than on the exteriors of their dwellings. But it is strange that the only example we have of the interior of a residence in the book is a part of the organ gallery of Belton House, with its elaborate carvings of fruit and flowers by GRINLING GIBBONS.

As there is a distinction between theory and practice, modernity and antiquity, there is likewise one between the conditions under which building has now to be conducted and those which formerly prevailed. The Fuller or "Flatiron" offices in New York can never be so impressive in the crowded streets of the city as the Pyramids amidst the sands of Egypt. But the youngest messenger in New York could explain why so lofty a building was erected, and it may be doubted whether any of the ordinary masons employed on the Pyramids knew much about the purpose of the structures. It seems incomprehensible to modern minds that such a mass of stone should be required to protect a few mummies. The old Egyptians were probably as shrewd as ordinary men in our time. But they were not able to judge everything from a utilitarian standpoint, and their financial questions were limited to the amount of taxes which each was compelled to pay. Utility and finance are the two great tests which are now applied to all things. Mr. BELCHER, by restricting himself to exteriors, suggests that architecture is merely the construction of façades for the benefit of those who may look upon them, and throughout his pages he persistently avoids any reference to outlay. While we cheerfully recognise his efforts for the diffusion of knowledge concerning fine buildings, we are afraid that the public would have desired from Mr. BELCHER a treatise of a different kind in order to be enlightened about "The Essentials of Architecture."

THE "ARGYLE LODGING," STIRLING.*

A JAPANESE fortune-teller, who was sincere in believing in the truth of his own system, once told LAFADIO HEARN that the Chinese possessed another still more perfect. According to him, "anyone learned in that science would be able not only to tell the exact time at which any post or beam of a house will yield to decay, but also to tell the direction of the breaking and all its results." If the system could be made familiar in a reasonable time it would save much trouble in designing and in calculation of the strength of materials. There is room for a few of the professors in London; but in America, where so much framing is used, they would be invaluable. They would also be useful in anticipating archaeological investigations. "Buildings, like builders, have their history," according to CARLYLE, and it would be pleasant, before granting a final certificate, to be able to discover the events for which an ordinary house would become the theatre. Scottish palaces and castles were especially adapted for vaticinatory purposes. The Argyle Lodging in Stirling is an instance.

From whatever point of view it is seen, Stirling appears to be picturesque, and the town itself does not

disappoint the visitor when he passes along the streets. "The Bulwark of the North" still possesses many of the old dwellings which are evidence of what was once a capital. Some are turned to uses which the builders could not have foreseen. The military hospital was once the residence of the Earl of ARGYLE, and it has been described as "the finest specimen of a nobleman's lodging or town-house in Scotland." In an architectural sense, it has greater claim to be considered as the house of the Earl of STIRLING, but the influence of the ARGYLE family has prevailed.

In 1571 there is reference to the presence of the fifth Earl of ARGYLE in Stirling, and in 1617 land "forment" the seventh Earl's house is mentioned in the records. The latter was a boy of eight when he succeeded to the title, and for his safety he was sent abroad. On his return he married a Catholic lady, and eventually he was declared a traitor and rebel. His son and successor was a prominent man in the troubles of the Civil War and was executed for high treason in 1661. *WARD's Last Sleep of Argyle* was one of the paintings commissioned for the decoration of the Houses of Parliament and is known by the large engraving. CHARLES II made some amends to the ninth earl, who as soon as he came into possession of the estates erected a new mansion in Stirling, in which was incorporated a part of the older building.

A tutor and travelling companion of the seventh earl was WILLIAM ALEXANDER of Menstrie. According to the book before us he was born about 1567, but in most accounts of him the date is put down as 1580. He was one of Scotland's early poets, and is honourably mentioned by HALLAM as well as CAMPBELL. His "Domesday" runs through twelve books. As a scholar he secured the favour of JAMES I. of England, and from the king he obtained not only titles and high offices but a grant of the greater part of North America. He considered it was obligatory on him as Earl of STIRLING to possess a fine mansion in the burgh, and he selected a site adjoining the Argyle Lodging. The architect was his son, ANTHONY ALEXANDER, the Royal master of works. Mr. RONALD says of it:—"It is a large building three storeys in height, measuring about 100 feet on the wall facing the east, 88 feet on the north, 81 feet on the south, and 96 feet of frontage to the Wynd. . . . The internal arrangements of this mansion were in advance of the time in which it was built. The retainers' hall, 47 feet long by about 20 feet wide, is now divided by a slim partition, and partly used as kitchen." There was a public room 20 feet by 20 feet and the state-room measured 47 feet by 20 feet.

The house was completed in three years, and in 1635 the Earl took up his abode in it. He died in Covent Garden, London, five years afterwards, leaving his estate embarrassed. His son, the architect, also died in London in 1637. The mansion fell to the fifth son, who lived until 1664. Soon afterwards the Town Council, having a mortgage on it, took possession of the building and arranged to use it as a hospital. Before it was adapted for that purpose the Earl of ARGYLE was able to obtain it by paying one thousand pounds. He altered the walls in order to make one building of the two residences. A Council of War was held in it in 1715, and the Duke of CUMBERLAND occupied it for a few nights in 1745. It was described as a ruined house in 1760, and in 1764 it was sold. The property subsequently changed owners several times until the beginning of the nineteenth century, when the Crown purchased it, and it now serves as a military hospital.

Mr. RONALD, the author of the monograph, was a builder who was born in Stirling in 1838. The technical accuracy of his descriptions is therefore explained. He was prominent as a townsman and held various municipal offices. Mr. RONALD was also an enthusiastic archaeologist, especially in connection with Stirling, and he was fortunate in having several discoveries to his credit. He was unable to complete his history of Stirling Castle, which would have been his principal work.

* *The Story of the Argyle Lodging.* By James Ronald. (Stirling: E. Mackay.)

"The Story of the Argyle Lodging" has been produced on a style which is creditable to printer and publisher. Mr. D. B. MORRIS's memoir of the author is an affectionate tribute to the memory of his friend. The building is illustrated by photographs and other illustrations which reveal the character of a remarkable house, one that suggests the architectural and constructive skill to be found in Scotland at the beginning of the seventeenth century.

CROSBY HALL.

THE local government, records and museums committee of the London County Council have prepared the following report:—The Council is probably aware that Crosby Hall, Bishopsgate, is in imminent danger of demolition. Having regard to the historical associations of the hall (which are alluded to below) and its unique architectural interest, we have had before us the question whether the Council should take any action in the matter, as it is empowered to do by section 60 of the London County Council (General Powers) Act, 1898, which provides that "It shall be lawful for the Council, if they think fit, to purchase by agreement buildings and places of historical interest . . . or to undertake or contribute towards the cost of preserving, maintaining and managing any such buildings and places. . . ."

The first reference to the site is made in 1466, when John Crosby, an eminent grocer and woolstapler, obtained of the prioress of the convent of St. Helen a lease for ninety-nine years of certain lands and tenements adjoining south-west of the priory precinct. Included in the lease was a house wherein he then resided, and which is described as "all that great tenement with the appurtenances formerly in the possession of Catanei Pinelli, merchant of Genoa" (Blackburn's "History of Crosby Place," pp. 1, 2). In place of this Stow says that Crosby erected a new house "of stone and timber, very large and beautiful, and the highest at that time in London." There can be little doubt that, at any rate, the existing great hall was built at that time. Crosby died in 1475, and in 1483 Richard, Duke of Gloucester, who shortly afterwards became king under the title of Richard III., was in possession, probably as a tenant under Crosby's executors. Richard arrived in London on May 4, 1483, and, getting possession of the king (Edward V.) and his brother, he took up his residence at "Crosbie's Place" (Hall's "Chronicle"). Shakespeare, in his play "Richard III.," several times alludes to Richard's stay there. In 1501 Sir Bartholomew Reed was the tenant of Crosby Place, where in the following year he spent his mayoralty, one of the most brilliant on record. It is said, moreover, that it was at Crosby Place that he entertained the Princess Katherine of Aragon two days before her marriage with Prince Arthur, and subsequently received the ambassadors of the Emperor Maximilian when they came on a visit of condolence on the occasion of that Prince's death (Hugo in "Transactions of London and Middlesex Archæological Society," vol. i. p. 44). Subsequently the lease passed, by purchase, to Sir Thomas More, afterwards Lord Chancellor, and some have supposed that it was here that More composed the "Utopia" and "Richard III." In 1523 he sold all his remaining term or interest in the lease of the "great tenement called Crosbie's Place" to his friend Antonio Bonvici. During the residence of Bonvici the freehold, by the dissolution of the priory, passed to the Crown, and was purchased by Bonvici, who held it until 1553. In 1566 the house was purchased by William Bond, alderman, who is said to have made considerable additions to it, and from his family it passed in 1594 to Sir John Spencer who, in that year, held his mayoralty there. During this period it seems to have been the custom to lodge ambassadors at Crosby Place. The Dowager Countess of Pembroke, "Sidney's sister, Pembroke's mother," was living there at some time between 1609 and 1615, and it may with probability be conjectured that Shakespeare, himself a resident in the parish of St. Helen's, was often a guest at Crosby Place during her tenancy. Crosby Place escaped the Great Fire of 1666, but about 1676 nearly the whole of the building, apart from the great hall, was burnt down. The hall was in 1672 converted into a Nonconformist meeting-house, and was so used until 1769. Part of it was during some portion of the period utilised as a grocer's warehouse. From 1810 to 1831 it was let for a packer's warehouse. On the lease running out in the latter year the building was in danger of demolition. Public interest was aroused, however, and subscriptions were invited "for

the purpose of securing an interest in the hall on a term of lease equal in point of possession to a freehold and for restoring its architectural details to their primitive splendour" (*Gentleman's Magazine*, 1832, Part I. pp. 505-8). The freeholder granted the restoration committee a lease for ninety-nine years. The first stone of the exterior restoration of the building was laid by the Lord Mayor on June 27, 1836, and the hall was reopened on July 27, 1842. From that year it was leased to the Crosby Hall Literary Institute, and on the institute coming to an end in 1860 the freeholder repurchased the lease. For the next seven years the hall was used as a wine merchant's warehouse, for which purpose damaging alterations were carried out. In 1868 it was restored, and has since been used as a restaurant.

We are giving the matter careful consideration, and propose to take an early opportunity of viewing the premises.

TRAINING IN ARCHITECTURE.

ON Saturday the Rede Lecture was delivered in the Senate House at Cambridge by Sir Aston Webb, R.A., whose subject was "The Art of Architecture and the Training Required to Practise it." It was apropos of a proposal to establish a University diploma in architecture.

The lecturer said it would probably be admitted that theoretically architecture was the noblest of all arts and the foundation from which the sister arts of sculpture and painting should derive their growth; but in practice the educated public of the present day were, it could hardly be denied, more interested in the progress and development of the sister arts than they were in architecture. This was to be regretted, for this art, like the others, required the stimulus of sympathetic encouragement in order to attract the best men to its ranks and procure results of the highest order. He was glad to take that opportunity of gratefully acknowledging, on behalf of himself and colleagues, the interest that the University of Cambridge was taking in the academic training of architects. The neglect of architecture was perhaps the more remarkable because, owing to its utilitarian side, it affected for good or ill the health and comfort of everyone; whilst it was perhaps the utilitarian side that had led the public to regard it as hardly an art at all, and to refuse to believe that a man could be an artist who was expected to be thoroughly conversant with foundations, drainage, heating, ventilation and accounts. The art of architecture in its highest sense must, like all art, produce on the beholder certain emotions and feelings. Thus our public buildings should stir our pride and love of country, and our palaces a sense of the majesty and power of the rulers. The buildings of our law courts and prisons should inspire awe and obedience; our university and educational buildings should suggest dignity, learning and restraint; our houses the happy privacy of home, and so on. That had been the mystery of the buildings of Egypt, Greece and Rome. Again, to be wholly satisfying, architecture must also be the indigenous expression of the people. There was a present desire to discard archæological methods and start again with simple forms, thus following the example of painting and sculpture. Italian architects from the fourteenth to the sixteenth centuries were largely painters, sculptors and poets, as well as architects. Inigo Jones and Wren in England introduced the Italian influence. A more elaborate system of training was required now than formerly, owing to the fact that our traditions had been lost, and that buildings, both in their construction and arrangement, were more complicated than formerly. The present means of meeting these requirements were the Royal Academy Schools, the inducements to study held out by the Royal Institute of British Architects, lectures and classes at the University of London, King's and University Colleges, the London County Council, the Polytechnics, the excellent architectural schools in many of the provincial cities and towns, and the school and classes of the Architectural Association. In France the State, the Academy and the architects had combined to produce one great scheme in connection with the *Ecole des Beaux-Arts*, in which painters, sculptors and architects all worked together, with the *Prix de Rome* as their final goal. The modern training of an architect in England had been carried out by members of the profession themselves at their own expense and in somewhat isolated and spasmodic methods. He claimed that before technical training was begun a good education should be acquired; if possible five years should be spent at a good public school and three years at a

university. It seemed to him of the greatest moment that there should be a conference or other method to determine the part which each of the educational bodies concerned was to play in the training of an architect, and he believed the universities could do much to help them. The cause was a great one, for architecture was surely, with literature, the most permanent record of a nation's life, the one by which the civilisation and culture of our time would be most surely judged of hereafter.

ARCHÆOLOGY IN STAFFORDSHIRE.

AN excursion of the North Staffordshire Field Club to Chebsey, Eccleshall, Gnosall, Ranton and Ellenhall was lately arranged and successfully carried out under the able leadership of Mr. A. Scrivener, of Hanley. At Chebsey Mr. Scrivener drew attention, says the *Staffordshire Advertiser*, to the remains of the early shaft to the churchyard cross, cylindrical at the base, with band at the point where it becomes rectangular. This cross is very similar to the Leek and Clewlow crosses. Mr. Scrivener also described the church, with its Norman and Early English masonry, and remarked that Chebsey was one of the few churches in the county with an outside stair turret running right up to the top of its Perpendicular tower. There are four bells, three of which are of the pre-Reformation period. An inscription over the church porch bears the date 1715, and a coat of arms in the tower is dated 1710. The interior of the edifice was inspected with more interest from the fact that all the old plaster has been removed from the walls. Among the features of interest in the church are the Norman window on the north side of the chancel, indications of early window on south wall of chancel inside, and the arcade and chancel arch, which are of Early English character. Outside, on the east wall of the tower, may be seen the line which the old high-pitched roof followed.

The vicar (the Rev. C. M. S. Patterson) read a list of the parsons and vicars of Chebsey, which the Rev. F. Parker, of Colton, had supplied to him. The first entry in Domesday Book relating to Chebsey was 1086, but no name was given. The next earliest was 1194, when Hugh Pippart was parson, and the last entry (1573 to 1590) contained the name of Humphrey Whitmore, who succeeded to the benefice on the death of his predecessor, Sampson Marvall. Mr. Patterson mentioned the curious fact that up to the year 1220 the priory of St. Oswald's, York, claimed rights in Chebsey and other churches in the diocese of Canterbury. In 1326, according to the Sacrist's roll in Lichfield Cathedral, a cope or baldachin, embroidered with birds, was delivered at Chebsey Church by the Chapter, and in 1345 a similar gift was again made. By an entry in the Chapter Acts book, 1523-4, the chancel of Chebsey Church was ordered to be put into "competent repair."

A short drive brought the party to Eccleshall, where the fine old church, memorable as the hiding-place of Queen Margaret after the battle of Blore Heath, claimed first attention. On the occasion of the Club's former visit to the church in 1896 Mr. Charles Lynam dealt exhaustively with its architectural features, and Mr. Scrivener, who now acted as guide, consequently refrained from entering into all the details. He pointed out that the earliest remains to be seen in the church consisted of two slabs of stone, doubtless fragments of a cross shaft, built into the north walling of the north aisle to the tower, and alluded to an interesting discovery he had recently made of a fragment of stone, most probably part of the same shaft, built in the walling of the south arcade near the chancel arch. Had they here, he asked, the remains of St. Chad's time? At any rate, they were most probably pre-Norman remains. Next in point of date came the stone forming the bottom step of the inside doorway of the stair turret at the south-west angle of the tower. This was probably part of a Norman abacus or the top of a Norman arch-pier. Of the present structure, the north and south arcades formed the earliest portion and were probably erected about 1190. He drew attention to the old roof line on the tower wall, and said he did not think there ever was a clerestory at that time. Mr. Scrivener also alluded to the chancel, which was of the Lancet period, the north chapel and the vestry, observing that it was not easy to account for a small opening in the west wall. Was there ever a floor over the vestry or was that building an anchorite's abode and this a small window to look into the chapel? The tower, with its three beautiful arches opening respectively into the church and the north and south aisles, were also the

subject of interesting comment by Mr. Scrivener. The south doorway to the church and portions of the outer doorway to the porch were, he said, excellent examples of the Perpendicular period, but the porch itself had been much restored. It had been stated that the south aisle was of this period, but he was inclined to think its windows were post-Reformation. As an explanation of what had been described as a puzzle, Mr. Scrivener mentioned that the middle stage of the tower had on its north, south and west faces openings which had been identical and were windows no doubt like the south one, but altered at later times. The monuments in the church to four bishops of Lichfield were inspected with much interest. Bishop Overton's monument is dated 1603, but he died in 1609, and Harwood states that he put up this monument during his lifetime. Bishop Overton was rector of Stoke-on-Trent in his earlier life. It is a curious coincidence that the date on this monument is the same as on Erdeswick's in Sandon Church, and it is of the same character in many respects. There are some quaint headstones in Eccleshall churchyard, one being an inscription on the western face to the nephew of the one whose name is on the eastern face, the lines rhyming with capital letters. Another headstone denotes the resting-place of James Bayley, late of Park House, who died at the advanced age of 99. The inscription records the fact that "he was servant to five bishops at Eccleshall for 55 years 9 months and 17 days, keeper and woodman, and fished Copmere Pool 45 years." A lady member of the party drew attention to several curious grooves in the exterior wall of the church, which are supposed to have been caused by the sharpening of arrows, and Mr. Scrivener said a royal order was promulgated in ancient days enjoining the use of the bow by yeomen on "Sunday afternoon in the churchyard on the south side." Mr. Lynam said he noticed a few yards to the west of the tower a beautiful monumental effigy, which he thought might very well be taken inside the church, and he hoped the Club would bring its influence to bear upon the matter.

At the castle the members were cordially welcomed by Mr. and Mrs. Carter. Mr. Scrivener gave a brief history of the castle, of which he said sufficient remains existed to show that it consisted of a square enclosure bounded by a large moat. There was probably a tower at each angle, but only one remained. Mr. Scrivener added that an old history in his possession stated that Walter de Langton pulled down the castle and manor-house at Haywood and built them both anew. At the house, Mr. and Mrs. Carter exhibited several interesting "finds" in the grounds, including an ancient stoup, bearing the Staffordshire knot, and probably used for holy water or as a christening font; also a good-sized cannon ball, supposed to have been fired at the castle—"one of Cromwell's little politenesses," as a member of the party humorously observed. An inspection of the curious nine-sided tower followed.

Mr. C. Lynam kindly undertook to describe the interesting cruciform church of Gnosall, the restoration of which he superintended. Starting at the west end, which has great peculiarities, he said that prior to the restoration there were staircases to the north and south aisles leading to galleries, which went right through the church. These galleries were used not by the ordinary congregation, but by the poor people, the men being on one side and the women on the other. In the west front was a central doorway, over which were three lancets combined; there was also a lancet to each aisle. The original church had a high-pitched roof and narrow lean-to aisles. The battlemented portion of the tower was added when the clerestory walls were built. He pointed out that the chancel was of considerable size, as was usual in collegiate churches; it had been very much restored, and the upper part was of a much later date than the lower. Speaking inside the church, Mr. Lynam said that, looked at from east to west, the structure could not fail to command admiration. He pointed out the beautiful carving on the chancel arch, which had formerly been hidden by plaster, and also what appeared to be part of a narrow arch in the wall near to the pulpit. He was not able to say exactly what it was, but that it belonged to the original work there could be no question, as it was precisely the same in character. It might have been a narrow arch leading to the larger arches of the nave, or it might have been an arcade. The noble proportions of the chancel were indicated, and Mr. Lynam mentioned that Gnosall had the good fortune to succeed to the fine reredos which Mr. Street erected at Eccleshall when he restored the church, and which had been replaced by a more elaborate one. The

only ancient monument was a tomb with effigy erected to a member of the Brough family. Mr. Lynam's observations were listened to with the greatest attention, and he concluded by observing that in Gnosall they had one of the most interesting churches in the county.

Continuing their journey, the party arrived at Ranton, where by the kindness of Mr. Williams the remains of the ancient priory were inspected.

Mr. Scrivener, quoting from an unpublished history of "The Priory and Manor of Ranton," written by Mr. J. W. Bradley, of the William Salt Library at Stafford, stated that the priory was founded by Robert, called Fitz Noel, Lord of Ellenhall, temp. Henry II. The site was a space that had been secured in the woodlands of Ellenhall, and the house was dedicated to the Blessed Virgin Mary. These circumstances gave it the name of St. Mary of the Clearings or Ridings. Eyton and Wrottesley stated that all that could positively be said of the date of foundation was that it was prior to 1166. In a list of priors of Ranton from 1166 to 1535, Thomas d'Alton was the last. The revenues of the priory were valued at 90*l.* 2*s.* 10½*d.* per annum. Ranton was known as a priory of Black Canons subordinate to the Abbey of Haughmond, in Shropshire, built and endowed in the time of Henry II. by Robert fil Noëli. According to Pitt, the remains of the abbey in 1817 were a high tower, part of the walls and a small part of the cloisters, but at the present day there only remains the very interesting Perpendicular tower. Mr. Scrivener pointed out some very early work on the southern side of the tower, and also fragments of exquisite carved work.

Mr. Lynam advanced the theory that the upper part of the tower was used as a pigeon-house when the priory was a monastic institution. The existence of a doorway on the inside of the stair turret had always puzzled him, but seeing the doorway outside, the sides of which were now filled up, induced him to believe that it led to the columbarium.

The Rev. G. T. Royds said the priory was originally a moated site, there being traces of a moat on the north side.

From Ranton the party, which included motorists as well as cyclists, proceeded to Ellenhall, where some routine business was transacted, and Mr. W. Wells Bladen (secretary) sketched the programme for the long excursion of the club to Cheltenham and district next month under the leadership of Mr. Lynam and Dr. McAlldowie. Subsequently the members visited the parish church, which was restored in 1886 under the direction of Mr. C. Lynam during the incumbency of the late Rev. H. Turnour. Two mural tablets on the south wall of the church first claimed attention, one being inscribed in plain lettering "JONATHAN COPE," and the other "ANNA COPE, 1683. T. H. FREEMASON."

The Vicar narrated a curious legend with reference to the word "Freemason," but no one seemed able to interpret the initials "T. H." Just in front of the church porch is an ancient churchyard cross restored by Mr. Lynam in 1886, and the objects of interest in the interior of the edifice include a Norman "tub" font, which was recovered from a neighbouring farmhouse, where it was used as a pig trough; fourteenth-century tiling at the entrance of the chancel, fifteenth-century tracery and small Norman window in the north wall of the chancel. From the church the party proceeded to the Old Hall, which was inspected by the kind permission of the occupier, Mr. Joseph Kent. This was formerly the manor-house, the home of the Noel and Harcourt families, who also owned Hilcote and Chebsey. An interesting feature of the hall is the fine oak staircase, said to be 200 years old. The Vicar read a few interesting notes of the history of Ellenhall or Linehalle, as it is described in Domesday Book, after which the party adjourned to the Vicarage, where an ancient quern turned up by the plough in one of Mr. Kent's fields and a stone hammer-head found in Frankwell Orchard, the site of an old Norman settlement, were inspected.

THE BRITISH SCHOOL OF ROME.

THE Rome correspondent of the *Morning Post*, reviewing the work of the institution since the beginning of October, says the season has been memorable in several ways. For the first time the school has had the advantage of the Government grant for a complete season, and this financial aid, though it has by no means placed it in the favoured economic position of some of the similar institutions belonging to other nationalities, has yet proved of great benefit. For the first time, too, the school's official work has begun, and the director has been in residence, on October 1—an arrangement which enables students of the

Athens school to pass a brief period in study in Rome on their way out. Unfortunately a season otherwise satisfactory has been marked by the death of Professor Pelham, of Oxford, the founder of the school, to whose constant interest in its welfare it owes so much and whose place as chairman of the managing committee has not yet been filled.

The year has been the first of Dr. Thomas Ashby's directorship. Dr. Ashby has been associated with the school since its foundation; he was for two years assistant director, and during the interregnum of twelve months which followed the retirement of Mr. Stuart Jones he was practically at the head of the school; before the beginning of this season he was formally appointed as its director. Of Dr. Ashby's capabilities for the post it is needless to speak. He is regarded by foreign as well as by British archaeologists as the highest living authority—*le Nibby de nos jours*—on the classical topography of the Roman Campagna, to which he has for several years devoted his special attention. During the season the school has had some thirteen students on its books. Mr. A. H. S. Yeames, late of the British Museum, has been preparing himself by a study of the history of the fifth and following centuries of our era for the archaeology of the early Middle Ages. Mr. C. E. Stuart has been examining manuscripts of Juvenal and of Seneca's tragedies. Miss Ericksen has continued her studies of Italian gardens and villas. Mr. P. W. Droop, before proceeding to take part in the excavations at Sparta, spent some time investigating the Messapian inscriptions near Lecce, and incidentally endeavoured to find the tomb of the last French Duke of Athens there. Mr. F. G. Newton, an architect, has been working at the Columbarium of Pomponius Hylas near the now closed Porta Latina, and has drawn plans of that famous road. Mr. H. Morley, a gold medallist of the Academy, has copied the frescoes in the Stanze of the Vatican and the ceiling of the Sistine Chapel, besides studying Paolo Veronese at Venice. Two other architects, Messrs. S. H. Maw and J. H. Higson, have measured various classical fragments, such as the entablatures in Trajan's Forum, as well as several Baroque churches, such as the Gesù. Mr. Allan Mainds has devoted his time to the pictures and frescoes in the Vatican and at Florence; Miss Welsh has been studying sculpture; Mr. T. E. Peet, an Oxford Craven Fellow, proposes to take up prehistoric investigations in Southern Italy. Two other students, Mr. A. G. Henderson and Miss Abrahams, were here for a short period. In addition to the students eight associates of the school have been at work in connection with it:—Mr. G. S. Davies, of Charterhouse, the author of "Hans Holbein;" Mr. Oppé, of the Education Department; Messrs. M. S. Briggs and R. W. Thorpe, two architects who have been studying Baroque buildings at Lecce; Mr. G. A. N. Reid, of South Kensington, who has been engaged in Northern Italy; Mr. V. Hill, also of South Kensington, who has sketched sculpture and decoration in Rome; Mr. G. R. Woolway, who has worked in the Piccolomini Library at Siena; and Mrs. Tilt, an artist.

There have been two open lectures at the school during the course of the winter, at which the director, the assistant director and Mr. J. A. Twemlow, of the Record Office, read papers on the Campagna, on Sardinia, on the Capitoline Catalogue and on St. John of Bridlington. It is proposed before next season to make a small structural alteration at the school, so as to provide more accommodation at the lectures. The library has greatly increased of late, thanks largely to numerous donations of books, such as the publications of various British Archaeological Societies and the "Archæological Survey of India." A number of books on sculpture have also been purchased, and the library, considering its short existence, is now fairly voluminous. But both time and money are required to form a really large archæological and historical library.

The British School is the only British scientific institution in Rome. Our Teutonic cousins have the Prussian Historical Institute as well as the German Archaeological School; they have ample official backing; more useful still—their students are all certain of posts when they return to the Fatherland. In England it is not so; learning as a rule *laudatur et alget*. All the more reason is there, then, for supporting a foundation which not only advances scholarship but also increases British prestige.

A Hoarding has been erected around the equestrian statue of Bartolommeo Colleoni in Venice. The foundations have settled and it is necessary to undertake restoration which is likely to occupy a couple of years.

NOTES AND COMMENTS.

THE payment of 30,000*l.* for 36 acres of land, a mansion which was estimated to bring in 400*l.* rent, fees for admission to see the ruins, or in all 625*l.* a year, must be considered from the surveyor's point of view as a liberal price. In our time, when land is not over-priced, forty-eight years' purchase on a rack rental is unusual. But then there is the fascination of tradition. At Glastonbury legendary fascination out-balanced the principle of profit, and to keep the fragments of the old abbey from adorning a public park or the private grounds of a millionaire in the United States caused the biddings to run up to the sum mentioned. The purchaser was Mr. ERNEST JARDINE, of Nottingham. But he has assigned his interest to the Bishop of BATH AND WELLS, who thus becomes responsible not only for 30,000*l.*, but for the expenses of the sale, interest, &c. His Lordship has been guaranteed to the extent of 15,000*l.*, and he appeals to the public for the remainder of the sum. The abbey property when acquired would be vested in the Archbishop of CANTERBURY, the Bishops of WINCHESTER, BRISTOL, GLOUCESTER AND BATH AND WELLS, together with other persons, presumably laymen, who would be suitable to hold it as administrative trustees on behalf of the Church of England. How the property is to be utilised does not appear to be as yet determined.

THE difference between the systems of contracting for builders' work in London and Glasgow was exemplified at the last meeting of the Building Trades Exchange of Glasgow. When that institution was founded it was imagined there were sufficient builders in Glasgow to support the outlay. But in the north general contractors are rarely recognised, and, as in France, nearly every trade is represented by a contractor. The Council have the sense to accept the peculiarities of the building business, and it has been resolved to enlarge the basis of the Exchange. It is therefore proposed that the Executive Council, in addition to twenty-one members of the Exchange who are shareholders, shall consist of two representatives of the Institute of Architects, the Institute of Measurers, and of the following trade associations, viz. Master Masons, Master Bricklayers, Master Wrights, Master Slaters, Master Plumbers, Master Plasterers, Master Lathsplitters, Master Glaziers and Master Painters. If any other associations are formed they will also be invited to share in the business. It is believed that by that course the building trade in general will be gainers, for an approach would be made towards the creation of a powerful united body.

FOR the first time the prize founded by the late M. HENNER, the Alsatian painter, was awarded on Friday last. The value of it is 3,000 francs, but as the same artist can enjoy it for two or three successive years it has some importance. The prize is not intended for students; there are several already for them. M. HENNER wished to aid figure-painters who, like himself at one time, having gone through the student stage and won rewards, found it difficult to undertake an important work and were tempted to produce pot-boilers, in consequence they were likely to fall into the clutches of dealers. It is therefore stipulated that candidates for the HENNER prize must have passed their thirtieth year. The jury is to consist of members of the Academy of Fine Arts and winners of the Médaille d'honneur of the Salon. The distinction of gaining the first prize belongs to M. GUINIER, a pupil of BENJAMIN-CONSTANT and of M. JULES LEFEBVRE.

MANY of the stories which are related about the action of sand in Egyptian and Arabian deserts are

thought to be imaginative. But the people of Conway are likely to be convinced that sand power can become terrifically destructive. They have had experience of its effects on a small scale. Adjoining the town is a plain known as the Morfa, which was used as a camping ground. Last year seven battalions came there; this year it is considered that only two could use the site. The sand not merely covers the grass, but overcomes the temporary buildings. The Council have obtained advice from the French maritime department, and propose to use 4,000 trees of the *Pinus maritima* species, which helped to catch the sand at Arcachon. Earth and gravel will have to be brought from a neighbouring mountain before the shrubs are planted. Fences or groynes of brushwood were found to be insufficient, and apparently systematic planting is the only remedy. The Council propose to borrow 2,510*l.* to carry out the work, and in order to have authority an inquiry was held by a Local Government Board inspector. From the evidence given by Mr. DELAMOTTE, the borough engineer, we have taken the facts which are given above. It will be a novel experiment, and the result will be observed with attention, especially as the danger is not unconnected with erosion.

A CONFERENCE of the Royal Sanitary Institute is to be held in Trinity College, Dublin, from June 25 to June 29. The Earl of Ross, who is president, will deliver the inaugural address in the examination hall of the college. The work of the conference will be divided into three sections:—1. Sanitary Science and Preventive Medicine; 2. Engineering and Architecture; 3. Physics, Chemistry, Biology and Meteorology. The first section will have Sir C. A. CAMERON as president. The subjects for discussion will be "Poor Law and Sanitary Administration in Ireland" and "The Role of Sanatoria as a Factor in checking Tuberculosis." The president of the section of Engineering and Architecture will be Mr. P. C. COWAN, C.E., of the Irish Local Government Board, and the vice-presidents will be Mr. ROBERT COCHRANE, Sir THOMAS DREW, Mr. WILLIAM M. MITCHELL, Mr. G. CHATTERTON, and Mr. W. ROSS. The subjects for discussion will be "The Economic Housing of the Working Classes in Town and Country," and "Could the Existing Statutory and Departmental Requirements as to Sewage Disposal be relaxed in Certain Cases with advantage to the Community?" Sir J. W. MOORE, M.D., is president of the third section, in which will be discussed "The Climatology of Ireland in Relation to Public Health" and "Disinfection Considered from a Medical, Chemical and Bacteriological Standpoint." Excursions have been arranged, and English and Irish railway companies are issuing return tickets at a single fare and a quarter.

ILLUSTRATIONS.

HOUSE IN BUCKINGHAMSHIRE—GARDEN FRONT.

THESE illustrations show the entrance and garden fronts of a house that was proposed to be built near Wendover, Bucks. The walls outside would have been covered with rough-cast, the dressings being of Bath stone, and the roofs would have been covered with red "Italian" tiles. The woodwork throughout would have been painted white. The gardens were designed by Mr. SALVANDE and the house by Mr. R. A. BRIGGS, F.R.I.B.A., of 12 Norfolk Street, Strand, W.C.

HOUSES, CLEVELAND ROW, S.W.

CATHEDRAL SERIES.—CARLISLE: VIEW OF CHOIR, LOOKING WEST.

THE LATE J. A. CHATWIN.

THE record with very great regret, says the *Birmingham Daily Post*, the death of Mr. J. A. Chatwin, the well-known architect, which occurred on the 6th inst. at residence in Wellington Road, Edgbaston. Mr. Chatwin, recently completed his seventy-seventh year, had been sick up for some time, but he had no specific illness, though he had retired from the more arduous work of his profession, he was able to attend to business affairs in two days of his death.

Mr. Chatwin was a Birmingham man and an Old Ed-dian. His father, Mr. John Chatwin, was a well-remembered button manufacturer in Great Charles Street, and the subject of this memoir was born in April 1830. At King Edward's School he was contemporary with a number of scholars whose subsequent reputation gave distinction to the school. Mr. Chatwin matriculated at London University, but did not proceed to a degree. At an early age he commenced his architectural education in the office of Messrs. Branson & Gwyther, building contractors, who were at that time engaged upon the extension of the London and North-Western Railway from Curzon Street to New Street. This position enabled him to gain valuable knowledge of the principles of construction. Mr. Gwyther showed special interest in his young assistant, and encouraged him in attempts at architectural design. As he showed a distinct gift in this direction, he was in 1851 sent to Sir Charles Barry, from whose designs the Houses of Parliament and other important buildings were then being erected. It was doubtless from this association that Mr. Chatwin imbibed an admiration for features of the Perpendicular style of architecture which are to be embodied in much of his ecclesiastical work and designs for school buildings. Mr. Chatwin assisted in making the drawings for the House of Lords. During the period of his articles he assiduously attended the evening classes of the first schools of design originated by Prince Albert and held at the old Royal Academy rooms, Somerset House, under the direction of several artists of distinction.

On leaving Sir Charles Barry, Mr. Chatwin commenced practice in Birmingham, and quickly established a high reputation, particularly for ecclesiastical work. An ardent student of archaeology and a lover of the old Warwickshire churches, he infused into his designs a dignity and feeling of repose which gave confidence to those interested in ancient fanes, that if he was called upon to undertake a restoration or an enlargement the result would not be an artistic incongruity, but something characterised by dignity, breadth of treatment and harmony of form. It was a tribute to his capacity and taste that he was selected to design the new church of St. Martin's, an example of his work in the Perpendicular style which has been justly admired. In connection with the taking down of the previously existing building he unearthed traces of a structure going back to a much more remote period than had previously been imagined. The details of the discoveries were set forth in the late Mr. J. T. Bunce's "History of Old St. Martin's." An even finer achievement than St. Martin's was Mr. Chatwin's restoration and enlargement of Aston Church. The first part of the work was carried out in so admirable a manner that the late Mr. John Feeney said: "Mr. Chatwin practically *carte blanche* in the matter of completing it by the erection of a costly chancel, which was undertaken as a family memorial. Another notable work was the provision of a chancel to St. Philip's in place of what was merely a recess for the communion table. The chancel was designed in Classical style, with bold rounded pilasters and outstanding Corinthian columns and cornice, which gave to the interior of the church an aspect of dignity and impressiveness and pleasing. Mr. Chatwin was responsible for the commission being given to the late Sir Edward Jones for the designs of the beautiful series of windows afterwards added to the church. He was, of course, retained as architect in connection with the modifications of the interior arrangements required a few years ago to adapt St. Philip's as the cathedral church.

Other works which may be mentioned were the enlargement of St. George's, Edgbaston, the restorations, involving considerable rebuilding and enlargement, of Edgbaston old church and Handsworth parish church. Mr. Chatwin also restored St. Augustine's, Edgbaston, the Catholic Apostolic church, Spring Hill, St. Ambrose, Christ Church, Edgbaston, St. Mary's, Bearwood, All Saints, Stechford, St. Mark's, Washwood Heath, St. Mary's, Acock's Green, St. Philip's, Knowle, St. Mary's, Warwick, St. Mary's, Kidderminster, Penkridge parish church, Mapleborough Green

Church, near Redditch, Greasley Church, near Nottingham, and many others. Mr. Chatwin's work was not confined to the ecclesiastical domain, but he prepared drawings for numerous public and private buildings. The Great Western Hotel, in Colmore Row, was an early example; the head offices of Lloyds Bank belong to a later period, as also the same company's bank in Lombard Street, London, and branches in a number of provincial towns. The Wolverhampton Art Gallery was his design. He was as skilful in his drawings for terra-cotta work as for stone, as witness the Hen and Chickens Hotel, New Street, the various branch grammar schools, and the High School for Girls, which he designed as architect to the governors of King Edward's Foundation.

People who are acquainted with examples such as those enumerated will recognise that Mr. Chatwin had a large measure of the artistic temperament. He was a lover of pictures, and for many years was vice-president of the Birmingham Royal Society of Artists. He also took an active interest in the work of the archaeological section of the Midland Institute. Many years ago he was elected a Fellow of the Royal Institute of British Architects, and he was also a Fellow of the Antiquarian Society of Scotland. Mr. Chatwin married in 1869 the second daughter of Mr. Edward Boughton, of Coventry, and leaves four sons and four daughters. About ten years ago he took into partnership his son, Mr. Philip B. Chatwin, who relieved him of the greater portion of his professional work. Mr. Chatwin was a Conservative in politics, but took no part in public matters outside those related to his profession. He was characterised by personal qualities which made him as deservedly respected as he was widely known.

LUSTRE POTTERY.*

IT would be unbecoming in me to commence a paper on "Lustre Pottery" before the Applied Art Section of the Society of Arts without recalling that it was from this platform, some fourteen or fifteen years ago, that Mr. Wm. de Morgan, our English pioneer in the methods of true lustre decoration, first explained his processes and their results. My reason for reading a fresh paper now on the same subject is that during the last fifteen years a great deal has been learnt about the history of the various lustre processes, and great advances have been made by Hungarian, French and English potters in extending and perfecting the various methods of lustre decoration. While gladly acknowledging what the English pottery trade owes to Mr. De Morgan in the way of incentive and experiment, I trust it may be found, when my paper is concluded, that English potters are now prepared to repay the debt by fresh and original work of their own.

In considering the subject of lustre pottery it is necessary to spend some time in a careful consideration of what we mean by the term, for it has been applied indifferently to methods that are old and new, to decorative results that are exceedingly delicate and subtle, as well as to those that are the reverse. On the table before us is assembled nearly every variety of pottery that the most catholic of collectors could bring together under this designation. Here will be found the so-called "copper" and "silver" lustred earthenwares of Staffordshire, Swansea, Leeds and Sunderland, first produced during the latter part of the eighteenth century, so largely manufactured during the first half of the nineteenth century, and now become the spoil of those collectors who despair of attaining to the finest things. Here, too, are the oldest lustres of all, dating back for more than a thousand years, when Egyptian, Syrian or Persian potters discovered a unique method of pottery decoration which was carried round all the countries bordering on the Mediterranean, with its apogee in the Hispano-Moresque wares of the fifteenth century and the Italian majolica of the sixteenth century. Here, too, are examples of the modern pieces made in imitation of, or in rivalry with, these Mediæval masterpieces; by Ginori and Caviglioli of Florence; by the Massiers in Cannes; by the Spanish potters of Seville and Manises; by Zsolnay of Pécs in Hungary; by Hermann Kähler in Denmark, and by De Morgan, Pilkington's, Bernard Moore, Maw's and others in England. Here also will be found the faint, nacreous, bismuth lustres invented by Brianchon of Paris in 1856, but best known among us from their use on the once-famous Belleek porcelain of Ireland.

* From a paper by Mr. William Burton, F.C.S., read before the Applied Art Section of the Society of Arts.

What pictures the imagination conjures up under the stimulus of such a string of names. To glance from Old Cairo and Rhages or the Moorish kingdom of Granada, Diruta in its prime and the Gubbio of Maestro Giorgio, to the days of Wedgwood in England, and on to our own times, is enough to take one's breath away. But the art of the potter has always been most conservative of its past, and in such an art it need occasion no surprise to find the latest and youngest experimenters among us eager to emulate the successes achieved centuries ago by men whose very names are forgotten, but whose works survive, "Like good deeds in a naughty world."

Even a cursory glance at such a collection, the like of which has probably never been gathered together on a lecture-table before, shows that the one feature which all the "lustres" have in common is a shining metallic quality of surface, which marks them off from every other kind of pottery decoration. Though this quality is more or less manifest in all the decorations of this class produced during the last thousand years, let us study it first in the so-called copper and silver lustres of our everyday English pottery, introduced a little more than a century ago. Here, at all events, the metallic quality is developed to the utmost, for pottery covered all over with such lustres as these recalls at once the characteristic appearance of vessels shaped in metal, and there can be no doubt that the Staffordshire and other English potters of the late eighteenth and early nineteenth century thought they had discovered a delightfully simple method of making their pottery look like metal, for they shaped their vessels in exact imitation of those of the silversmiths and goldsmiths of the period; and as they were mechanically-minded people they modelled their mugs, jugs, sugar-boxes, teapots and candlesticks as accurately as possible on the popular Sheffield plate of the day. All unconsciously they seem to have been following the example of the first inventors of the lustre decoration, for there is no doubt in my mind that the potters of Egypt, Syria and Persia, who made the first "lustres" in those far-off centuries when the East was still the cradle of the arts and sciences, also hailed their invention as a brilliant discovery that enabled them to make pottery look like gold.* We are so accustomed in these days to see on every hand pottery decorated with gold fired to the glaze that it is difficult to realise what a modern invention the gilding of pottery and porcelain really is. Gold fired on to the surface of glazed pottery appears to have been unknown to all the great potters of the Middle Ages. I am inclined to the opinion that the Chinese and Japanese may have taught its use to Europeans, and there is ample evidence that its use in Europe is scarcely earlier than the middle of the eighteenth century.† Where leaf gold had been applied to the surface of tiles or vases before this period it appears to have been merely attached by japanners' size, and must, therefore, be regarded as an exotic decoration, for we must refuse to consider anything pottery decoration which has not been fired.

It is all very well to grind up leaf gold with a small quantity of a soft flux, which would fix it to glazed pottery on refiring at a low temperature, but the latter part of the eighteenth century, which witnessed such an outburst of experimental work in pottery, was also the period of the fresh departure in natural science which laid the foundation of modern chemistry. Gold was being experimented with in many ways, for the old search for the philosopher's stone had only taken a fresh direction, and before the end

of the century it was found that gold could be applied to pottery by mixing a solution of the metal in aqua regia with thick oily or resinous fluids, so that when a coat of mixture was carefully laid over the pottery and fired at low heat a shining golden deposit was immediately produced without any further trouble. So far as we can learn it was some unknown experimenter in the Staffordshire potteries who first made this discovery, and during the decade of the eighteenth century the method was in extensive use in England.*

It is interesting to recall, too, how soon the newly discovered metal platinum was brought into use for the same purpose. Just as it was found that gold-chloride solution diffused in a thick oily menstruum would furnish a coat of shining gold, one of the first industrial uses of platinum was its application in a similar way to produce a shining deposit of platinum on crockery, which went by the common name of silver lustre, because of its resemblance to that metal in appearance and because the name "platinum" would have meant nothing to the ordinary person at that period. I always like to imagine myself to be the introduction of these shining metallic deposits of gold and platinum owed much to our greatest English potter, Josiah Wedgwood, for from his intimate connection with the best scientific men of his day he is likely to have learned about such a substance as platinum before any other Staffordshire potter, and Professor Church has informed me that he obtained some information on the subject of lustre from Dr. John Fothergill, as early as the year 1760. Certainly, too, Wedgwood was one of the potters who made extensive use of these gold and platinum lustres, though other Staffordshire potters were active in the same field in the late years of the eighteenth century, and the method seems to have been pretty widely spread, as it was so practised at Swansea, Leeds and Sunderland.

There are many examples exhibited here to-night which enable us to realise what these English lustres were like. The deposit of metallic platinum is always dense and metallic, so that vessels coated with it shine almost as brightly as silver, hence the unfortunate name of "silver" lustre has been generally given to it. The gold lustre is sometimes quite as dense, though we often meet with it so thinly that the colour of the pottery on which it has been applied is an important factor in determining the colour effect. On white or cream colour ware, if the lustre is thinly applied it gives only a pale purplish stain, with a faint golden sheen; but on red pottery, or where it is thickly applied it may look like gold, copper or bronze. Sometimes copper was added to the gold to produce a darker and more bronze-like effect.

If we were to consider the production of a metallic lustre on pottery as the true aim of lustre, then this English pottery of the late eighteenth and early nineteenth centuries must be regarded as the most perfect lustre pottery ever made, for nothing could exceed the evenness and regularity of its shining metallic surfaces.

The metallic quality of surface is, however, only one feature of the finest lustre effects, and neither the most important nor the most beautiful one. If we examine examples of the fine lustres of the Persian, Spanish or Italian pottery we shall find that the decoration, however strong and metallic it may be in certain lights, is softened and beautified by a wonderful play of iridescent colour, so that it assumes something of the changing quality of the inside of a peacock's shell, or is diversified by a play of brilliant colour like soap-bubble or the feathers of a peacock's tail. But these qualities the metallic films of gold and platinum are entirely deficient, for they present nothing but a dazzling unbroken surface like a sheet of pure metal. I must assume that everyone knows nowadays that these brilliant interference colours—soap-bubble colours—one may well call them—of true lustres are due to the presence of thin films, and the process which gives us the hazy

* Mr. Henry Wallis has suggested that, as it was considered derogatory in Byzantium, during her prosperous days, to eat or drink from vessels of other metals than gold or silver, in her declining years, when the precious metals had been gradually absorbed, the potters would copy designs from the gold or silversmith, and the lustred ware became a cheap but showy substitute for the precious vessels which had previously enriched the Credenza. In Spain, too, the old lustred ware is known as "Dorada," i.e. "gilded," and Ibn-Batuta, the famous Arab geographer and traveller, writing in 1350, speaks of the ware made at Malaga as the "gilt pottery or porcelain which is exported to the most distant countries."

† When the King of France, Louis XV., became financially interested in the porcelain factory at Vincennes, shortly before its removal to Sèvres, it is recorded that a large sum of money was paid to a Benedictine friar, named Hippolite, for the secret of gilding decoration; and yet Vincennes appears to have been the first European factory that used gold at all extensively in the decoration of porcelain, and it was at that time not used on pottery or faience at all. The famous Wedgwood appears to have had great difficulty in acquiring a knowledge of how to apply fired gold to pottery, and almost his only patent has reference to an imperfect method of gilding.

* Simeon Shaw, in his *History of the Staffordshire Pottery*, published in 1828, ascribes the invention to John Hancock, though he also mentions a decorator named Hennys as having been concerned in its introduction. But Shaw was a most critical and unreliable purveyor of gossip; he frequently publishes contradictory statements, and personally I attach very little importance to his statement. It is a matter of painful interest to an English potter to realise that this process invented in England is directly to the production of liquid gold, which is now sold to German firms to the Staffordshire potters to the amount probably of 100,000*l.* per annum. On a small scale it is the story of the aniline industry over again: the Englishman acting as inventor and then, from want of sufficient scientific knowledge, losing the trade to the better trained German.

allic deposits of gold and platinum is opposed to the luction of metallic films sufficiently thin to be iridescent. iridescent films are most easily produced from other als such as bismuth, silver and copper, precisely use these metals are capable of being tarnished or ised in air, while gold and platinum are not. I have, for instance, thin sheets of the four metals—gold, inum, silver and copper. One of these sets has been free from action, while the other set has been exposed ely to the action of damp air and gentle warmth. You at once that the gold and platinum retain their bright- unimpaired; the copper and silver, while they have something of their original brightness, have acquired ead a play of iridescent colour.

The only form of pottery decoration which in my ion ought to be called lustre is that which exhibits des the metallic sheen this play of iridescent colour, wn here on thin sheets of copper and silver, and it ld be much better, in my opinion, if our so-called lish lustres, made with a basis of gold or platinum, e described as "plated" or "metallised" pottery, so as void the confusion into which many writers and col- ors have fallen of treating these not very artistic pro- s as if they belonged to the same category as the ndid lustres of old time.

During the last year or two fresh attention has been lo to the lustre process in this country, especially by Bernard Moore, the famous Staffordshire potter, and elves, and although we are the best of friends and ly criticise each other's work, neither of us knows the ess used by the other. I should like to say that I sider many of Mr. Moore's effects not only novel in selves but strikingly beautiful. Of the work made at own factory I cannot speak, but there is a collection of ere to-night which may, I hope, speak for me.

I should like, however, to give a short account of the esses that we have found best adapted to the purpose, such an account may help to clear up certain mis- ceptions that have been prevalent with regard to the old re processes. I have described the old methods and erials as accurately as I can, and I have stated, as the lt of my experience, that they will produce perfect and iful lustres. There is, however, no reason, so far as I ee, for adopting the old Spanish or the Italian methods preparing the lustre mixture. All that is necessary is a some compound of copper or of silver, or mixtures of wo, should be mixed with a suitable proportion of e inert substance, which can be either china-clay ny ordinary red-brick clay. It is necessary that a copper or silver compound used shall be pure t of standard composition. The sulphides, oxides or onates of the two metals answer perfectly, and they e on the whole, to be preferred to the chlorides or the tes. The mixture of clay and metallic salt having been fully ground, like any other pottery pigment, can be ated over the fired glaze, using any ordinary potter's um; that is, they can be painted on with turpentine n fat oil, with sugar and water, or, as the Mediæval ers did, with vinegar. I believe that generally the inental practice is to use vinegar, and the Italians ress that no other medium works so well, but that does agree with our experience. The pattern having been kly painted on, the pieces are then placed in a special le kiln and fired, and that is where, I believe, the most rtant part of the whole process resides, and where, I z, we have probably made the greatest advances. I recall Piccolpasso's statement that the firing of lustre was a very uncertain process, and that n not more than six pieces were good out of a ured; and I have understood from Mr. De Morgan at times his experiences were almost as dishearten- . When we consider the rude and elementary ods used for firing lustre, this is hardly to be won- ed at, because such firing must often have been irregular, the result that the smoking would be equally irregular . The first necessity is to design a muffle kiln that can ised to an even temperature throughout, but that only ssitates careful kiln construction. The next point is e correct ascertaining of the requisite temperature, e use the lustreing process takes place at a red heat ow as to be barely visible, and the ordinary trials on h a potter relies for judging the temperature of his are useless, but with a well-constructed kiln and a etent fireman there should be little difficulty in obtain- he proper temperature in a great proportion of the kiln. he next point is the admission of the reducing gases or

smoke. Here again, perhaps, I may clear up a little mis- apprehension. It has been suggested by many writers that the peculiar beauty and softness of many of the old lustres may have been due to the special fuel that was used for the purpose, and some will have it that broom or rose- mary is the only fuel which will produce a suitable smoke for the purpose. Such an idea is quite erroneous. Cer- tainly, if broom is plentiful, it produces a very nice and not too dense smoke; but any kind of wood will produce equally good results, or, as Mr. De Morgan stated, sawdust or shavings will answer the purpose just as well, while even resin and pitch could be used. As a matter of fact, the reduction is much more evenly effected by the use of reducing gases, such as a mixture of carbon-dioxide and carbon-monoxide, or ordinary illuminating gas. For this purpose the muffle is best constructed in iron with tapped pipes passing into and out of the kiln to allow for the slow passage of a current of the particular gas to be used. Then when the correct temperature has been reached, after sweeping out the small quantity of air that remains by a current of carbon-dioxide, carbon-monoxide or coal gas can be admitted and the reduction takes place very regularly and steadily. It will be found, however, in practice that it is very necessary to arrange the pieces in the kiln in such a way that the currents of gas are diffused as uniformly as possible through the kiln from top to bottom and from side to side; indeed, it is astonishing how difficult it is to avoid the setting up of currents of gas in given directions, so that the pieces are more quickly reduced on one side than on the other. In our own case the temperature, intensity of the reducing gases, and the rapidity of current are so perfectly under control that our kilns are hermetically sealed through the whole process, and we never draw a trial of any kind.

When the pieces are taken out of the kiln they are still coated with the lustre pigment, which can, however, be easily scrubbed away with soap and water, unless the temperature has been too high, when it will be found that the lustre mixture has been fused into the surface of the glaze, leaving a nasty grey non-metallic film and a spoilt piece of ware.

Certain very interesting effects have been brought to light in the course of our work to which I may direct your attention, particularly as they do not seem to have been mentioned before in any description of the process.

The first effect of the lustre firing is apparently to vola- tilise some compound of silver, which penetrates into the glaze, giving it a yellowish stain, and this yellow stain is produced long before there is any stain from the copper compound, and whether the kiln atmosphere is reducing or not. On the contrary, no stain appears to be developed from the copper until the atmosphere is powerfully reducing, and then the red stain makes its appearance and slowly deepens during the whole time of reduction. More- over, if the firing is conducted for a long time these volatile stains of silver and of copper slowly spread over the whole of the glaze surface, so that if you take a perfectly white vase and cover its surface fairly well with a foliated pattern in silver or in copper the ground of the piece may become entirely yellow or red as the case may be. Another thing that is very noticeable is the greater ease with which silver gives lustre than copper. It follows from this that where mixtures of silver and copper are used together the actual quality of lustre produced will depend not so much on the nature of the mixture itself as on the temperature and duration of the firing. It is quite possible, indeed, by under-firing a mixture of silver and copper to produce an effect which would lead anyone to suppose that the lustre had contained silver alone. A great deal has also been said as to certain glazes being much better for lustreing upon than others. There is some truth in this idea, but not very much, for we have found it perfectly possible to produce excellent lustres on glazes of every type—leadless glazes, lead glazes and glazes with or without oxide of tin. The only type of glaze which seems to be impermeable to the stain of silver and of copper at the lower temperature required for the effect is the felspathic glaze of hard-paste porcelain, and that I suppose is the reason why the Chinese have never used the lustre process in the decoration of their porcelain.

Having stated as clearly as I can how both the old and the new lustres were made, it now remains to add that of course the value of the lustre process depends entirely on the artistic use of it. The effects of lustre are so beautiful in themselves, and may be made so striking and powerful, that the dangers attendant on its misuse are probably

greater than with any other process in the decoration of pottery. Having reduced the scientific and mechanical sides of the process to something like order and method, it is our earnest endeavour to use the beautiful results that have been placed in our hands in such a way as to produce a new English pottery as artistic and beautiful as that of the Middle Ages. To this end we have gradually gathered together what I may describe as a school of young English artists, all of whom have had some training in various art schools of the country under the control of the Board of Education. Every piece of lustre pottery we produce is unique, for either the designs are original conceptions or adaptations of the painters themselves, or in cases where we have been fortunate enough to obtain designs from distinguished decorative artists like Mr. Walter Crane, no two pieces are reproduced in the same way. Notwithstanding the perfection to which the chemistry of the process has been brought, the method must always remain liable to variations, which also serve to give variety to the pieces. As in old times, the best pieces are not made by invention alone, because out of a dozen pieces equally well painted and fired one, perhaps, will have a quality surpassing all the rest. Yet I never look on a collection of fine lustre pieces, such as has been exhibited here to-day, without in my mind parodying two lines of Omar Khayyám:—

I often wonder what the potter buys
One-half so precious as the things he sells.

A CARLYLE MEMORIAL.

IN view of the correspondence in our columns this week, I says the *Glasgow Herald*, on the Carlyle Memorial, it may be of interest to state exactly how the matter stands. With the history of the movement the public are more or less familiar. At the centenary dinner in Edinburgh in December 1895 it was suggested that steps should be taken for the erection of a memorial to Carlyle. The committee which had charge of the arrangements were deputed to consider the suggestion, and an executive committee, with Professor Masson as chairman, was appointed. After much deliberation the committee decided that the most fitting memorial would be a bronze replica of the famous Boehm statue on the Thames Embankment at Chelsea. The necessary consent of Boehm's executors and of Lord Rosebery, the purchaser of the marble statue, having been obtained, an appeal drawn up by Professor Masson was widely circulated. The appeal, continues the *Herald*, brought the beggarly response of 199*l.* from 92 subscribers. Shortly thereafter other appeals, some of them of national interest and of more immediate importance, were issued to the public. There were the memorials to Mr. Gladstone, to Robert Louis Stevenson and to Queen Victoria, while the South Africa war funds made a heavy call on the surplus cash of the community. Accordingly, having at the time made what they conceived to be their best effort, the executive allowed the matter to rest till a more propitious day should arrive.

Recently it was again taken up, and it was suggested that if the scheme for a reproduction of the Boehm statue could not be carried out, an alternative proposal for a medallion in St. Giles's, Edinburgh, might meet with the necessary measure of success. A design was prepared by Mr. Pittendrigh MacGillivray, R.S.A., and the consent of the authorities of St. Giles's for its erection obtained. The subscribers were communicated with, but with a section of them the proposal did not meet with favour, and eleven intimated that their subscriptions, amounting to 36*l.*, would not be available for that purpose. Lord Rosebery, indeed, forthwith handed over his promised 25*l.* to the blind asylum. Since then the executive have received some 75*l.* of additional subscriptions, practically all for the Boehm scheme. The executive, however, are prepared to carry through whichever of the two proposals becomes possible. For the medallion something like 100*l.* is still required, and for the larger scheme of the statue some 350*l.* more. Nobody will accuse the executive of excessive diligence in the matter, and yet it must be allowed that circumstances have been rather against them than with them in their work. It was their intention to have had last winter a public meeting with a view to stirring up some enthusiasm for the proposal, and efforts were made to get the Lord Chancellor—a Dumfriesshire man—to preside, but they failed. Lord Ardwall, a gentleman closely associated with the county, was also mentioned as a possible chairman, but the pro-

posal to hold a public meeting has in the meantime been abandoned till the late autumn, when it is hoped to organize such a meeting as will give the necessary stimulus to movement. It has been suggested that in the meantime the Town Council of Edinburgh should be asked to set aside a site in Princes Street Gardens for the proposed memorial. Lord Provost Gibson is understood to favour the proposal, and if the application were granted it is thought that the taking of such a practical step would encourage the flow of subscriptions.

There are not wanting enthusiasts in the movement. Mr. David Wilson, of the Indian Civil Service, himself author of a volume on Carlyle, is a warm supporter of the proposal. Mr. Andrew Carnegie has subscribed 25*l.*, George Reid, R.S.A., has given 5*l.*, and the list of subscribers includes the names of Lord Mount Stephen, S. R. Crockett, Mr. Alexander Ure, K.C., M.P.; the Robert Wallace, M.P.; Mr. J. A. Campbell, of Stracathro; Sir Thomas Glen-Coats, Professor Saintsbury, the Colonel Wauchope and Dr. Wallace Williamson. A lady, writing from the Highlands, enclosing a subscription, concludes a vigorously worded letter thus: "The Carlyle should want a monument, or have but a second-rate one, while they stick one up every other day, every little whipper-snapper—!" Professor Masson, though no longer able to take any active share in the work of the executive, is still anxiously desirous to see the Boehm scheme carried out. Discussing a suggestion recently made for the issue of another appeal, he thinks there should be no rebuke and no arguing on behalf of the propriety of such a monument. "It would be of keeping," he writes, "in an official appeal to read expressions of that kind about Carlyle and his work, which there have been scores in books and essays about him for the last fifty years and more. His mere name is enough now for all who will take any interest in the proposed memorial, and I think the official appeal that might go forth ought to be a brief business document, stating simply, and then soliciting subscriptions for the contemplated copy of Boehm's statue to be set up in Edinburgh, leaving the readers to their own already formed conception of Carlyle, and not arguing about him at all or pleading his case at all. There may be differences among people as to their reasons for admiring Carlyle, with perfect unanimity in the matter of his extraordinary greatness in all, but let each subscriber subscribe for his own reasons." There the matter stands. In the meantime Councillor Douglas Elliot, 40 Princes Street, Edinburgh, honorary treasurer, will be glad to take charge of the subscriptions on behalf of the memorial.

DUNDEE CITY CHURCHES.

IF the opinion of Mr. Macgregor Chalmers, architect of Glasgow, is adopted, the Dundee city churches, as they are at present known, will be razed to the ground and replaced by handsome new buildings erected. The subject of the demolition of the fabric in which St. Mary's, St. Clement's and St. Paul's congregations have their churches has, says the *Dundee Advertiser*, recently engaged the serious attention of the Town Council and the general Kirk Session, and a former body some time ago came to the conclusion, as a result of a report by Mr. James Thomson, city architect, that by spending 4,500*l.* their obligations to place the buildings in a condition covered by the phrase "wind and water-tight" would be met. This sum the Town Council's principal heritors were prepared to spend, but a more contentious scheme involving an outlay of between 7,000*l.* and 8,000*l.* was suggested whereby the architectural features might be restored, the Kirk Session to raise the balance of the expenditure. The Kirk Session, after negotiations with the works committee, and having the two schemes explained to them, passed the matter over to the Presbytery, who in turn called in Mr. Macgregor Chalmers of Glasgow, an architectural expert, to examine the fabric and give his opinion regarding the proposals. In the form of a typewritten report Mr. Chalmers submitted his views to the members of the committee of Presbytery specially elected to deal with the matter. Although the utmost secrecy is being maintained as to the terms of the report, it is understood that Mr. Chalmers does not approve of either of the schemes proposed, although of the two would prefer the larger, but even it would mean that twenty-five years' time further heavy expenditure would be involved. The building, he points out, is rapidly decaying.

the soft stones having been seriously affected by the weather, and instead of proceeding on the lines proposed, he expresses a firm opinion that the question of erecting new buildings could be faced. The Old Steeple, he says, is one of the best of its kind in Scotland, but even here the atmospheric conditions have affected the stones which were introduced when last repairs were made on it, and these are not in such a good state of preservation as the original stonework. The committee, after consideration, agreed to have a conference with a sub-committee of the general Kirk Session before bringing the matter before the Presbytery at its monthly meeting.

THOMAS GIRTIN.

THE Board of Education have acted wisely in including three examples by Thomas Girtin (Turner alone giving four) in their first circulating collection. The memory of Thomas Girtin is too intimately interwoven with that epoch which raised the title of draughtsman to that of painter in water-colours to be forgotten in any semblage which professes to be representative of the art. That painting in water-colours is an art of modern invention is universally known, and that the credit of the recovery is due to the British artists is equally admitted. The title had been achieved worthy the name of art by the draughtsman until about the middle of the eighteenth century, when the study of linear perspective having been successfully cultivated, the artists made some successful attempts at topographical drawing, or the representation of actual views of towns, cathedrals, castles, mansions and other pictorial objects, with that fidelity to their respective forms and proportions in combination which constitutes the reliable picture.

Previously to the application of linear perspective to topographical delineation, nothing could be less natural than the representation of scenes from nature, as may be seen in all the background subjects that were intended to represent real scenes in the historical pieces painted by the artists, and even the masters of more modern times, up to the period of the latter part of the seventeenth century, when the Flemish and Dutch masters, cultivating successfully the study of linear perspective, produced those justly admired topographical works in which architecture formed the principal features of the subject.

About the middle of the eighteenth century nothing could be less scientifically set forth than views of buildings and places; for in all the works topographical, such as Hogarth's folio work (line engravings) of the colleges at Oxford and Cambridge, the topographical illustrations of Rowe's folio "History of London," and other large and expensive similar works, all the views were represented in that heterogeneous style of delineation termed "bird's-eye views," which may be considered nothing short of the grotesque of perspective.

How it happened that the British artists were so entirely wanting in perception to remain so long in ignorance of the art of correct delineation is the more surprising, as the ingenious Wenceslaus Hollar had practised so many years in England during the reigns of Charles I. and Charles II., and had made so many engraved topographical representations of various parts of London, with sufficient skill and intelligence to show them what the art was capable of. So, however, it was; and thus it continued until Paul Sandby commenced his topographical studies, and gave to the world his veritable delineations of the picturesque scenes of the island. These at once pointed out the right path to other artists, many of whom, availing themselves of his intelligence, pursued the same species of drawing and spread the knowledge of this department throughout the empire.

The graphic works of Sandby assumed very little more than a mechanical knowledge of light and shadow, being almost invariably marked in foreground, middle-ground and distance, buildings, trees, figures, cattle and every other object, with a deep pencilled outline, shadowed with Indian ink and tinted with thin washes of colour, in the tints of brick, stone, tile and slate; the trees and grass of deep greens and the sky and distances with cold unbroken blue, or blueish gray.

Michel Angelo Rooker, the next in succession, proceeded a step still further in topographical art. His views of the colleges, engraved for the Oxford Almanac for several consecutive years, were long admired as works of great merit. He moreover made the first successful approaches in his coloured studies from nature to imitate the local colour of

each object, such as bricks, stone, tile, timber, &c., with the tints which they had acquired by exposure to weather, and which render them so fitting for pictorial representation. Rooker, however, though he thus advanced the art by pointing out the proper method of study, could not combine the whole into a picture. It was even considered by him and his ingenious contemporaries and immediate successors that the process of painting in transparent water-colours could never attain to sufficient power to form a picture.

Thomas Hearne practised topographical drawing at the same period with still greater success; as his works, though not affecting force of light and shadow, and with little pretension to colour, were yet very complete in harmony, being chaste in effect and tasteful in execution, faithful in their general characteristics and beautiful in their detail. His drawings, indeed, were so replete with these qualities that Girtin and Turner owned they derived from the study of his works the rudiments of that topographical knowledge which they improved so as ultimately to raise the British school in this department of art superior to that of any other nation ancient or modern.

In this epitome of the rise and progress of water-colour art it would be injustice to the memory of John Cozens not to mention his meritorious labours in this branch of drawing, as it was he who first successfully practised that delightful attribute of scenery painting in water-colours, aerial perspective, which before his time had scarcely been attempted, from the erroneous belief that it was not to be accomplished by the limited powers of colours thus prepared.

These, then, may be considered the original founders of the school of British draughtsmen, and each having added something to the common stock of water-colour art, Girtin and his coadjutor Turner, then youthful disciples in the same department, commenced their career on the stepping-stones which their ingenious predecessors had placed for the advantage of these and others their more fortunate successors.

It would puzzle philosophy, in its wisest mood, to account for the superiority which these young artists obtained, at so early an age, over the labour of the whole long lives of these their worthy predecessors, for they worked with the same materials and from the same prototypes. The very same objects which had served them—the castles, ruined monasteries, abbey gates and other pictorial subjects which had by them been delineated—also were sought by these, but their predecessors represented them only, at the best, as tinted chiaroscuro drawings, whilst these formed them into splendid pictures; such, indeed, that connoisseurship marvelled at the achievement, and painters in oil were no less lost in wonder to know by what possibility such works could be wrought in materials apparently so entirely incompetent to the operation.

Thomas Girtin was born February 18, 1775. Whilst yet a child he evinced a predilection for drawing, having a pencil and scrap of paper in hand whenever he could possibly obtain them, and scribbled all that his childish fancy presented, to the neglect of every other consideration either of duty or amusement; yet, to quote his own words, "other boys of his own age, at ten or twelve, who amused themselves or idled in the same way, drew quite as well as himself." This candid confession may serve to stimulate the youthful student to exertion, whether studying this art professionally or as an amateur artist, as it plainly shows that to excel in painting is not, as too commonly supposed, a mere affair of inspiration.

It is almost indispensable, in attempting to describe the mode of study and practice by which Girtin attained to so great a mastery in water-colours, to incorporate the congenial pursuits of his fellow student, Turner; for the complete development of the latent powers of water-colours, which had hitherto eluded the research of the whole of their predecessors, was the result of the joint labours of these extraordinary young artists.

Whilst they were in their nonage, the venerable Doctor Munro then resided on the Adelphi Terrace. This eminent collector and intelligent connoisseur had an enthusiastic love for graphic art generally, but more particularly for water-colour drawing. He had been intimately acquainted with Wilson, Marlow, Gainsborough, Paul Sandby, Rooker, Hearne, Cozens and all who were eminent in the study of landscape; and at his select winter evening conversaziones these and other distinguished artists and amateurs enjoyed much intellectual and friendly intercourse.

During the doctor's long acquaintance with artists (for his early predilection for the arts led him whilst young to

seek their society), he richly augmented the collection of drawings first begun by his father. He possessed a considerable number of the most valuable sketches by Gainsborough, whose style he imitated with more verisimilitude than even Sir George Beaumont. He had, moreover, many of the finest drawings by Sandby, Hearne, Rooker, Cozens and others, comprising the most valuable specimens, and forming together the best collection of works in water-colours of any collector of his time. These, indeed, formed a school of examples, and no one could have applied them with more advantage to the rising artists in the same pursuit than did Dr. Munro.

This distinguished amateur threw open his collection for the improvement of certain young artists, whose promising talent he had discovered, and whose interest he felt desirous to promote. Amongst these were Girtin, Turner, Varley, Underwood, Edridge, Francia and some few others, who attended at his house on certain evenings, and there made copies and studies from the choicest specimens in his rich collection, under the doctor's auspices and direction; an advantage which could not fail to be highly beneficial, as he was a most able preceptor; indeed, his taste and judgment would have done credit to any professional artist. These valuable services he rendered to his élèves gratuitously.

The ardour and generous spirit of competition with which these youths pursued their evening studies was most exemplary, for each appeared to labour rather for the approbation of his competitor than from a jealous spirit of rivalry. With Girtin and Turner this mental contest was maintained with mutual feelings, eminently creditable to youths so equally gifted with genius and perception, and so alike endued with executive powers.

Girtin and Turner—indeed all the disciples of the Munro school—occasionally copied and studied from the same prototypes. From the elaborate and tasteful delineations of Hearne and Rooker they acquired the rudiments of a just and accurate insight into the properties of topographical design, and from the drawings of Cozens a practical knowledge of breadth and simplicity, united with the charm of the aerial perspective. Girtin and Turner combining these qualities (for we must speak of them *par excellence*, they being moreover the elder disciples of the school), and superadding their own enlightened perceptions to the knowledge thus acquired, laid the foundation of that superstructure which they raised to the glory of the British school of water-colour painting.

The progress which this ingenious evening coterie of young artists made in the course of two or three of these winter evening meetings enabled them to obtain an accuracy of eye and mastery of hand sufficient to copy with facility every example placed before them; and these indispensable qualifications fitted them to try their powers in drawing from nature.

It is a too common complaint with amateurs that they cannot, without travelling to parts remote, find fitting subjects for pictorial delineation. The imagination of one wings its way to the romantic regions where the Poussins caught their inspiration; and another sighs for the classic scenes wherein Claude found those landscape amenities which delight in his elegant compositions—vainly fancying that were they amidst such enchanting scenes they might exercise their graphic capacities to some efficient purpose.

(To be concluded.)

SMOKE ABATEMENT.

THE last report of the public control committee of the London County Council contains the following proposals:—

The administration of the various enactments as to smoke nuisance is divided up in the county of London amongst a number of authorities. Nuisance from trade premises is dealt with by the metropolitan borough councils and nuisance from locomotives is dealt with by the Council through its officers acting as common informers. We are of opinion that it would be preferable if the administration of these enactments were centralised. Nuisance from smoke differs considerably from the ordinary insanitary nuisance and should be dealt with in an entirely different manner. Smoke readily passes from one district to another; it diffuses itself in the atmosphere and creates nuisance not only in the immediate neighbourhood of an offending chimney, but also in districts far removed from the actual source of nuisance, and whilst one sanitary authority may actively administer the law in its own district, it may yet

suffer considerably through the laxity in another district. It therefore seems desirable that the Council should itself undertake the work of administration, and if the Council adopts this view and applies for the necessary powers, the opportunity might also be taken of incorporating the various enactments as to smoke nuisance in London into one statute with such amendments as we have suggested.

Serious nuisance also arises from private houses. It is estimated that half of the smoke in London comes from this source, and at the present time these are unaffected by the law. The smoke from each individual chimney may be slight, but when it is remembered that in winter probably one million domestic chimneys in London pour forth smoke daily into the atmosphere it is evident that the total volume of smoke must be very great. As indicating the great amount of smoke discharged from domestic chimneys it has been noticed that some of the densest London fogs have arisen on days when the great bulk of business premises have been closed, and a massive bank of smoke in London has been seen to rise to a height of at least 3,000 or 4,000 feet, and to be carried by the wind in a sunlight obscuring trail to a distance of fifty miles.

Dr. W. N. Shaw, of the Meteorological Office, states that he finds from comparison of records that, owing to its smoke, London loses half of its sunshine in winter and one-sixth in summer, and there can be no doubt that domestic grates contribute largely towards this evil. Many people advocate the abolition of the open fire in favour of the closed stove system in use on the Continent; but while undoubtedly the general adoption of such a system of heating would result in a purer external atmosphere, this would be secured at the sacrifice of much of the fresh air inside living-rooms, for which open fires, by providing a good deal of ventilation, are largely responsible. It is therefore unlikely that English people will abandon the open fire. Although, owing to the very nature of its construction, it seems impossible to combine in the open grate the essentials of smokeless combustion unless anthracite coal or coke be exclusively used, careful experiment and inquiry have shown that there are several open firegrates on the market which secure excellent combustion of coal and largely reduce the amount of smoke.

Much reduction of smoke nuisance from private houses may be expected through the growing use of gas and electricity for the purposes of heating and cooking, as it has been found that nearly half a million gas cooking stoves are now in use in London, and their use is steadily increasing. It has been suggested that the amount of smoke could also be considerably reduced by adopting systems of central heating, but we are of opinion that to materially diminish domestic smoke it is necessary to educate public opinion on the subject, and a step in this direction is the instruction which is given to children in elementary schools in the principles of combustion, so as to make them grasp the fact that smoke is not inevitable, but often results from the wasteful use of fuel.

We do not propose at the present time to suggest any action to deal with nuisance from this source, but it may be found necessary at some future time, unless public opinion brings about some radical improvement, to give serious attention to this grave problem.

It is extremely desirable that Government property, which is now exempt from the provisions of the Public Health (London) Act, 1891, relating to smoke, should be brought under their operation, as both the Council and the Woolwich Metropolitan Borough Council have frequently had cause to complain of the serious smoke nuisance from the chimney of the Royal Arsenal at Woolwich. In this connection we may remind the Council that the following resolution was passed at a conference of the metropolitan borough councils held on July 7, 1904, on the administration of the Public Health (London) Act, 1891:—

"That in the opinion of this conference it is desirable that the provisions of the Public Health (London) Act, 1891, as to nuisances arising from the emission of smoke, should be applied to property in possession of the Crown."

As required by standing order No. B 163, we have to state that we are advised by the solicitor that the Council has power to promote legislation in the direction above indicated provided that the provisions of the Borough Funds Act, 1872, as applied by the County Councils (Bills in Parliament) Act, 1903, are complied with, and we recommend:—

(a) That, as regards nuisance from smoke in the County of London, application be made in the next session of Parliament—

1. To consolidate existing enactments relating to smoke nuisance in London.

2. To amend section 24 (b) of the Public Health (London) Act, 1891, so as to cover any serious emission of smoke, irrespective of colour and whether issuing from a chimney or not; to provide for the imposition of a direct penalty of 10*l.* for a first offence and cumulative penalties where necessary for subsequent offences, and to give the same powers of entry to trade premises to the Council's officers as are now granted to officers of the sanitary authorities.

3. To repeal the exemption enjoyed by Government property under sections 23 and 24 of the Public Health (London) Act, 1891.

4. To amend section 114 of the Railway Clauses Consolidation Act, 1845, and section 19 of the Regulation of Railways Act, 1868, by providing that the penalty for the first offence shall be 10*l.*, that cumulative penalties may be imposed where necessary, and that the emission of dense smoke from the funnel of an engine shall be deemed an offence without the necessity of proving default on the part of a railway company or its servants either in the construction of the engine, the condition of the engine, unsuitable fuel or negligence in stoking.

5. To empower officers of the Council to enter the premises of railway companies in order to make the necessary identification of smoking locomotives.

6. To amend section 30 of the Highways and Locomotives (Amendment) Act, 1878, by providing that it shall cover the emission of smoke from a properly constructed engine through the negligent use of the same.

7. To amend section 1 of the Locomotives on Highways Act, 1896, so as to permit section 30 of the Highways and Locomotives (Amendment) Act, 1878, to apply directly to light locomotives.

8. To constitute the Council, instead of the metropolitan borough councils, the executive authority for dealing with smoke nuisance in London.

(b) That the costs and expenses of promoting the legislation referred to in the foregoing resolution (a) be defrayed out of the county fund.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A GENERAL MEETING of the Institute was held on Monday, the President in the chair, to read the minutes of the special general meeting held on Tuesday, May 28, formally to admit members attending for the first time since their election, &c. The report of the scrutineers appointed to direct the election of the Council, standing committees, &c., for 1907-8, was received.

On the motion of Mr. H. W. Wills, it was resolved that it be a recommendation to the Council to insert a clause in the revised by-laws empowering the taking of a poll on any professional question on the signed requisition of twenty-five members.

The results of the elections were as follows, viz. :—

THE COUNCIL.

President.—T. E. Colcutt.

Vice-Presidents.—J. S. Gibson, E. T. Hall, H. T. Hare, L. Stokes.

Hon. Secretary.—Alexander Graham, F.S.A.

Members of Council.—Reginald Blomfield, A.R.A., J. J. Burnet, A.R.S.A. (Glasgow), A. W. S. Cross, M.A., E. G. Dawber, W. Flockhart, Ernest George, J. A. Gotch, F.S.A. (Kettering), E. A. Gruning, H. V. Lanchester, E. L. Lutyens, C. E. Mallow, Ernest Newton, W. A. Pite, A. N. Prentice, H. R. Ricardo, J. W. Simpson, John Slater, Paul Waterhouse, M.A.

Associate Members of Council.—H. A. Crouch, W. C. Green, S. K. Greenslade, S. H. Hamp.

Representatives of Allied Societies.—Hippolyte J. Blanc, R.S.A. (Edinburgh Architectural Association), H. Dare Bryan (Bristol Society of Architects), H. S. Chorley, M.A. Oxon. (Leeds and Yorkshire Architectural Society), J. F. Groves (Cardiff, South Wales and Monmouthshire Architects' Society), E. Kirby (Liverpool Architectural Society), W. M. Mitchell, R.H.A. (Royal Institute of the Architects of Ireland), J. M. Monro (Glasgow Institute of Architects), P. Ogden (Manchester Society of Architects), A. B. Plummer (Northern Architectural Association).

Representative of the Architectural Association (London).—W. Cave.

STANDING COMMITTEES.

Art.—*Fellows*: R. S. Balfour, J. J. Burnet, A.R.S.A., E. G. Dawber, E. George, J. S. Gibson, H. T. Hare, Pro-

fessor W. R. Lethaby, E. S. Prior, M.A., J. W. Simpson, P. Waterhouse, M.A.—*Associates*: J. Anderson, A. T. Bolton, T. Davison, S. K. Greenslade, T. G. Lucas, E. Wood.

Literature.—*Fellows*: A. W. S. Cross, M.A., J. A. Gotch, F.S.A., E. S. Prior, M.A., H. R. Ricardo, Professor F. M. Simpson, Professor R. E. Smith, R. P. Spiers, F.S.A., H. Stannus, A.R.C.A., C. H. Townsend, P. Waterhouse, M.A.—*Associates*: W. C. Green, J. H. Jones, B.A., H. Passmore, A. J. Stratton, W. H. Ward, M.A., P. L. Waterhouse, M.A.

Practice.—*Fellows*: W. H. A. Berry, Max Clarke, A. W. S. Cross, M.A., G. Hubbard, F.S.A., J. D. Mathews, S. Perks, H. A. Satchell, A. S. Snell, T. H. Watson, W. H. White. *Associates*: E. Greenop, E. R. Hewitt, H. H. Langston, H. Porter, M.A., T. E. Pryce, A. W. Tanner.

Science.—*Fellows*: H. P. Adams, T. W. Aldwinckle, Max Clarke, W. Dunn, M. Garbutt, F. Hooper, C. S. Peach, H. D. Searles-Wood, A. S. Snell, L. Solomon. *Associates*: R. J. Angel, E. J. Bennett, H. W. Burrows, E. R. Hewitt, E. W. M. Wonnacott, E. A. Young.

The hon. auditors are Messrs. H. P. Burke Downing and A. W. Sheppard.

Twenty Fellows and five Associates were elected, viz. :—

Fellows.—O. D. Black (Liverpool), A. T. Butler (Cradley Heath), S. B. Caulfield, P. B. Chatwin (Birmingham), P. H. Currey (Derby), F. B. Dunkerley (Manchester), N. Fitzsimons (Belfast), D. T. Fyfe, L. W. Green, John Hartree (Hereford), H. T. D. Hedley (Sunderland), W. M. How, P. M. Johnston, W. Scott-Deakin (Shrewsbury), W. S. Skinner (Bristol), W. Stewart, Henry Tanner, jun., J. A. Thomas (Surrey), H. Tooley, K. M. Young (Belfast).

Associates.—T. C. Agutter, S. C. Brittingham (Melbourne), W. Hooker, K. G. Rea (Montreal), S. J. Wearing (Leicester).

LOWERING THE PROFESSIONAL STANDARD.

THE following correspondence has passed between the late President of the Quantity Surveyors' Association and the late President of the Surveyors' Institution :—

20 Mecklenburgh Square, W.C. : April 9, 1907.

Dear Mr. Langridge,—As a Fellow of the Surveyors' Institution, I was very pleased to see in a memorandum issued by that body, signed by you and sent to local authorities, &c., the following, viz. :—"That any system by which the financial return for professional work is reduced below the point at which it becomes remunerative to properly trained and qualified men must tend to lower the professional standard." I welcomed that sentence especially, because I believe it is the first explicit public statement that the Council of the Surveyors' Institution regard disgraceful cutting down of charges as tending to lower the professional standard. Now that the Council have once properly and publicly branded the practice, and brought those who are guilty of reducing the financial return below the point at which it becomes remunerative to properly trained and qualified men within their own definition of "tending to lower the professional standard," I suppose there can no longer be any doubt that the Council mean to take the necessary steps to compel Fellows of the Institution to cease "lowering the professional standard," or expel them.

When your Council are ready to hold an inquiry, I can have brought before them for a first case a glaring instance of a Fellow of the Institution tendering to supply the quantities for some new schools supposed to cost about 20,000*l.*

I believe the County Council scale for work between 5,000*l.* and 20,000*l.* is 1½ per cent. The Quantity Surveyors' Association scale for school buildings for work between 10,000*l.* and 20,000*l.* is 1⅓ per cent., and for work between 20,000*l.* and 30,000*l.* 1¼ per cent. Hurst's scale is 1½ per cent. on the first 10,000*l.* and 1 per cent. on the remainder.

The Fellow of the Surveyors' Institution agrees (since the issue of your circular) to do the work for ½ per cent. Is not that "tending to lower the professional standard?" Should it not be brought before the Council as "disgraceful conduct in his profession as a surveyor," bringing him within Rule 19?

I shall be glad to have your views, as President of the Institution, on this subject, of so much importance to all quantity surveyors, and to assist you in any inquiry or in any other way I can in the interests of the profession.—Yours always faithfully,

(Signed) A. J. GATE.

To George Langridge, Esq.,

President of the Surveyors' Institution,

Great George Street, S.W.

The Broadway, Tunbridge Wells: April 11, 1907.

Dear Mr. Gate,—Your letter of the 9th inst., directed to me at the Institution, received. I am thoroughly in accord with the memorandum issued to the local authorities by the Council of the Institution, and from the information brought to their notice, it seemed most desirable to bring the Council's views on the subject before the authorities. Personally I strongly object to anything in the nature of touting for work, or putting surveyors into competition with regard to the amount to be charged for their services rendered, and I should like, as far as possible, to impress this view on the members; but, as you know, there are outsiders, and the question of proper fees for services rendered in a Society so widely extended seems one in which it would be difficult to make a rigid rule. In this I am giving my views as a member only, and not as President of the Council.—I am, dear Mr. Gate, yours truly,
A. J. Gate, Esq. (Signed) GEORGE LANGRIDGE.

20 Mecklenburgh Square, W.C.: April 22, 1907.

Dear Mr. Langridge,—Thank you for yours of the 11th inst., but it does not quite answer mine of the 9th. I am pleased to have your assurance that personally you would like to impress on your members that you strongly object to surveyors competing as to their charges; but what I want to know is whether, as President who signed the recent memorandum, you will take the necessary steps to make them cease doing it to the disgraceful extent now prevalent.

The Institution's charter was granted on a petition in which it alleged that its object was "improving the status and regulating and shaping the customs and usages of surveyors," and on a plea in that petition that the grant of the charter would be "according to the Institution a position by means of which it will be better able to exercise an influence towards maintaining a high standard of rectitude among the members of the profession."

I, and other members of the Institution, are of opinion that as regards quantity surveyors the Institution is certainly not carrying out the objects of its charter; but, instead of improving it, is allowing its members to seriously lower the status of surveyors, and that it is utterly failing to regulate the customs, even of its own Fellows, when a Fellow of the Institution is allowed to tender to supply quantities for a 20,000*l.* school at $\frac{1}{2}$ per cent., and the Institution does nothing to stop such tendering.

If I send you necessary particulars, the name of the Fellow, &c., will you bring the matter before your Council to take steps to stop such undoubted lowering of charges of quantity surveyors? Surely the grant of your charter requires you to take action in such a case.

I am, dear Mr. Langridge, yours always faithfully,
(Signed) A. J. GATE.

To George Langridge, Esq.,
President of the Surveyors' Institution,
12 Great George Street, S.W.

12 Great George Street, Westminster, S.W.:
April 24, 1907.

Dear Sir,—In reply to your letter of the 22nd inst., I am desired by the President to inform you that the policy of the Institution has always been to leave the question of fees to the individual discretion of members, and that this policy was confirmed at the recent general meeting called to consider this matter.—I am, dear Sir, yours faithfully,
(Signed) A. GODDARD.

A. J. Gate, Esq., 20 Mecklenburgh Square, W.C.

20 Mecklenburgh Square, W.C.: April 26, 1907.

Dear Sir,—Thank you for yours of the 24th inst. Without that I was already only too well aware what the policy of the Institution has always been.

It is that policy I object to, as a Fellow who has a right to ask that the Council shall perform the duties for which its charter was granted.

Allowing its Fellows to compete for work at any starvation prices absolutely at their individual discretion may be the President's and Council's idea of "improving the status and regulating and shaping the customs and usages of surveyors," but it is not mine. I can only consider it deliberately ignoring and refusing to carry out the terms of its charter.

Whether the President and Council are, or I am, right, I leave to those of my professional brethren who, like myself,

regret the low status to which the profession is sinking under such "improving" and "regulating."

As the correspondence clearly brings out and leaves no possible doubt as to the deliberately expressed policy of the Institution, I propose to publish it as being of the graves concern to all quantity surveyors, and in the hope that the responsible and respectable members of that profession will see the necessity of at once taking steps to protect their interests and dissociate themselves from the insane policy of the Council before it is too late.—Yours always faithfully,
(Signed) A. J. GATE.

To the Secretary, the Surveyors' Institution:
12 Great George Street, S.W.

GENERAL.

Mr. W. M. Mitchell, F.R.I.B.A., R.H.A., the president of the Institute of Architects in Ireland, has been appointed by the Kingstown Urban Council to act as assessor, at a fee of 75 guineas, in the selection from the competitive designs for houses in Kingstown of those two which will best comply with the particulars of the competition. The assessor's attention is to be directed especially to the financial limitations. It is expected that there will be 200 competitors for the prize of 100*l.*

Mr. H. T. Steward has been appointed by the Council of the Surveyors' Institution to fill the vacancy in the Tribunal of Appeal caused by the resignation of Mr. J. W. Penfold.

Mr. William Strang, A.R.A., has been elected member of the Council of the International Society of Sculptors, Painters and Gravers.

The First Prize (5,000 francs) in the competition for the Palais de Justice, Sofia, has been granted to M. Balley, of Saintes; the second prize (3,500 francs) to M. Girette, of Paris; the third (2,000 francs) to M. Lazaroff, of Sofia; and the fourth (1,000 francs) to M. Bourgeois, of Poissy. There were thirty-five competitors.

An American Academy of Art in Rome is likely to become an actuality before long. Mr. Pierpont Morgan, Mr. Henry Frick and Mr. W. Vanderbilt have subscribed 200,000*l.* for the purpose of founding it.

The Finance Committee of the London County Council recommend that Mr. Edwin Waterhouse, F.C.A., be asked to report, in continuation of his report, dated March 15, 1897, upon the accounts of the works department, and generally as to the position of the department from a commercial point of view; and that in the event of Mr. Waterhouse not being prepared to make the report referred to, Messrs. Price, Waterhouse & Co., chartered accountants, be asked to prepare such report.

The Chemical Laboratory of the University of Cambridge is to be enlarged from plans by Mr. Stevenson, at an estimated cost of 13,500*l.*

The First Commissioner of Works, in response to a Parliamentary question as to whether the stone for the late Queen Victoria Memorial was being prepared by foreign workmen said:—"The work for the Queen Victoria Memorial is not under the charge of any Government Department, but is carried out by the committee appointed to dispose of the fund which was raised by national subscription. I understand that marble, which is being quarried for the purpose at Carrara, is being prepared by the workmen on the spot before it is shipped to England."

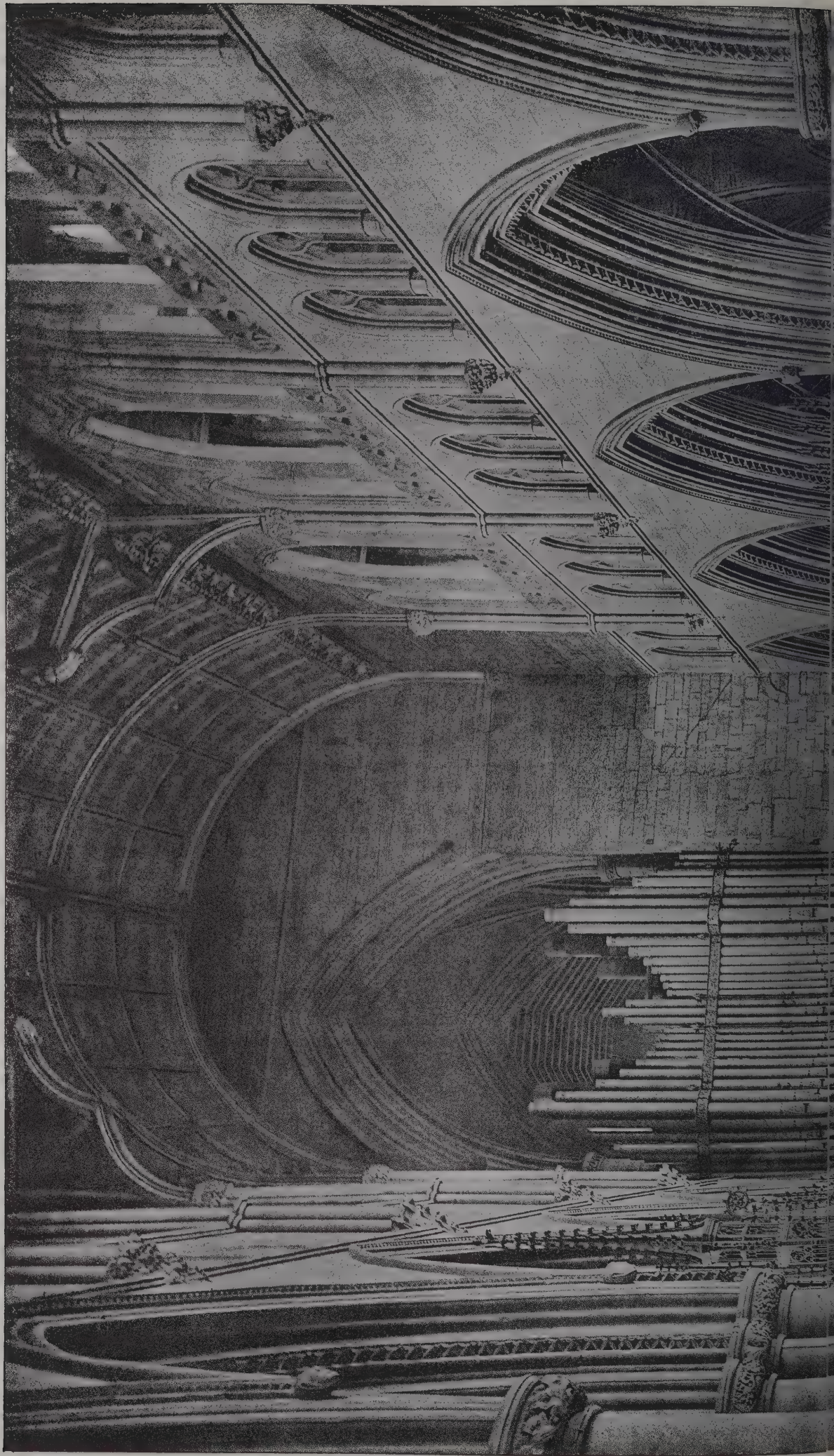
In Reply to a Question put in the House of Commons, it was officially stated that an appointment is about to be made to the headmastership of the Metropolitan School of Art, Dublin. The suggestion that the sums which have lapsed to the Treasury by the long vacancy in the post should be recovered and applied to the purposes of the art school is impracticable. The unexpended balance of salaries must, in the usual course, be surrendered to the Exchequer.

The Bournemouth Town Council have approved a recommendation from the education committee that a central art, science and technical school be erected at an estimated cost of 25,000*l.* A proposal to erect a public swimming bath in the Springbourne district at a cost not exceeding 6,000*l.* was lost.

M. Paul Leroi (Léon Gauchez), the editor of *L'Art*, died suddenly on the 8th inst. He was the most fearless of critics, but a large number of artists owed their success to his influence and generosity.

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The Architect, June 14th 1907.





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CATHEDRAL SERIES, No. 602.—CARLISLE: VIEW OF CHOIR, LOOKING WEST.

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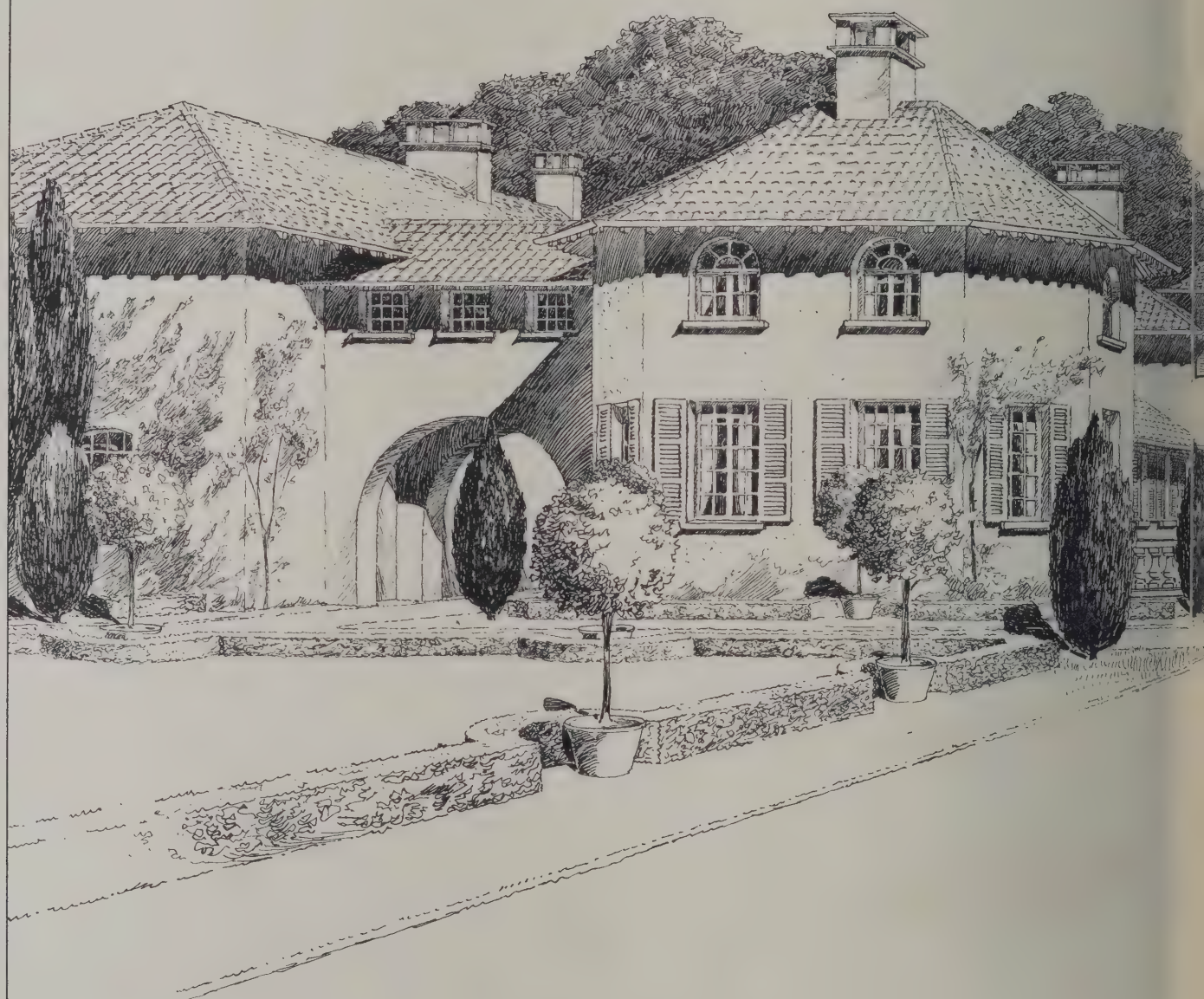
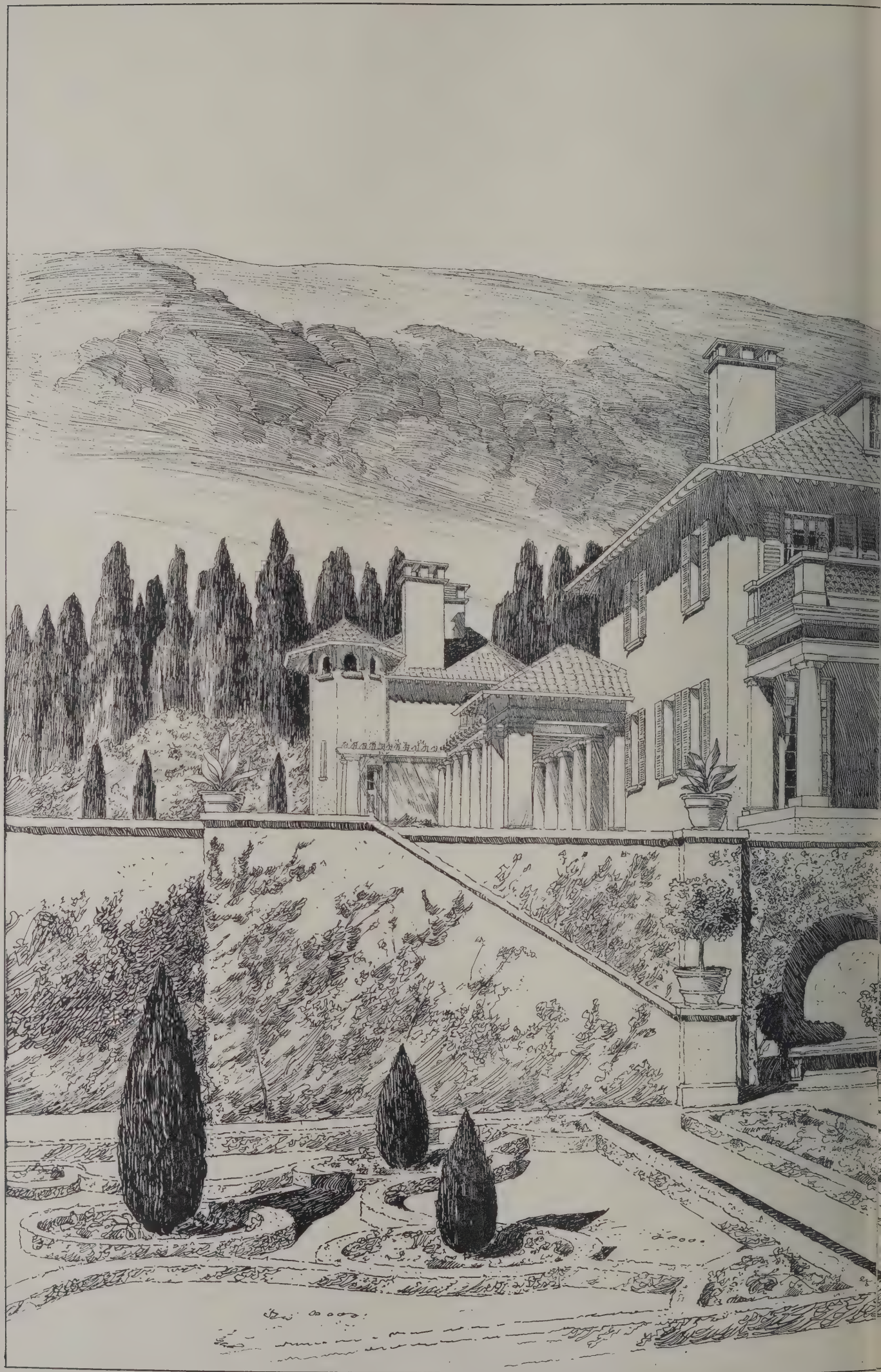




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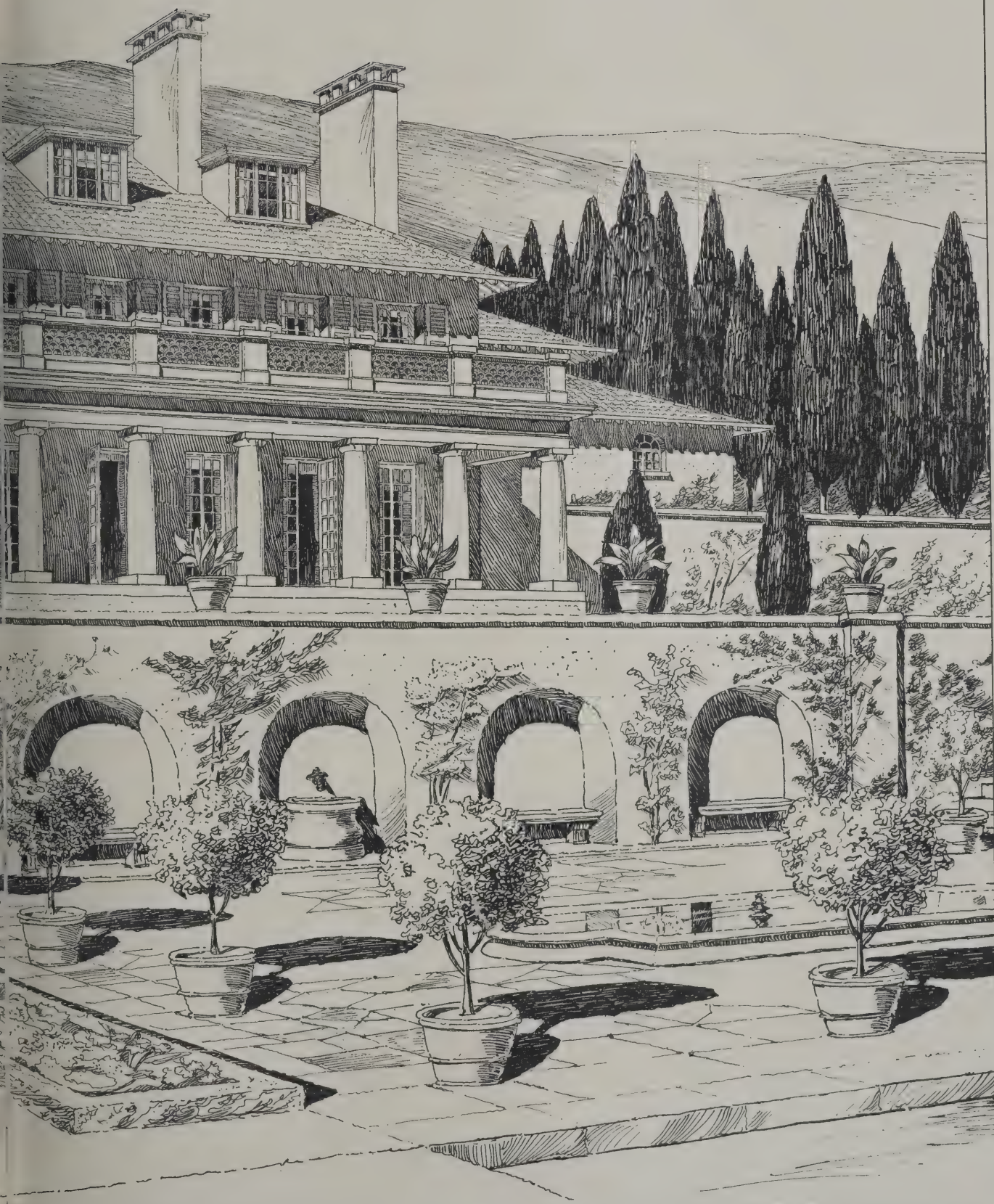


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The Architect.

THE WEEK.

Is it not desirable for the London County Council to come to a decision concerning the proposed County Hall? The establishment committee on May 9 prepared an elaborate report on the subject, in which they said "that the best course for the Council to take is to go on with the scheme with all possible despatch." But the Council have not considered the subject at any of the meetings since the report was submitted. It is also worthy of notice that the finance committee have recommended that there should be a conference on the expenditure. It was also considered desirable to expend 350*l.* on borings at the site, but there is delay in that matter. We do not suppose that if there should be a change in the policy of the Council on the subject it would affect the conditions of the competition. Architects, however, prefer to be without any doubt about their position, and until the Council approve of the recommendation of the committee there must be misgiving about the carrying out of any of the designs.

THE Manchester City Council have adopted the report of the special committee appointed to inquire into the establishment of a works committee. The committee had reported against the proposal. But one of the members said they had been guided by the experience of the operations of the Works Department of the London County Council. One instance of the London system was mentioned, and it is so amusing as to be worth reprinting. A report was received that a lamp was broken in a suburb of London two miles away from the department works. A man was sent to examine the lamp. He came back and reported that it would have to be brought to the works to be repaired. A man and a horse and cart were sent for it and specifications for the repairs were got out. Various workmen were put on the job, care being taken that there should be no overlapping—that a tinsmith should not do the work of a painter, for example—and eventually the lamp was repaired and refixed. When the cost came to be reckoned up it amounted to 3*l.* 17*s.* 6*d.* A brand-new lamp could have been bought for 25*s.* Those who have studied the operations of the Works Department in London will agree that the case exemplifies on a small scale the circumlocutionism which is the character of pseudo-Government departments. Whether the Works Department will be soon abolished it is difficult to say, but there can be little doubt that greater reliance will be placed on ordinary contractors than was allowed in recent years.

THE value of an architect's final certificate is so clearly understood in England that objections to it are rarely recognised by the Courts. Although English precedents are supposed to have almost equal authority in the United States, it would appear as if the final certificate is not self-sufficient, but requires other conditions which are not always respected in this country. A case which exemplifies the difference has been decided in the Court of Appeals of the District of Columbia. A contractor agreed to erect twenty-one brick houses in Washington according to drawings and specifications by an architect. It was agreed that payment was to be made in the manner and at the time set out in a schedule of payments signed by the parties and made part of the deed. The original contractor withdrew, and handed over the work to a trust company. When the work was completed the architect gave a certificate, and payment was demanded according to the agreement. The owner claimed damages because of delay by which the value of the houses was diminished. The Court held that a contract to perform work in the best manner and with materials of the best quality in accordance with plans

and specifications does not make the acceptance by the architect final and conclusive; the contractor is not relieved from the agreement to carry out the work according to plans and specifications. The architect's certificate was not to be accepted as conclusive unless there was a statement to that effect in the contract deed which was not open to a charge of ambiguity. The decision, of course, affects not only building but engineering work. The questions may well be asked, If the architect or engineer is not competent to decide about the carrying out of his own plans and specification, who is better qualified and on whom is the expense to fall for the extra investigations?

ACCORDING to the Workmen's Compensation Act, any workman receiving weekly payments under the Act shall, if so required by the employer, submit himself for an examination by a medical practitioner. A case of the kind occurred in 1905. Arbitration followed, but as the judge considered the medical evidence contradictory a medical referee was called in. The referee found the man was able to work as an unskilled labourer, and the judge ordered that payments should cease. In three months the man found he was unable to continue working, and an effort was made to reopen the case. After passing from one Court to another the case came before the House of Lords on Tuesday. Lord HALSBURY said the arbitrator could have kept the employer's liability alive by ordering the payment of a penny or a shilling a week. But as the arbitrator, who, as usual, was a County Court judge, had not done so, there was an end to the case. Their lordships' decision is in keeping with the principle that an action at law cannot be brought to obtain compensation which can be recovered under the Act, and that all questions which arise must be settled by arbitration. Unfortunately arbitration is not more infallible in dealing with workmen's compensation than in other matters.

THE excavations at Timgad, in Algeria, have within the last few weeks revealed the existence of a great Christian church in the eastern part of the city. The length of it was about 280 feet and the width 82 feet; there was also a parvis or forecourt of the width of the church and a length of 26 feet. There was evidently a mortuary chapel, in which were sarcophagi. The church is supposed to date from some time in the fourth century, and was used by the Donatists. They were followers of DONATUS, who had been orthodox Bishop of Carthage. But after his condemnation by the Council of Arles he founded a sect which extended over the greater part of Northern Africa. Hitherto Timgad has been associated with Roman work. But evidently its inhabitants must have had a varied history, and by the time M. ALBERT BALLU, the architect who has control of the researches, completes his work it will be possible to spell out many points in its history from the architectural monuments.

THE report of the Architects' Benevolent Society states that the income would have been insufficient to meet the years' demands if it were not for the 100*l.* added to the income and 175*l.* added to the capital account obtained through the letter of appeal sent out by Mr. COLLCUTT. During the year eighty applications for relief were received, and seventy-five grants, amounting in all to 743*l.* 12*s.* 6*d.*, were distributed, in addition to 183*l.* 15*s.* paid to pensioners. The expenses amounted to 132*l.* 1*s.* 5*d.*, and the balance is 50*l.* 19*s.* 2*d.* The disbursements, apart from the pensions, exceeded the subscriptions by 60*l.* It will therefore be evident that additional subscribers and bequests are desirable. Business is not flourishing, but it seems surprising, considering the number who practise as architects, that a larger sum is not obtainable. The Council, however, consider the past year was marked by increased prosperity as well as usefulness.

SCOTTISH ARCHITECTS.

THE exhibition in Edinburgh which was arranged by the Edinburgh Architectural Association in 1882 included work by English as well as Scottish architects. Another exhibition which was opened this week in Edinburgh is, with one or two exceptions, confined to native work. The same building—the Royal Scottish Academy—is again used. But instead of 1,200 drawings there are now only about 500 to be viewed.

One of the most interesting works is the portrait of JAMES CRAIG. The architect's name is not familiar in the south. But in our days when so much is said about laying out streets and town improvements it deserves to be recalled. In no other city has so much success followed a design. People who now walk along Princes Street and look at the beautiful gardens which bound it on one side cannot imagine the extent of the improvement of which CRAIG was the pioneer. Scotsmen loved the Old Town in spite of its numerous sanitary shortcomings. When expansion could no longer be evaded it was proposed to utilise the ground on the south side of Edinburgh. But Provost DRUMMOND, who was then in authority, considered it would be preferable to erect a new town on the north side. His project seemed to be impracticable, for the valley, in which are now the gardens and railway, was under water. It was a long if not a deep lake. DRUMMOND's architect was JAMES CRAIG, a pupil of Sir ROBERT TAYLOR, who, towards the close of the eighteenth century, was considered to be the foremost architect in London. It is strange that no memorial of CRAIG is to be seen in the new Edinburgh of which he was the creator.

THOMAS HAMILTON, who erected the famous High School and was one of the foundation members of the Royal Scottish Academy, is the subject of another portrait. His contemporary, WILLIAM BURN, was a pupil of Sir ROBERT SMIRKE. He lived in Edinburgh for several years, but he returned to London, and up to his death in 1870 his practice was large. ROBERT ADAM is so closely connected with London he is generally supposed to have been an Englishman. But he was the son of the King's mason in Edinburgh, and the old Register House in that city is one of his works. It is represented in the exhibition by means of a model.

It was courageous on the part of Mr. RUSKIN to have condemned in the strongest words provided by his varied vocabulary the architecture of Edinburgh before an Edinburgh audience. One of his victims was W. H. PLAYFAIR, who was living in 1853. In "The Stones of Venice" he selects that architect's Free Church College as an example of the way in which buttresses were employed in modern times without any purpose, but merely because they were supposed to be a necessity of the style. In that particular example symmetry rather than strength dictated their use. PLAYFAIR, like many other northern architects—he was born in London—failed in Gothic, believing Classic alone was adapted for the northern Athens. However, his National Gallery, College of Surgeons, New College, Surgeons' Hall have long been accepted as creditable to Edinburgh. The view of his Donaldson's Hospital which is in the exhibition is interesting, because the colouring and the figures are by DAVID ROBERTS, R.A., who was once the scene-painter in the Edinburgh Theatre.

DAVID BRYCE was for a time a partner with WILLIAM BURN, and even in his last days he remained a dignified type of the old school. His Bank of Scotland is really a part of the Old Town, but there is no building in Edinburgh which has a more scenic effect when seen across the valley from Princes Street. His Fettes College and several country houses are grandiose examples of a style which was once in favour. The portrait of GEORGE M. KEMP recalls the enthusiastic joiner who designed the Scott memorial—a work which it is no exaggeration to say has been admired by people from all parts of the world, although the details show little respect for precedents. DAVID RHIND, the archi-

tect of Stewart's College, the Commercial Bank, &c., is another of the worthies who figure among the portraits. His designs prepared for the competition of the Houses of Parliament and the Government offices are shown.

Recently there was a scheme before the Town Council for the construction of a terrace in the Princes Street Gardens. It was not a novelty. Designs are shown which were prepared by Mr. J. DICK PEDDIE, M.P., for a similar alteration. The few statues of Scotsmen and the Scott memorial are enough to inspire a belief that a great many similar examples would be effective. But if the votes of visitors could be taken they would probably be in favour of allowing nature to prevail.

The drawings by living architects have been seen in various exhibitions. Sir R. ROWAND ANDERSON has a large array, including Mount Stuart House, Rothesay; the National Portrait Gallery, Edinburgh; the Central Station, Glasgow; the designs for the Montrose and Inglis memorials in St. Giles's Church, &c. In his treatment of classic elements he is more of a modern than were the architects of the earlier part of the last century. Mr. HIPPOLYTE J. BLANC, the president of the Association, shows the Coats Memorial Church, Paisley, and other works. Then there are the *Scotsman* Buildings, by Messrs. DUNN & FINDLAY; the North British Hotel, by Messrs. G. BEATTIE & SON; the Craig House Asylum and the Edinburgh University Union, by Messrs. SYDNEY MITCHELL & WILSON, and many other recent efforts. There are several drawings of the Old Town by JAMES HERON.

The Glasgow Corporation have sent a collection of drawings and photographs of buildings which have been erected in the western capital during the last half-century. By Sir GILBERT SCOTT is the Glasgow University. There are also views of the Municipal Buildings by the late WILLIAM YOUNG; St. Andrew's Halls by Messrs. DOUGLAS & STEVENSON and J. SELLARS. Among other works are the Clyde Trust offices by Mr. J. J. BURNET, the Stock Exchange and the Clydesdale Bank by the late JOHN BURNET. One of the churches by the late ALEXANDER THOMSON will excite interest. The *Daily Record* buildings are by Messrs. HONEYMAN & KEPPIE. The Parcel Post Office is by Mr. W. T. OLDRIEVE. The mansion-house, Rosehaugh, is by Mr. W. FLOCKHART. Among other architects represented are Mr. W. LEIPER, Mr. J. B. WILSON, Mr. MACGREGOR CHALMERS, Mr. J. A. CAMPBELL, Mr. G. S. AITKEN, Mr. A. M. PATTERSON and the late W. HEITON.

The architectural exhibition should be useful to architects as well as to the public. Those who practise the art must realise after seeing the drawings that Scotland has shown power in architecture as well as in painting. If greater independence of thought had been exercised there is no reason why a local style should not be developed by this time; or if the word "style" is objected to, then we can say local peculiarities. The old Scottish mansion had in it characteristics which could be turned to account, as was done by DAVID BRYCE, BURN, ROCHEAD and others. The public, that is to say Scotsmen, who have buildings to erect can convince themselves from the drawings that something else is practicable besides an imitation of what is produced in London, Paris or Holland. The words which were spoken by Mr. RUSKIN in Edinburgh over fifty years ago are worth remembering. He said:—"It is not by subscribing liberally for a large building once in forty years that you can call up architects and inspiration. It is only by active and sympathetic attention to the domestic and everyday work which is done for each of you that you can educate either yourselves to the feeling or your builders to the doing of what is truly great." In the old days there were obstacles to architectural advance. The clergy were all powerful, and they preferred to use buildings of a simple kind. When we are told that the Reverend WALTER BALCANQUHAL insisted on every window in Heriot's Hospital having different architraves and ornament we can realise the omnipotence against which architects had to struggle.

AHMEDJIE MOSQUE, CONSTANTINOPLE.

ON May 29, 1453, after a siege of about eight weeks, Constantinople surrendered to the Turkish forces of MOHAMMED II., and from that time has remained under the rule of Sultans. They were religious after a manner, and lost no time in arranging for the worship of the God of Battles. At first they had to use the numerous churches of the Christians, although the eastward position was not observed in the planning, while statues and mosaics were evils which they abhorred. The sculpture was removed, and the walls covered with plaster or whitewash wherever offensive pictures were seen. St. Sophia in that way was adapted to the Mohammedan ritual. In some cases the churches were demolished, and the materials rearranged to form mosques.

But the Sultans did not forget their obligation to raise temples which should not suggest mere temporary expedients. MOHAMMED II., although occupied in organising the new empire, erected as many as six mosques in the city. One was on a prominent site, and was designed by a Christian architect. But as the greater part of it succumbed to an earthquake in the eighteenth century, the reconstructed building which bears his name cannot be accepted as resembling the original.

BAYEZID II., the son of MOHAMMED II., also was a mosque builder, although his reign was troubled, and among his enemies were his brother and son.

SULEIMAN I., who is called the Magnificent by some and the Legislator by others, erected the noble building which bears his name. The principal dome is 86 feet in diameter, or about 20 feet less than that of St. Sophia. The lateral arches which sustain it are supported by great piers, partly of porphyry columns which once stood in the great open space known as the Atmeidan, which was the Hippodrome, and was one of the marvels of the ancient Byzantium.

There are several smaller domes forming a picturesque cluster, and there are four graceful minarets. SULEIMAN reigned for the long period of forty-six years, and died in 1566.

It is possible that AHMED I., who ascended the throne in 1603, was, as became a boy of fourteen, emulous of the fame of SULEIMAN I., and desirous to erect a more noble mosque. Among all in Constantinople it alone has six minarets, and is therefore called Alty-Minareli-Djami. According to tradition, the Imam of Mecca was so horrified when he heard of the proposed irreverence—for the Kaaba he guarded had only six—he went to the Sultan to remonstrate with him. The young AHMED could not deny his fault, which seemed likely to put an end to his project, but by a happy thought he proposed to add a seventh minaret to the Mecca shrine, towards which the thoughts of all true believers were then, as now, turned in devotional moods.

In another feature we can perceive a desire to compete with the Suleimanic mosque. SINAN, the architect of that building, arranged eight piers for the dome, and made each a solid structure in which the porphyry we have mentioned becomes only a partial facing. In the Ahmedjie, on the contrary, the dome and arches appear to have only the four massive columns, each about 20 feet in diameter, for support. They are the first objects which strike the visitor on entering, and from some positions near them the mosque appears larger than it is in reality. PUGIN, in the church he built adjoining his residence at Ramsgate, might have been thinking of AHMED's piers, for by means of a single massive pier the sight is momentarily deceived, and a chapel assumes the dignity of a church. If the pier were removed, and it has little use constructively, the general effect of the small building would be minimised. The columns in the Ahmedjie it will be seen are treated in a manner which recalls the Classic cabling, and by that means a multitude of

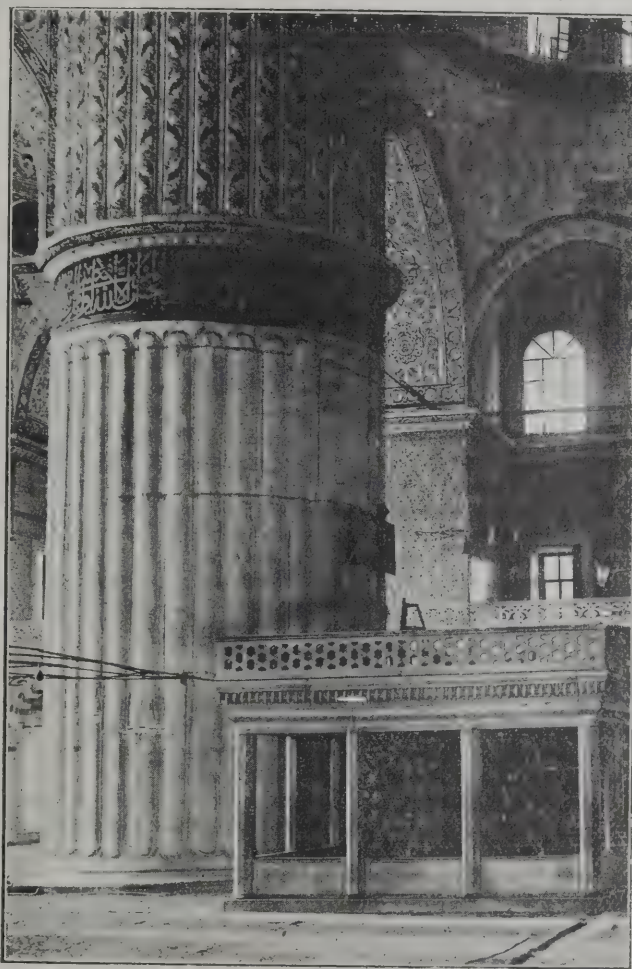
supports is suggested.

The deep band of verses from the Koran almost serves as a capital to each column. The columnar piers suggest that BURKE was right when he said that greatness of dimension is a requisite effect in building, and that a work of art may deceive in order to appear grand.

The building, it is believed, cost an enormous sum. As AHMED died in 1617, it is likely he did not witness the completion of his mosque. There are many parts of the building which are left plain, although elaborate decoration must have been contemplated. The windows which are filled with common glass also seem as if they were expedients which arose from the scarcity of money or the indifference of the new rulers. The immediate successors of AHMED were weaklings, who were not adapted for so perilous a position as representative of the Prophet, and they were followed by others in

whom cruelty predominated, and who preferred wars which could end in massacres.

If we remember the general condition of architecture in Europe at the beginning of the seventeenth century, we must wonder at the vigour and refinement of AHMED's mosque. The architect, whose name is not recorded, may have considered it essential for his central dome that the resistance on all sides should be equally balanced, and in consequence set out the plan as a square. The arrangement diminishes the interior effect, but as the four sides of SULEIMAN's mosque were not alike, the later building could be said to differ from it in a strict regard to uniformity. AHMED must have commanded clearances on an extensive scale in the Hippodrome area to provide ample room for his building, but the surrounding courts, with their cloisters and trees, form one of the most agreeable spots in Constantinople. The beautiful kiosque with its fountain is a marvel for its delicate arabesques, which become



COLUMNAR PIER, AHMEDJIE MOSQUE.

more remarkable when we recall the time in which they were produced. But the interior of the mosque is, of course, far more impressive, and the visitor, as Mr. RANSOM says, wonders whether he has not before him the largest columns ever constructed by man, and which by themselves are enough to immortalise the architect.

EQUESTRIAN STATUES.

THE custom was long accepted in this country which restricted the privilege of equestrian statues to memorials of a sovereign or of a royal prince. The departure from the custom was first permitted out of compliment to the great Duke of WELLINGTON. As a prince as well as commander of the forces for many years the statue of the late Duke of CAMBRIDGE, which was unveiled by His MAJESTY on Saturday, has therefore a double claim to attention. The late Duke was a man exceeding the average size, and Captain ADRIAN JONES suggests that historic fact by his treatment. Both horse and rider are reminiscent of the progress of a review, and both resemble living beings. The group is placed on a pedestal of Dartmoor granite designed by Mr. BELCHER, A.R.A.

FLAXMAN, in one of his lectures, accepted the statement of SPEED about the long period after the departure of the Romans in which the Britons continued to practise bronze casting. According to the antiquary:—"King CADWOLLO being buried in St. Martin's Church, near Ludgate, his image, great and terrible, triumphantly riding on horseback, artificially cast in brass, was placed on the western gate of the city, to the further fear and terror of the Saxons." Figures of horses, however humble in style, we can believe were always admired in this country; and no better way of indicating the greatness of a king could be devised than by representing him as a mounted commander. The statue may have been rude and, as FLAXMAN thought, became terrible from its execution. But it must be supposed it was a regular custom in England to model figures of kings on horseback. It may even be said that no variety of the sculptor's art is so inefficiently exemplified as that of equestrian groups.

The Greeks might be presumed to have bequeathed very numerous works of the kind. In the first place, by recognising centaurs as if they were real beings, and by endowing some of them with more than human cleverness, they were bound for the purposes of art to study the form of the horse with as much attention as they gave to a man or a woman. They had also another class of subjects—the Amazons—who required in order to be fully understood to have horses as companions. In an early period of the art we read of a group which represented a contest between HERCULES on foot and a mounted Amazon. SIMON OF ÆGINA was said to have gained renown by his bronze horses. It is also recorded that to celebrate a victory at Olympia a bronze car was produced drawn by four horses. Two life-size horses each attended by a groom served as another memorial of victory. The horses of CALAMIS were proverbial for their fidelity to nature. The perfection seen in the equestrian procession of the Parthenon and the centaurs of the metopes, which are now in the British Museum, could not have been so beautiful if many sculptors before PHIDIAS had not attempted similar subjects. Unfortunately the world does not possess a single example of the equestrians of the earlier periods.

We may presume that subsequently the number of those groups increased rather than diminished. Individuals were permitted to glorify themselves to an extent which would not be tolerated in a more primitive time. There can be no doubt that the Mausoleum was surmounted by a quadriga, and there may have been other examples. It was difficult for the Romans to have carried off numerous statues of deities and athletes. But an equestrian group, if it bore any resemblance to modern works, could only be transported with far more

trouble. In that way the absence of genuine Greek examples can be explained.

Mounted figures were well adapted for ostentatious Romans. If PLINY is to be believed, the sculptors were able to produce such works five centuries before our era, for he mentions one representing a Roman lady on a steed which was produced at that time. There are occasional references which suggest that equestrian statues were numerous in Rome. It is difficult to understand why so few have survived. The two great groups on Monte Cavallo, which formerly stood in front of the Temple of the Sun or the Baths of Constantine, are generally accepted as Greek rather than as Roman works. It is now believed they are only copies, and there is no certainty they were reproduced in Rome. They represent horse-tamers rather than equestrians. It can therefore be concluded that the figure of MARCUS AURELIUS is the only representative of a true equestrian statue which has survived, for the fragments of the ancient bronze horse in the Capitoline Museum leave it doubtful whether there was a rider. MICHEL ANGELO and others of the Renaissance sculptors regarded the horse which bears MARCUS AURELIUS as perfect. But FALCONET, the French sculptor, who measured all the parts and compared them with those of a living horse, considered the ancient work was an example which could only be produced at a time of decadence. The eyes, the nostrils, the mouth, the neck, the legs, were all declared to be defective. The horse, it was said, could not move in the way he is represented without a lesion of the antagonistic muscles. It is remarkable, however, that with all its shortcomings the emperor's horse has been admired for 1,700 years. One of the causes of the success of the group may be the merciful character of the rider, which is suggested by the placid countenance and the action of the hand, as if he were pardoning those who had opposed him. The figure of MARCUS AURELIUS is, however, when analysed found to have even more defects than the horse. Some critics have concluded that the work must have been produced by two sculptors.

Although during the Renaissance period there was a desire to rival the ancients in every kind of art of which they had left examples, there was a dearth of equestrian figures. In the famous letter which LEONARDO DA VINCI sent to LUDOVICO IL MORO in 1483 he wrote:—"I can likewise undertake the execution of the bronze horse, which is a monument that will be to the perpetual glory and immortal honour of my lord your father of happy memory and of the illustrious house of SFORZA." The artist is said to have completed the model, but it was of such dimensions it could not be cast, though whether from the want of materials or from defective arrangements in the foundry cannot be determined. The model was claimed to be more beautiful and majestic than any effort of a sculptor hitherto known, but the French troops made a target of it. DONATELLO was more fortunate, for he was able to bring to completion the equestrian statue which is the memorial of GATTAMELATA in Padua. But the arrangements were made by Venetians who were men of business. His pupil VERROCCHIO produced the better-known statue of COLLEONI in Venice which LEOPARDI cast.

Among modern works one of the most remarkable is FALCONET'S "Peter the Great" in St. Petersburg. It suggests the effort of the monarch to civilise his wild subjects, for he appears as if he had ascended a rocky eminence which was not free from serpents. The mass of rock had to be transported for some distance. PETER is clad in classic robes, and the horse stands on its two hind legs. But although suggestive of the circus, it appeared to be well adapted for a semi-barbarous country, and Frenchmen continue to be proud of it.

Another modern statue is RAUCH'S "Frederick the Great" in Berlin. The pedestal is adorned with several equestrian figures of warriors, and consists of two

tages, the upper having reliefs on each side. The last war with France has enabled German sculptors to produce several statues of the Emperor and his four principal lieutenants, who are generally represented as questrians. France of late years has not produced any equestrian figures, and there is not one of the first NAPOLEON in Paris. Jealousies will not allow that mode of representation unless the subject is JOAN OF ARC.

In England similar works are not numerous, and, as we said above, were long confined to royalty. The masterpiece among those showing men of lesser rank is undoubtedly ALFRED STEVENS'S "Wellington" in St. Paul's Cathedral, although it may be open to Dean MILMAN's objection that the Duke is riding into the cathedral on the top of his tomb. The late G. F. WATTS, in his Grosvenor Falconer and "Energy," has modelled massive figures, but it is open to doubt whether they should rank with the best examples of foreign sculptors. FOLEY in his "Hardinge" and "Outram" displayed a finer style.

HOLYROOD CHAPEL.

A CORRESPONDENT of the *Scotsman* has called attention to an address which the late Mr. W. W. Robertson, of the Board of Works, delivered to the Architectural Association, November 9, 1892, on the subject of "Our Duty in Respect of Ancient Buildings." In it the following passage occurs regarding the Chapel Royal, Holyrood:—

We have come to consider the thing, and we may as well pronounce now the baneful word "restoration" which have hesitated so long to introduce. This is the word which, like that inadvertently uttered at some magical scene of beauty and delight, may suddenly change the whole aspect of our gathering; this is the special danger to which consider old buildings are exposed in this century, but which I delayed to name. It is, indeed, a word of evil men, and we should have been very much richer this day if it had never been uttered, or if the ideas which it represents had never been applied to our ancient buildings. Here is, we do not deny, a certain fascination about the idea of restoring a ruined and desecrated building to its former noble proportions and richness of decoration, and most people are inclined to say that if the imagination is responsible for a few details, the piety of the intention and the excellence of the general result will cover less venial transgressions. There is no doubt that this is the popular idea of a becoming and respectful treatment of our old buildings; there is also no doubt that, since the beginning of this century, so-called restorations conducted in this spirit have wrought more havoc and destruction among our old buildings than any other single cause, or, it may well be, than all other causes combined. If this is so, it becomes the duty of everyone who realises it to raise his voice in warning and protest, and to do all in his power against the continuance of such destruction. The importance of this must be my excuse for trying your patience further on the subject.

Does anyone doubt that this is the popular view? If such I only knew how often, during the last ten or twelve years, I have had urged on me the desirability of restoring the Chapel Royal at Holyrood; restoring it, that is, in the sense of rebuilding all the missing parts, roofing it, glazing the windows and introducing the internal furnishings and decorations necessary to fit it once more for use as a chapel royal.

This example will do as well as another to enable us to realise what restoration of this sort actually means. The condition of the building, which is, of course, only a fragment of the old abbey church, is shortly this:—The aisle walls and the greater part of the west wall are still in existence. The east wall is the work of the sixteenth century. The whole of the nave arcade, and, of necessity, the triforium and clerestory on the north side are gone. On the south side the nave arcade and triforium remain, but in condition unfit to bear a superincumbent load, and the clerestory on this side also is gone; but I have often been told that there are sufficient remains to show what the whole must have been, and that is indeed so except in the case of the clerestory.

We are to build anew the missing portions. To begin with, there is the whole nave arcade, triforium and clere-

story on the north side. Those who are enamoured of this sort of restoration do not seem to realise that a thing once destroyed can never be restored. It is an utter and absolute impossibility. We may produce something more or less like it, but the thing itself we can never reproduce. When we have built anew this arcade and triforium and clerestory, and thus given one entire new side to the nave, do not let us suppose that we have restored the old work—it is our work, our piers and our arches, our shafts and our carving. In "The Old Curiosity Shop" the Marchioness assures Dick Swiveller that when she quaffed water in which orange peel had been steeped she could fancy it was wine if she made believe very much. But no amount of make-believe will enable us or anyone to suppose that these arches and piers are the old work. We know, and everyone knows, that the clerestory is our own, and mainly conjectural, and that the triforium and arcade below it are only more or less perfect copies of the old work opposite. Without doubt, as we have a genuine liking and regard for the old edifice, we have worked honestly, to the best of our ability and judgment, and the copies are really excellent copies, perfect copies we may say, or if not absolutely perfect, they are so in our present estimation; that is enough for us to-day, and for the present we are contented, if not happy, in what we have done.

Well, there our work stands, upright and handsome, staring out of countenance the weather-beaten and rickety old work opposite. In our secret soul we have a deep and honest affection for these venerable stones, and we would fain leave them untouched. But, what would you? We have begun the work of restoration; we must go on with it. The public would never endure that this beautiful new work, which is really excellent of its kind, should be confronted by these scarred and blackened and anything but perpendicular piers on the south side. The least that public opinion demands is that they be scraped and scrubbed and freed from the dirt of centuries, and brought into something like congruity with our handsome new work; and if this be done their lack of perpendicularity may perhaps be forgiven. Let us hasten to make a compact with the demon of restoration. In order to preserve these stones where the old builders placed them let us give up their surface to be cleaned and scraped as the restorer will. Alas! we have to build a clerestory and support a roof on these anything but vertical piers, and the laws of statics, which have no veneration for these old stones or for anything else in particular, declare that it cannot be done. We must now, as has indeed been seriously proposed to me in cold blood, take down this southern triforium and nave arcade and rebuild them so that we may have a safe substructure on which to erect our new clerestory and roof, a dreadful task for anyone who has the love of the old building at his heart. Now we begin to realise the grim truth which Ruskin has declared, that "the true meaning of restoration is destruction, the most total destruction that a building can suffer, a destruction out of which no remnants can be gathered," and that "more has been gleaned out of desolated Nineveh than out of rebuilt Milan."

I do not propose to carry our restoration of Holyrood Chapel further. I do not need to show how in this and in similar attempts to prepare a long-ruined building for occupation, even where entire rebuilding is not required, there is continual necessity for renewals which, in the aggregate, cannot fail to impair most seriously the genuineness of the fabric. We need but mention the weather-worn tracery which needs renewal before it can be glazed, the jambs and lintels which must be rebuilt, if not entirely renewed, before doors can be fitted to them; the parapets and wall heads which must be rebuilt before they can be trusted with a roof or have the gutters fairly fitted to them. These and similar points will occur to us all.

The Joint Educational Authorities of Bacup and Rawtenstall have decided to erect a secondary school at Waterfoot, which is situated midway between the two boroughs. The estimated cost is 25,000*l.*, and plans have been prepared for the approval of the Lancashire County Council.

Mr. Edward Milligan Beloe, F.S.A., of King's Lynn, who died on March 22, aged eighty, left property which has been sworn at the total value of 17,835*l.* After the death of his widow his executors may use their discretion in offering his collection of East Anglian maps, prints, prehistoric implements and other antiquarian objects to Norwich Museum by way of a gift, conditionally that they shall be preserved in their entirety and properly identified as his donation.

DUNDEE CHURCHES.

THE following report has been prepared for the Dundee Presbytery by Mr. Macgregor Chalmers, Glasgow, on the condition of the city churches:—

"In accordance with your remit, I visited Dundee on Tuesday, the 14th ult. I then learned that the Town Council of Dundee has had the decayed condition of the three city churches—St. Clement's, St. Mary's and St. Paul's—under consideration for many years. It was reported to the Council in 1888 that the cost of the necessary repairs on the churches would be 2,000*l.* Some years later the estimated cost was increased to 2,500*l.* The matter was again considered in the year 1905, when the cost was estimated under three heads, as follows:—(a) Cost of cleaning and pointing St. Clement's Church, and cleaning down and removing loose parts of St. Mary's and St. Paul's churches, 550*l.*; (b) cost of cleaning and pointing St. Clement's Church and repairing St. Mary's and St. Paul's churches with cement, 2,800*l.*; (c) cost of cleaning and pointing St. Clement's Church and thoroughly repairing and restoring with stone St. Mary's and St. Paul's churches, 7,500*l.* In the most recent report the cost of repairing the three churches is estimated at 4,500*l.* Of this sum 300*l.* is to be expended upon St. Clement's Church and 4,200*l.* upon St. Mary's and St. Paul's churches. All the decayed architectural features and walling of St. Mary's and St. Paul's are to be removed and replaced by new stone. The walls of St. Clement's are to be brushed down and the joints pointed. The Town Council have approved of this last report and estimate.

"When I read this report, I concluded that St. Clement's Church was in excellent repair, and that St. Mary's and St. Paul's were so dilapidated that it was necessary to spend on their repair a sum fourteen times larger than the sum to be expended upon St. Clement's Church. When the buildings were examined this conclusion was found to be erroneous. St. Paul's Church is sixty-three years old, St. Mary's Church is sixty-five years old, and it is said that St. Clement's is 119 years old. The external walls of St. Clement's Church have been built of a local sandstone of poor weathering quality. It is evident they have been in a dilapidated condition for many years. They are now hopelessly decayed. The works proposed are limited to pointing the open joints in the masonry and removing all the loose material still adhering, the effect of which will be to expose a fresh surface to the action of the weather. This will accelerate the disintegration of the stone. I think the report approved by the Town Council, so far as it refers to St. Clement's Church, practically admits its hopeless state of disrepair. I cannot recommend the acceptance of the expenditure of 300*l.* on its repair as a complete fulfilment of the Town Council's obligations as heritors. I think the time has come when the erection of a new church should be undertaken. I am of opinion from my study of the churches that the rebuilding of St. Clement's Church was in contemplation sixty-three years ago. The west end of the south wall of St. Paul's Church supports this view.

"The magnificent tower to the west end of St. Clement's Church was restored by the Town Council about thirty-five years ago at an expenditure of nearly 9,000*l.* It is unfortunate that a local sandstone of poor weathering quality was used in the restoration, as a considerable part of this new work is now decayed and calls for repair.

"St. Mary's and St. Paul's churches were also carefully examined. They are built of a local sandstone of poor weathering quality, and although they are little more than sixty years old, the architectural features are already broken and wasted by the weather. The base-course, the string-course, the cornice and cope of the side aisles, the intakes, niches and gables of the buttresses, the ornamental parapets and clerestory windows, the skews and pinnacles of the gables, the sills, jambs, mullions and arches of the windows, the jambs and arches of the doors, and a large proportion of the ashlar walling are broken and decayed. The report above referred to contemplates removing all these decayed and broken stones and replacing them with new stone. This work, especially the introduction of new sills into the great windows, will be difficult and very costly. As the stonework of the Victoria Hall built ten years ago on the north side of St. Mary's Church is already decayed, it may be well to avoid the use of local stone unless of guaranteed quality. There are many quarries from which reliable stone of suitable colour may be obtained. The stone from Alloa or from Wooler, in Northumberland, is of good quality. If the proposed works on St. Mary's and St. Paul's churches are carried out, the Town Council,

in my opinion, will have fulfilled their obligations as heritors (although I do not think that their proposals are the best in the circumstances). I feel sure that the masonry of the buildings will then remain in a fair state of repair for twenty-five years or more. The sum to be set apart for repair is a large one. If the work is carried out, not by contract, but by the Corporation directly employing the labour and paying for time and material, it is probably sufficient. But it is desirable that the Corporation should be left free to carry out the work in accordance with the specifications rather than in accordance with the estimate of the probable cost.

"I beg to report that in my opinion the Town Council proposals regarding the repair of St. Clement's Church are inadequate. I think it should now be rebuilt. I am of opinion that the Town Council's proposals regarding St. Mary's and St. Paul's churches are adequate, although, as have indicated, I believe that the interests of the city would be better served by following another course."

A copy of the report is to be sent to the Town Council.

NATIONAL PORTRAIT GALLERY.

THE trustees of the National Portrait Gallery call attention to the fact that the concluding meeting for the year 1906-7 marked the fiftieth anniversary of the first meeting of their Board, which took place on February 6, 1857, and the 270th meeting since that date. Of the Board of Trustees as at first constituted one member still survives—Lord Elcho, now Earl of Wemyss, who retired from the Board in 1866. The vacancy on the Board of Trustees caused by the death on April 13, 1906, of Mr. Richard Garnett, C.B., LL.D., has been filled by the appointment of Sir Thomas David Gibson-Carmichael, Bart.

The history of the National Portrait Gallery during the past fifty years has been one of continuous expansion within the Gallery and of public appreciation. At first housed in small apartments in Great George Street, Westminster, the collection on numbering 288 portraits was removed in 1869 to a gallery forming part of the exhibition buildings at South Kensington, where it remained until 1885, when in order to avoid risk of destruction by fire was removed temporarily to the Bethnal Green Museum. The number of portraits having increased during the sixteen years to 747. The collection remained at Bethnal Green for ten years, during which period the number of portraits was increased but slowly to 982. In 1895 the collection was transferred to the new gallery erected through the generosity of the late Mr. William Henry Alexander at St. Martin's Place and was reopened to the public in April 1896.

Since that date and during the past eleven years the public interest in the National Portrait Gallery has increased to a remarkable extent. The number of portraits on the register in the collection has increased to 1,460, exclusive of engravings, photographs and other portraits of a supplementary nature, which bring the total number of portraits actually exhibited to 1,630.

The rapid increase of the collection has for some time proved that the present gallery is quite inadequate for the purpose of displaying the collection in an orderly and intelligible arrangement, and the need for extension continues to become more urgent. The trustees have ascertained from the War Office that nothing can be done at present with reference to allotting any part of the site of St. George's Barracks for this much-needed extension of the gallery. The trustees can therefore only call public notice to the difficulties caused by the present congestion, and urge the Lords Commissioners of His Majesty's Treasury to give the matter their serious consideration.

Since the opening of the new building in 1896, in order to relieve the congested state of the galleries fifty-two portraits, mostly duplicates of persons represented in the gallery by better portraits, have now been transferred on loan to various public offices and collections with the approval of the Lords Commissioners of His Majesty's Treasury.

During the past fifty years the price of works of art of every description has continued to increase. The trustees have therefore great difficulty in obtaining portraits of any special value and historical interest, since the grant placed at their disposal in the annual estimates, which was amply sufficient fifty years ago, is now quite inadequate in the present state of competition. This difficulty moreover is one likely to increase in the future.

The collection has come to be regarded as a valuable factor in national education, and more than one foreign nation has expressed a desire that the example should be followed in their own country.

The donations, loans or bequests number 800. The latest additions are:—Richard Carlile, publisher, author and speaker, painter unknown; Robert Dodsley, poet, dramatist and bookseller, painted by W. Alcock; the Royal Academy in 1772, two sketches by J. Sanders, after J. Goffany, R.A.; Mary Anne Everett Green, historian and architect, drawn in chalks by her husband, George Pycroft Green; Samuel Johnson, LL.D., a study for the portrait at Knole, painted by Sir Joshua Reynolds, P.R.A.; Thomas, second Baron Lyttelton, an old copy after Thomas Gainsborough, R.A.; Samuel Cousins, R.A., mezzotint engraver, painted by James Leakey; Roundell Palmer, first Earl of Selborne, copy by Malcolm Stewart after the painting by Miss E. Busk; Gathorne Gathorne-Hardy, first Earl of Cranbrook, drawn in 1857 by George Richmond, R.A.; Charlotte Brontë (Mrs. Arthur Bell Nicholls), drawn in crayons in 1850 by George Richmond, R.A.; Sir Henry Irving, LL.D., 1838-1905, copy by L. Allen from the painting by Sir John Everett Millais, Bart., R.A.; Sir Patrick Grant, field-marshal, painted by E. J. Turner; William Thomas Best, organist and musical editor, bronze medallion, modelled by C. Prætorius; Sir W. G. G. V. Vernon Harcourt, statesman, original plaster cast from the model executed at Rome in 1899 by Waldo Story; Henry Peter, first Baron Brougham and Vaux, two pen-and-ink sketches by Charles H. Lear; a collection of twenty-eight portrait-sketches of artists, drawn in pencil in 1845-6 by Charles H. Lear.

Twelve portraits were purchased, viz. William Vincent, R.D., divine and geographer, drawn by Henry Edridge, R.A.; James Anthony Froude, historian, drawn in coloured chalks by J. E. Goodall; William Farren, actor, painted by Richard Rothwell, R.H.A.; Samuel Warren, Q.C., F.R.S., barrister and novelist, painter uncertain; Sir William W. Collett, K.C., sketch in oils by Sir Martin Archer Shee, P.R.A.; Edward Gibbon, the celebrated historian, painted by Henry Walton; Charlotte Brontë (Mrs. Arthur Bell Nicholls), painted in water-colours in 1850 and stated to be by "Paul" or Constantin Héger after an earlier portrait by her brother Branwell Brontë; Michael William Balfe, eminent musical composer, painted probably by Richard Rothwell, R.H.A.; Matthew Boulton, F.R.S., engineer, medallion-portrait executed in 1807 by S. Brown; John Constable, R.A., pencil drawing by Daniel Maclise, R.A.; Sir Thomas Goley, G.C.B., admiral, drawn by Henry Edridge, A.R.A.; Sir Charles Napier, K.C.B., admiral, painted by E. W. Gill.

GREEK TEMPLES.

THE cell of a Greek temple is a simple, oblong building. In the earlier periods it was probably nearly destitute of ornament, and except for the cornice, and for the smallness of the dimensions, much like a barn. Afterwards a porch was added, supported by columns, and the entablature began to receive some embellishment. Even this disposition, when the front came into view, was beautiful, and more so when an additional range of columns was added to the portico. Afterwards columns were added at the back also, which means the variety and contrast produced by them could catch the attention from every point of view. The next step was to continue the columns all round. The temple cell had no particular appellation, and yet from the great multitude of temples existing in ancient Greece, many of which seem to have been very small, it is probable they were not uncommon. Temples of the second sort were said to be in *antis*, because in them the flank walls were prolonged beyond the front so as to form the sides of the porch, and these prolongations were terminated in pilasters having three faces, which pilasters were called *antæ*. The third arrangement was called *prostyle*, the fourth *amphiprostyle*, the fifth *peripteral*. Besides these were also the *pteral* temples, having two rows of columns round the cell, and *pseudodipteral*, which differed from the *dipteral* by the want of the inner range of columns, and from the *peripteral* by having a much larger space between the cell and the surrounding colonnade. In all these the same general form was preserved, a simple oblong, and the admiration bestowed upon them was owing to the simplicity of form and richness of detail. This richness of detail has its limits, and the work may be overloaded, even when the ornaments do not (as they frequently do in Italian architecture) interrupt or obscure the simplicity of

the design, but the liberty allowed is very wide. The simple cell must always have been deficient in that respect, for though the walls and cornices might be richly ornamented, yet these details could not have produced sufficient effect on the whole composition; for that purpose it is necessary that the building should be divided into principal masses, whose position with respect to each other must produce some degree of variety and intricacy. The temple in *antis* must also in some degree be deficient in richness, and no temple of this sort has been much admired; but the *prostyle*, and still more the *amphiprostyle*, if well proportioned, will always be admitted into the rank of beautiful buildings. From almost every point of view we see at least one column gracefully detaching itself from the mass of the building, and the nakedness of the side walls contrasts with the bright lights and shadows of the ends, and claims our admiration even when compared with the higher finish of the *peripteral* temple. The eye, however, will not be satisfied with some intricacy in the disposition of the general masses; it will require a similar gratification when it comes to examine the details; and we find this accomplished by fluting the columns, moulding the capitals, dividing the frieze at least by triglyphs and frequently placing sculpture in the intervals between them; adorning the pediments with sculpture, and placing *antefixæ*, or ornamental convex tiles along the eaves. The ancients used two sorts of tiles in covering each building: the first were flat, but turned up at the edges; they were trays with the ends cut off, made a little smaller at one end than at the other, that they might lap one into the other, but if such tiles were simply laid side by side the water would run in between them, and to prevent this other semicircular or semipolygonal, *i.e.* convex, tiles were placed over the joint. These tiles ran in ribs, from the ridge of the roof down to the eaves, and the last of them at the eaves had an elevated and ornamented end, and the range of these ornamented ends, which in the edifices of Athens were of white marble running above the cornice, greatly enhanced the appearance of splendour, and must have had considerable influence even on the distant appearance of the building. In temples of the Ionic and Corinthian orders the richness of decoration was carried still further, though there was by no means the difference between those and a highly finished Doric temple which might at first be imagined. However, between a Doric *prostyle* temple and a *dipteral* temple of the Corinthian order the distance is immense, yet each has peculiar beauties, and he who prefers the one has no right to reproach with want of taste him who approves the other.

GLASGOW SCHOOL OF ART.

THE Governors of the Glasgow School of Art, authorised by the Scotch Education Department, have granted five maintenance scholarships of 20*l.* each with free tuition, and seven travelling bursaries of 10*l.* each. Maintenance scholars:—Drawing and painting—Alex. L. Jackson, Robert C. Robertson. Architecture—Wm. J. Anderson. Modelling—John Currie. Design and decorative art—Florence M. Lee. Travelling bursars:—Drawing and painting—John Mills, John M. Purvis. Architecture—Wm. Friskin, Chas. A. Harding (divided), David M'A. Carlile (divided). Modelling—Wm. R. Dick. Design and decorative art—Eliz. G. E. Dobson, Robert Hood. Twelve governors' day class studentships and thirty governors evening-class studentships were awarded. The Institute of Architects' prize—Richard M. M. Gunn. Medallions presented by Mr. Chas. E. Whitelaw, F.S.A., architect:—Wm. J. Anderson, silver medallion; Alex. T. Scott, bronze medallion; Richard M. M. Gunn, special book prize. Anatomy—Alex. Gordon. Messrs. Wm. Meikle & Sons for stained glass—James S. Rennie. Day and evening bursaries offered by the Haldane Trust tenable at the Glasgow School of Art—the judges for these were Mr. Alex. N. Paterson and Mr. John Henderson. Day-class bursaries, value 15*l.* each—Charles Aird, Wm. B. F. Williamson, Ellison J. F. Young, Clara C. Tucker. Seventy evening-class studentships. "Robert Hart" Bursaries for drawing and painting, value 10*l.*, awarded by the "Robert Hart" Trustees upon the judges' report.

The Association of Municipal Corporations has decided to approach the Prime Minister and Mr. John Burns with a request that they will receive a deputation from the Association on the subject of the planning of suburbs of populous centres.

NOTES AND COMMENTS.

THE next meeting of the Royal Society of Antiquaries of Ireland is to be held in Athlone, and will commence on July 2. The town is the central point of Ireland, and in consequence its possession was sought in the contest between JAMES II. and WILLIAM III. According to MACAULAY, "ROSEN, who understood war well, had always maintained that it was there that the Irishry would, with most advantage, make a stand against the Englishry." When GINKELL was able to seize on the town, the Jacobite commander was forced to retreat and the end of the war could have been foreseen. The members of the Society will be able to visit the castle and other places associated with the siege. There will be excursions to Lough Rea (in the small islands of which are several ruins); but still more interesting will be Clonmacnois, where there are remains of the "Seven Churches," two round towers, three crosses, the nuns' chapel, the castle and about 200 inscribed slabs and fragments, with inscriptions in the Irish language. The abbey and castle of Roscommon will also be visited. Papers will be read on "The First Norman Castle of Athlone," "Clonmacnois," "Holy Wells in Ireland" and "The Burke Effigy at Glinsk."

A COMPETITION in which many Scottish architects will be glad to take part is that for municipal buildings in Stirling. The first part of the project will only be carried out at present, for the amount to be expended is limited to 12,000*l.* It will include Council chambers and offices for town clerk, chamberlain, collector, master of works and sanitary inspector, accommodation for caretaker and muniment-room. The second part will include School Board offices, police offices, corn exchange, fire station, workshops, &c. The premiums offered are not in keeping with the importance of the competition, for they amount to 50*l.*, 30*l.* and 20*l.* A competent assessor has been selected in Mr. WILLIAM LEIPER, R.S.A., of Glasgow. It is to be hoped that local characteristics will be respected by the competitors.

THE battle between town and country seems to be endless, for when it is over in one place it breaks out elsewhere. "No man made the land" is a maxim in political economy, but a great many are taxed to pay those who claim as much right to it as if they were its creators. The House of Lords insisted that there must be some abatement of the claims to ownership of light and air, for otherwise towns would be an impossibility. Something of the same kind is required in connection with the sanitation and water supply of towns, for every improvement which requires some of the land which nobody made is met with opposition and claims which are out of proportion to the interference which was necessary. A case of this class came before Mr. Justice JOYCE a few days ago. The Corporation of Halifax in carrying out works for a water supply found there was a leak in the bank of a reservoir, and in order to stop it they had to form a heading at a depth of 123 feet below the ground. In the search for the defect it was necessary to proceed for 42 feet beyond the Corporation property. The owners of the land sought an order from the Court not only for the removal of the works which were necessary, but to remove the concrete and whatever was introduced to prevent leakage. In theory it is true a landowner can claim the possession of a part of the earth beneath his land, probably beyond the centre of the globe. In the same way he can claim authority over light and air for a distance which it is difficult to realise. It could not be alleged that either the appearance or fertility of the 42 feet of ground suffered by the heading. But a trespass had been committed, and that used to be considered a very serious affair. Fortunately some judges are now disposed to recognise mutual rights, not as of equal force, but as

allowing of an extenuation of technical trespass. Lord Justice SMITH a few years ago laid it down "that (1) if the injury to the plaintiff's legal rights is small (2) and is one which is capable of being estimated in money, (3) and is one which can be adequately compensated by a small money payment, (4) and the case is one in which it would be oppressive to the defendant to grant an injunction, then damages in substitution for an injunction may be given." Mr. Justice JOYCE wisely adopted that rule, and decided that the plaintiffs should have no more than the 100*l.* which the Corporation had offered. As they are not to obtain costs the owners have lost by their suit.

THE Engineering Standards Committee have found it necessary to make alterations in the standard specification for Portland cement. The following may be mentioned among the more important points in which revisions have taken place:—1. The percentage of sulphuric anhydride has been slightly raised. 2. The quantity of cement to be used in the test for fineness and the period for which it is to be sifted have been specified, while the residue to be left on a sieve 180 by 180 has been somewhat reduced. 3. The grading for the increase of tensile strength in the neat test has been further extended. 4. The maximum final setting time for the "slow-setting" cement has been increased. 5. The expansion under the Le Chatelier test has been reduced. The sectional committee are also making experiments with a view to the inclusion of a clause as to initial setting time and other subjects. Considering the quantity of cement which is produced in this country we think the committee should be chary about introducing alterations. It must be remembered also that cement manufacture has created many foreign rivals, and it will not be difficult for them to declare that their product is in keeping with the second standard if not with the first. Experiments should be encouraged but if the Standards Committee amuse themselves by pottering with materials they are likely to seriously interfere with business.

FRICTION arose when in October last the Tribunal of Appeal decided that the London County Council should pay 110*l.* costs, having failed in respect of the appeal against the certificate of the superintending architect defining the general lines of buildings in Euston Road and Cleveland Street. The Tribunal having stated a case for the opinion of the High Court, the matter came on for hearing on May 14, before Mr. Justice PHILLIMORE and Mr. Justice BRAY. The Court held that when the Council made itself a party in an appeal case it had a right to obtain costs and had a corresponding liability to pay costs in cases where the Tribunal so thought fit, and that such being the case the Tribunal of Appeal had jurisdiction to order the costs in question to be paid by the Council to the appellants, and the Court affirmed the order of the Tribunal with costs. The Building Act committee have advised the Council to accept their lordships' decision. It is an important conclusion, for it upholds the independence of the Tribunal of Appeal, and also proves that the London County Council can be considered as an ordinary litigant without any special privileges.

ILLUSTRATIONS.

VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON.

FOXCOMBE, BERKS.

CATHEDRAL SERIES.—CARLISLE: THE CHOIR FROM ORGAN LOFT THE EAST END.

LESSONS FROM SAN FRANCISCO.

WE have received the following communication from the Government of the United States (Geological Survey) for publication, as it is believed the information contained in it is of universal interest and importance:—

Unless future earthquakes are very much more severe than any that have occurred, there is no reason why San Francisco should not be rebuilt as a successful commercial enterprise. It seems highly improbable that earthquakes will ever be much more severe than the one of April 18, 1906. There is no doubt that the city can be rebuilt, so that although it may suffer damage from future earthquakes, this damage will not be at all fatal, and the city will not burn up as the result of it.—JOHN STEPHEN SEWELL, captain, Engineer Corps, U.S.A.

When we can plainly see as we may, looking backward, that nearly all of this destruction and suffering might have been prevented by wise foresight and provision, we feel that we must send a warning to all the cities of the world. Any city that disregards this warning will be guilty of a great crime.—FRANK SOULÉ, Dean College of Civil Engineering, University of California.

The San Francisco disaster demonstrated that the lessons taught by the Chicago and Baltimore fires are still unlearned. The same faults in construction continue to be repeated. The only sure way to remedy grave defects of this character is to enact strict building laws which will compel an observance of the essentials for fireproof structures.—RICHARD L. HUMPHREY, Secretary of the National Advisory Board on Fuels and Structural Materials, and Expert-in-Charge of the Structural Materials Division of the Geological Survey.

In the above words, three of the best-known experts on structural materials in the United States sum up the hopeful yet practical lesson that has been learned from the terrible disaster that cost 500 lives and a property loss of 500,000,000 dols.

Acting in co-operation with the technologic branch of the Geological Survey, these experts visited the scene of desolation and ruin wrought by the earthquake and fire shortly after the catastrophe. Captain Sewell officially represented the War Department at the time; Professor Frank Soulé was acting on behalf of the Geological Survey, and Richard L. Humphrey, now expert in charge of the structural materials division of the Survey was on the ground representing the national advisory board on fuels and structural materials.

Their reports tell San Francisco and other cities of the world how to be prepared for earthquakes and also how to prevent general conflagrations. The experts find much carelessness in building methods, not only in San Francisco, but also throughout the entire country.

That reinforced concrete structures properly built are the best, not only to withstand earthquake shocks, but also against fire, is the opinion of these experts.

The conclusions of Captain Sewell in regard to the most efficient type of building for San Francisco contain some striking suggestions.

"For very tall buildings," says Captain Sewell, "the best type of construction is undoubtedly a steel frame, but it should be thoroughly braced, much in the same way as the Call Building. The steel bracing in this building undoubtedly saved the masonry. In buildings such as the New Chronicle and the Monadnock, the effect of the vibration was really counteracted by the masonry, and the masonry was much shattered. Some of it was precipitated into the street from the New Chronicle, the Rialto and other buildings. Naked steel frames of the same type came through without serious damage, but they did not have the additional stresses due to the vibration of a great load of masonry floor construction and content in the upper storeys as did the finished buildings.

"It is not right to run the risk of precipitating the masonry into the streets on the heads of passers-by, as might have happened in the case of the unbraced steel-frame buildings had the earthquake occurred at a later hour in the day. Besides, if the bracing is dependent upon masonry which is seriously shattered by the stress it is expected to resist, the factor of safety against general collapse is manifestly too small. The steel-frame construction should therefore be thoroughly braced.

"In my judgment, to secure best results, it should also be enclosed with walls of reinforced concrete, in which case it would be almost impossible to throw the walls off. The proper artistic treatment of this material would seem to be a very important problem for the architects in a place like San Francisco. Its great utility in earthquake shocks cannot be denied. Where steel-frame buildings are to be finished with ordinary masonry walls, however, complete bonding of all face bricks with full header-courses should be absolutely required; no other form is adequate. Nothing

but Portland cement should be allowed in any portion of the structure. The masonry should be tied to the steel frame in the very best possible way, and much more securely than is ordinarily the case.

"For buildings of moderate height, say up to 125 feet as an extreme limit, reinforced concrete alone can undoubtedly be so designed as to give very good results when subjected to either earthquake or fire. But the bracing of a reinforced concrete building of any height to resist earthquakes is a matter for serious study.

"Any building of considerable height in an earthquake country should have as little mass in the superstructure as possible, consistent with other necessary qualities. But this limiting of mass does not mean that the flimsy floors and partitions heretofore in use should be continued. In fact, to make the buildings proof against both earthquake and fire, it is probable that they will have to be at least as heavy as they have been, but changes in distribution of the mass could advantageously be made, and would be made by any careful and skilful designer.

"For the ordinary commercial building, where brick walls and wooden joists would ordinarily be used, I am of the opinion that reinforced concrete is the safest and most practicable solution in a place like San Francisco.

"Where reinforced concrete is used throughout, whether the building is very tall or not, great care should be taken with the design and execution of the connections between columns and members of the floor system.

"From the effect on fortifications and from the effect on monolithic and massive concrete structures elsewhere, it seems justifiable to conclude that a solid monolithic concrete structure of any sort is secure against damage in an earthquake country, unless it should happen to lie across the line of the slip. In that case the damage might be fatal and it might not. That would depend altogether upon the amount of the slip and the intensity of the forces accompanying it."

Professor Frank Soulé declares in his report that the failure of some of the methods of fireproofing in San Francisco is directly traceable to the commands of owners to their architects to cheapen, as far as practicable, the fireproofing and the construction generally, in order to secure greater interest on their investment. "This cheapening," he declares, "has often occurred in spite of the protests of the designer, and it is in an entirely wrong direction, for rates of insurance are largely reduced with improvements in fireproofing; and as the cost of the steel frame and its proper fireproofing seldom exceeds 27 per cent. of the cost of the building, it seems wise to protect the other 73 per cent. with adequate materials."

On the best types of buildings for San Francisco, Professor Soulé says:—"In a country subject to earthquakes a strongly-framed and well-founded wooden house of two or at most of three storeys in height, with non-disintegrating plaster and finish, light tile chimneys and ample fire prevention and protection would seem to be the ideal type of residence structures.

"The high, steel-frame office buildings have shown that in order to resist perfectly the bending moments and shears induced by the swaying due to the earthquake movement, such buildings should be stiffened in their joints and connections by the best rivetting combinations and knee and other bracing, particularly at or near the ground floor. This requirement is of the utmost importance, and so also is the one that the swaying referred to should be diminished by the liberal introduction of diagonal and wind bracing throughout. The proper bracing in the lower storeys has sometimes been omitted upon the demand of owner or lessee to afford more glass or light space, but such design has a weakening effect and should be discouraged.

"Columns, exterior and interior, should be put in more liberally in future upon the first and second storeys, and the strongest joints and connections should be adopted in order to resist the bending and shearing. These improvements will greatly stiffen the steel frame and prevent the cracking of the walls.

"With such strengthening the high steel structures will safely endure an earthquake of even greater severity than that of April 18. This kind of building has proved its worth and has come to stay. It has been tried, and has not been found greatly wanting. Minor improvements, as advocated, will produce a perfect structure.

"In another class are to be placed, but not as failures, concrete and reinforced concrete structures. These structures have become popular for construction with a large number of designers in San Francisco on account of the claimed strength, indestructibility, facility of use and fire

and rust protection their materials afford. Unfortunately for San Francisco, there were very few structures of concrete or reinforced concrete in the city at the time of her great trial, but these few behaved well during both the earthquake and the resulting fire.

"Therefore, although such structures are admittedly new and comparatively experimental on the Pacific Coast, the confidence reposed in them has already led to the designing of a number of large buildings of this type for public or business purposes. At present the sentiment is to limit them to a height of six or eight storeys on account of their experimental character, and because of the fear that greater height would permit a reversal of stress due to quake and wind force in the reinforced girders. It is agreed that the columns should be reinforced with steel and braced together whenever possible, and that the girders should be similarly reinforced for tension and shear, and made, as far as practicable, continuous over the columns; and also that the joints and connections should be strongly stiffened and the curtain walls strengthened by reinforcement.

"Mill construction with brick will undoubtedly be used in many instances for a considerable time to come, but the lesson taught us should be learned that the materials should be first-class pressed brick, well wetted, and cement mortar, and that all parts should be thoroughly tied and anchored together. This rule has been found by our experience to be a most important one to follow in all brick and stone construction, and its neglect in the past has resulted in much loss and ruin."

Mr. Richard L. Humphrey, the third expert, sums up his visit to the ruined city with the following:—"Large conflagrations demonstrate that there is no such thing as a fireproof building. To label one as such is bad practice, since it gives a false sense of security and causes a relaxing of necessary precautions."

Continuing, Mr. Humphrey says:—"The preparation of the new building code is also operating against the best interests of the city. The arbitrary classification is one which will result in more harm than good. The efforts of those interested in its preparation are directed largely to office and other large buildings, apparently not realising that the great percentage of reconstruction will consist of small three or four storey buildings.

"Because a structure is built of steel and fireproof does not make it superior to other types of construction, for poor materials and workmanship may produce one of inferior quality.

"The proposed code discriminates against reinforced concrete buildings in designating them as class B structures. While not intentional, this conveys the impression that it is next in order of superiority to class A structures. Class A should embrace buildings so well designed and constructed of first-class materials that they afford the maximum resistance to fire, and should represent the best method of fireproof construction regardless of type.

"The loss of life from earthquakes is usually very great. That in San Francisco it did not exceed 500 is accounted for by the fact that at the time of its occurrence during the early hours of the morning most of the inhabitants were in houses 90 per cent. of which were of frame. This type of structure withstood the earthquake shock particularly well, which accounts for the minimum loss of life.

"Had the earthquake occurred four or five hours later, when the people were performing their daily tasks in offices, schools, &c., or on the streets, the loss of life must have been very great.

"The lessons taught by the great calamities such as have befallen San Francisco, Baltimore, Chicago and other cities are not regarded. It is quite probable that the new San Francisco will be, to a large extent, a duplicate of the former city in previous defects of construction. The defects of construction which are so strongly condemned by reason of their failure are no worse than those generally practised throughout the United States. The same defects are common, and it is evident that the same result would follow an earthquake of equal intensity in another part of the country. A moment's consideration will show that the loss of life and property in New York, for example, under similar conditions would be enormous.

"The damage to property in San Francisco is estimated at 500,000,000 dols., but this sum, large as it is, is exceeded by the total annual expenditures for new construction in New York.

"In three days the tremendous area of over 2,593 acres was burned, destroying entirely 490 city blocks and in part

thirty-two blocks. Of this 314 acres comprised the congested district on which there was 250,000,000 dols. insurance, probably representing a value of at least 500,000,000 dols.

"In the Baltimore fire 1,343 buildings were destroyed, having an assessed value of 12,908,300 dols. In two years these burned buildings were replaced by 570 buildings, whose assessed value is 20,000,000 dols. These new buildings are larger than the old, and the widening of the streets has eliminated 700 building lots. It is expected that when the reconstruction within the burned district is complete, there will be less than 800 buildings, of which the assessed value will be fully 25,000,000 dols.

"It is, therefore, quite reasonable to suppose that the assessed value of the new San Francisco will at least be double than at the time of the catastrophe."

The experts offer still another suggestion to San Francisco which seeks to safeguard the people against a conflagration. In discussing the waterworks system, Captain Sewell says:—

"In a city subject to earthquakes it seems practically impossible to suggest any method of construction which will make the mains and distributing pipes in all cases perfectly secure. In my judgment the only remedy is to have a large storage capacity within the city itself, distributed among various reservoirs, and to have a more than ordinarily complete gridiron of mains with gate valves arranged to cut out any main at every intersection; further, the mains should be larger than would ordinarily be required, so that if a portion of the gridiron were shattered it could be cut out, but the water brought in undiminished quantities to the perimeter of the shattered area from all undamaged parts of the gridiron. The mains should be so large that although the water would have further to travel, in this case there would be an adequate supply for fighting fire, if necessary, in the area where the mains were shattered.

"It would seem that in a city like San Francisco a special system of high-pressure salt-water mains, supplied from a pumping-station, would be the best solution of the fire-fighting question so far as the congested district is concerned. This plan has been recommended by the National Board of Fire Underwriters, and it is probably the wisest one under the circumstances. The pumping-station should, of course, be protected from earthquake damage in every possible way. Possibly it should be a floating station. The salt-water mains should be laid out and so interconnected that nothing short of general destruction of the entire system could wholly shut off the water from any considerable area. All of this means greatly increased expense in the distributing system, but in a situation such as that in San Francisco it seems to be required.

"The earthquake effects at San Francisco also indicate quite clearly that a special study should be made of the problem of the prompt execution of emergency repairs for the damaged conduits and mains.

"In the case of salt-water fire mains in a city like San Francisco, where there is practically no damage from freezing, it would seem worth while to run the mains exposed everywhere. If breaks occurred it would then be possible to repair them in time to prevent any general destruction of the city by fire."

Professor Soulé, in taking up the question of waterworks, says:—

"San Francisco should have had separate and ample water mains, entering the city on several independent lines from different sources of supply; numerous distributing reservoirs on her hills in various parts of the city, always well filled, independent and yet with a distributing system meshing the entire area with its pipes, so joined or valved that they might be separated or united at will.

"There should have been, in a city almost surrounded by salt water, a separate system of flexible salt-water mains for fire and sewer purposes, and numerous large cisterns in her streets, laid in reinforced concrete, with somewhat flexible lining and pipes. These cisterns, only a few blocks apart, should have been always filled with salt water.

"There should have been many wide streets like Van Ness Avenue, where the fire was finally checked, and many large squares, thus dividing the city into many fire districts.

"The fire department should have included a dynamite corps, of experienced fire-fighters, and a number of fire-boats always ready along the water front and among the shipping. None of these things did we have. With them probably this story of the greatest fire in history would never have been written."

The experts pay considerable attention to the proper fireproofing of buildings, one making the remark, "The protection of external openings is by all odds the most important constructive problem involved in the effort to make cities proof against conflagrations."

Says Soulé:—"Of a building's entire fire damage, the risk from fire within the building is estimated, on the average, at 40 per cent., the other 60 per cent. of the risk being from fires exterior to the building. This risk for interior fires should be reduced to a minimum by ample provision for fire protection. As far as practicable, the absence of combustible material should be secured."

"Several of the so-called fireproof buildings in San Francisco were injured chiefly by the burning of their wooden trim, floors, doors, rugs, &c. Wooden floors have proven to be dangerous and objectionable; but in some instances non-combustible wood may be used for them and for the interior trim, as, for example, when the heat could never be very great. Metal trim, doors, window sash and castings, together with plate glass, or better, wire glass, may confine a fire to a single room, preventing a general combustion."

"Adequate fire-extinguishing apparatus—such as fire-hose, always connected with good water pressure, wells with automatic pumps, and tanks in the basement or filled tanks upon the roof, with pipe connections—was lacking in nearly all of San Francisco's buildings, even in those of the highest class."

"In the case of the California Electric Company's building the stand pipes with attached hose, the well, pump and tank in the basement, and the roof tank, together with the metal sash and the wire-glass windows, prove the value of such a private system, saving that property from the hot fire around it when every adjacent structure was burned. As this building was not fireproof the value of the fire-extinguishing system can be well understood, and had all of our large establishments been equally equipped the conflagration would have been quickly checked and a vast amount of property saved."

"While the danger from exterior fires to a given building is ordinarily estimated at 60 per cent., it practically becomes 100 per cent., of course, in case of a great conflagration."

"In San Francisco little protection from exterior fires had been adopted. There were few metal shutters or steel roller shutters, and those were usually of imperfect design, that proved unsatisfactory when tested. The openings in walls were fatal points of weakness in all of the great buildings. Wire-glass windows, though few in number, behaved well, but wooden instead of metal sashes were great sources of fiery contagion. Metal covering over wooden doors and window frames was generally inefficient. Ordinary glass was quickly cracked by heat from the exterior; the sashes took fire and the flames rushed in through the openings, consuming all combustibles within. Many of the best buildings were gutted in this manner. Had they been furnished with metallic shutters of the best design, with wire-glass in metal sashes, and with cornice and other exterior sprinklers supplied by a private water-plant, they certainly might have been saved."

"San Francisco's experience recommends that wells and elevator shafts running up through many storeys should be guarded by brick or reinforced concrete walls, fitted with double metal rolling doors bolted to the walls to allow for expansion, or with automatic sliding doors and wire-glass partitions. There was little or no provision for cutting off the draught of air that will ascend through such a shaft during a fire, and great destruction resulted in consequence."

"The Call building took fire by drawing the heat from the power-house behind it on the other side of Stevenson Street through the tunnel to the elevator shaft, up which it rushed with the fierce draught given by the eighteen storeys, breaking glass and burning doors, furniture, trimmings and office contents."

"The importance and value of real protection will be appreciated when it is stated that a third-class building with such complete fire-protection plant is insured for less than a first-class one not having it. This lesson is one that should be taught to all capitalist owners by their architects and engineers. Moreover, all parts of an establishment should be equally protected, for the fire may begin anywhere. The new Telephone building was burned owing to the non-observance of this rule, catching fire through the unprotected wooden back door of the basement."

"Capitalists and owners must understand that perfect fire protection for structural steel is necessarily expensive."

Any so-called fireproofing that is cheap and flimsy is a delusion and will not serve. The application of an effective method insures permanence of the structure, and at the same time is a great reducer of the rates of insurance."

"Steel columns may be well fireproofed by surrounding them with 4 inches of the best quality of stone or cinder concrete, or by 3 inches of either when hollow tiling is put upon the exterior."

"Fire-walls of brick extending up above the roofs of buildings were effective in resisting the spread of the fire, but the support derived from metal bands and anchors was often neglected, like much other masonry, in San Francisco, and such walls therefore fell in many instances both during the earthquake and fire, particularly when laid in common mortar."

"Cast-iron columns in many buildings endured the quake and the fire quite well, but undoubtedly would have been broken or shattered had cold water been thrown upon them in the midst of the great heat. They should no longer be used."

"Chemical fire extinguishers were effectively used immediately after the earthquake in some of the up-town residences, thereby preventing an increase in the number of fire centres in the beginning of the conflagration. It is possible that numerous chemical engines and locally installed chemical extinguishing plants in the down-town districts might have greatly limited the spread of the flames, despite the dearth of water at the commencement of the fires."

Captain Sewell's conclusions on fireproofing are equally interesting. He says:—"The Baltimore fire and the San Francisco fire, as well as many other fires and fire tests, have proven quite conclusively that commercial methods of fireproofing are inadequate to stand any real test. In the majority of cases the steelwork is fairly well protected, but the number of failures is sufficiently great to show that the factor of safety against fire is not by any means what it should be."

"In my judgment, columns should be covered either with 4 inches of brickwork laid in Portland cement mortar, and with all the interior spaces filled with concrete, or else they should be enclosed in an expanded metal basket and the entire interior filled with concrete so that the minimum thickness of the concrete shall not in any case be less than 4 inches."

"The furred ceilings so much used in San Francisco are a valuable addition to the fire-resisting qualities of the floor construction, and if the furring rods were more firmly secured the total loss here, as a rule, would be measured by the value of the plaster alone."

"The results at Baltimore and San Francisco did not by any means indicate that either hollow tile or concrete is altogether a failure or altogether a success. Both fires indicated very clearly that commercial methods of applying both materials are inadequate; both also indicated very clearly that successful results can be attained with both materials."

"A conflagration never yields reliable comparative results, but from such comparative results as are available I think there is no question that the best fire-resisting material available at the present time is the right kind of burned clay."

"As for concrete, there can be no question that good clinker concrete made of well-burned clinkers, Portland cement and sand, is a very efficient fire-resisting material. It is better than anything except the better types of burned clay products, but the form in which cinder concrete is commercially applied is on the whole no better than the flimsy hollow tilework with which it competes; in fact, it is not certain that it may not be worse."

"While there is no doubt that commercial standards of fireproofing are dangerously inadequate, the greatest trouble of all is the fact that so little attention is paid to protecting the exterior openings in a building. Even a very inefficient type of fire shutter would probably have saved some of the buildings in San Francisco, which were, as a matter of fact, burned out. A light metal shutter, combined with a window sprinkler, would probably resist quite a fierce fire for a long time. While the failure of the water supply in San Francisco might be urged as one reason why a window sprinkler would have been of no avail, it is a fact that water can be obtained by driving wells into the sand which underlies the business part of San Francisco almost everywhere. Under these circumstances, if the fireproof buildings had been fitted with metal shutters, each window provided with a sprinkler and the buildings themselves with

their own wells and fire-pumps, it is probable that the fire could have been kept out of a number of the buildings. The protection of external openings is by all odds the most important constructive problem involved in the effort to make cities proof against conflagration. It would seem that the question of so-called fireproof vaults in commercial office buildings should also receive some attention. The failure of such vaults in San Francisco was absolutely inexcusable. The fact that they were such flimsy affairs as they were was not due to any lack of knowledge available as to how a fireproof vault should be built; the only motive that can be imagined for the erection of such vaults is parsimonious and criminal economy."

The reports of the three engineers show that, as a rule, the amount of damage to buildings in San Francisco varied according to the character of the materials and the class of workmanship. Buildings constructed of first-class materials with careful workmanship suffered much less than those constructed of poor materials with inferior workmanship. This fact should be a lesson to owners, engineers and architects in all parts of the country.

In spite of the lessons taught by great conflagrations, it is to be deplored that a great deal of poor material and workmanship will enter into the construction of many buildings. Some of this is due to the desires of owners who want their buildings constructed as cheaply as possible and are willing to sacrifice quality to cheapness. Much of it, however, is due to the fact that information is lacking in regard to the use of many materials of construction. This is particularly true of concrete and reinforced concrete construction, the present rapid development of which is in its infancy, and emphasises the great need of additional information in regard to structural materials. That the Government is alive to this need is clearly shown by the work it is carrying on in its laboratories at St. Louis, Mo., where extensive tests and investigations of structural materials, principally cement, concrete and reinforced concrete are being made. The result of this work will tend to establish on a safer and more practical basis the claims of different types and materials of construction to their respective merits.

THOMAS GIRTIN.

(Concluded from last week.)

GIRTIN and Turner were born in the British metropolis, and localised there from infancy to manhood. Constrained to seek prototypes from nature in their own immediate neighbourhood, it was from what they discovered worthy of imitation within that circumscribed sphere that they practised their art; they there became painters, and extended not their route in search of the romantic or classic of landscape until they could study it effectively; thus prepared, when they did seek nature more afar, they soon imitated what they saw, with all the attributes which are so gloriously displayed in the works of these great masters of old.

It is not in the scene itself, however grand or however beautiful, that the merit of a picture consists; it is in the manner of treating it. If proof of this were demanded, we need only refer to the pictures of the Flemish and Dutch school, amongst the works of the masters of the highest renown—Rembrandt, Cuyp, Ruysdael, Hobbema, Paul Potter, and a host of others, whose graphic compositions, simple and homely as they may be, are sought by the enlightened connoisseurs of all nations. These were collected in their own immediate neighbourhood; nay, frequently their own domicile supplied them with a subject for an interior, and a look out of their own casement with an exterior view. From these simple themes they produced pictures in value that would sell for ten times their weight in standard gold.

Girtin, as soon as he had acquired the power of delineating what he saw from the real object, found abundant subjects for study within a short distance of his home. The ruins of the ancient palace of the Savoy, near Somerset House in the Strand, furnished him with materials for the exercise of his topographical pencil. From the vast fragments of the remaining walls of this extensive ruin he made various accurate drawings; and a study which he made of the old steps of the watergate of this palace, according to his own testimony, was a lesson of improvement, from which he dated all the future knowledge which he displayed in the pictorial representation of mutilated masonry; certainly the old Savoy steps afforded one of the finest examples for this interesting feature of topographical

design. It was then on this spot that he obtained that knowledge of detail which subsequently enabled him to represent ruins in the foreground of his subjects with so much characteristic truth and mastery, with so little mechanical labour. Indeed, his finest works are more evidently the labour of the mind than of the hand.

From this spot his progress for a while reached about a mile westward up the Thames, which led him to the truly picturesque shore of Lambeth. Here, amongst the old houses occupied by the families of the fishermen, and other buildings rich in the material sought by the topographic painter, he found enough to delight his fancy and engage his art. Few spots indeed could have better supplied those objects which in the pursuit of local colour an artist seeks than the rudely built dilapidated overhanging dwelling-houses, potteries, whiting-mills and other examples of the main features of the pictorial of topography, than this part of Lambeth. It was here, then, that he studied the veritable colour and texture of old plaster walls, with here and there a patch of brick, tiled roofs that scarcely afforded shelter to the inhabitants beneath, timber gray with age, and tenelements propped with rude posts and piles, the very contemplation of which would almost suffice to create a topographic draughtsman. Lambeth, then, was the school in which Girtin acquired the rudiments of his succeeding knowledge of local colour.

It was on the shore of Lambeth that he found his prototypes for rude pictorial figures, male and female, in which it has ever within memory richly superabounded; here, too, he was amply supplied with the choicest models of that congenial object to such scenery—the picturesque peter-boat—and that commanding object for Thames scenery, the lofty and richly pictorial lime-barge. Onwards a mile still higher the opposite shore of Chelsea enriched his store of coloured studies; and thus near home he made himself a colourist.

The time was not remote from this period, when he had yet scarcely attained to manhood, ere he sought nature in parts distant from the Metropolis. He visited York, Durham and other pictorial scenes in the north of England; thence to Cumberland, Westmoreland and different parts of Scotland; and subsequently made the tour of South and North Wales. During this tour he painted two landscapes in oil, the only ones he ever executed; but what has been their destination we have not been able to learn. It was on these excursions that his mind developed the grand scenes, and still grander effects, under the sublime influence of that light and shadow which our atmosphere occasionally throws over mountain regions. These scenes he sought, even in the season of storms, and embodied their effects in his pictures with a power that his enthusiastic admirers proclaimed to be no less than magical.

Before that new epoch in water-colour art which originated with Girtin and Turner, the utmost that had been attempted with transparent colours thus prepared in subjects of romantic scenery was the representation of distant mountains in a thin vapour, and all the other large features advancing towards the foreground, in timid, undefined washes of semi-aerial tint. Indeed, the most admired works of Cozens affected nothing more than a grayish sort of chiaroscuro, wrought into harmony by washes, merely intimating the hues of nature. Girtin, restrained by none of the fancied incapacities of water-colours, at once struck out a daring style, determined to imitate what he saw, and thus, by the energies of his original genius, perceiving that certain operations of the sun upon the clouds threw the vastness of a whole mountain, that occupied the entire distance, under a deep and solemn mass of gloom, he gave it in his picture accordingly, and thereby clothed his composition with that awful sublimity of effect which stamped the scene with the majesty of nature.

The broad style and grand simplicity with which he ultimately produced these splendid effects led many amateurs to take lessons of Girtin; hence every day brought forth vast sheets of elephant and atlas besmeared with Cologne-earth, Vandyke-brown, burnt terra-sienna and indigo blue—the rage for this dashing style was quite laughable. "Oh!" exclaimed each and every one of these amateurs, "do but teach me how to draw with this sort of daring-dashing effect, and I shall be content." Honest Tom Girtin—for so he was designated—was not willing to minister to their folly; indeed, he endeavoured to dissuade them from the attempt, but his efforts were vain—the delighted amateurs would try again, more paper was consequently spoiled—he could not help it, for the mania seemed to be incurable.

Girtin was of a kind and friendly disposition, and ever ready to communicate whatever he had discovered in his experiments to those who sought his assistance. He, however, was in youth a free liver, and associated with persons little qualified to improve his manners; these uncultured, from his natural love of ease, induced a shyness which made him shun rather than seek the acquaintance of the polite and well-bred. When travelling to the North he could take his passage in a collier, and his delight was to be in common with the crew, eating salt beef, drinking grog, and smoking and exchanging jokes with them. When on shore in search of the picturesque he sought the kitchen of the inn for refreshment, where he might enjoy himself without sacrificing his love for independence, and store up anecdotes and characters suited to his purpose.

His evenings were frequently passed at the house of Harris, a frame-maker, in Gerrard Street, Soho, the rendezvous of many artists of the day, at which time George Morland was also a constant visitor there, and sometimes an inmate. Harris was a dealer in drawings, and Girtin preferred selling his works through the agency of Harris to the disposing of them to private gentlemen. Morland entertained the same notions—hence Jack Harris, as he was dubbed, got much money by doing the agency for each. No such rare geniuses as these, and so remarkable for their indifference to public opinion, it might be reasonably supposed would have smoked their cigars together in social eternities, it was, however, far otherwise. Morland courted society because he loved to be “king of the company”; whilst Girtin, who was courted by good society, preferred to live with an inferior class merely to escape trouble, and far from domineering over these his associates he never for a moment was known to assume the least superiority. It was truly with him, “Hail, fellow, well met.”

For two or three winter seasons previously to his death he belonged to a little “sketching society,” formed at his suggestion by a fraternity of amateurs and professional artists—chiefly, as may be supposed, for the improvement of these his associates. No little coterie could be more respectable; and it was probable, had Girtin lived and this society continued, that his habits might have been wrought upon thereby, much to his benefit.

The plan of this society was to meet at the respective apartments of the members, and for each to make a sketch in drawing, in chiaroscuro, from some given subject from the poets. Certain amongst these impromptu productions of the club were much and deservedly admired. Each member at whose house the parties met supplied paper and brushes, and the designs for the evening became his property. They met at six, were entertained with tea and coffee, worked and chatted until ten, when a cold collation was served, and at twelve they separated.

Girtin was for some time the pupil of Dayes, a good off-hand sort of a draughtsman, under whom he acquired that knowledge of perspective which enabled him to delineate architectural subjects with characteristic correctness; but during the period of his pupilage, and indeed for some short time subsequently, his drawings were more remarkable for cold precision than for any of those superior effects which were displayed in his works after he commenced sedulously to colour from nature.

About the same period Turner became the pupil of Thomas Malton, who also drew topographical subjects with great correctness, but not with painter-like feeling; he was an eminent professor of perspective, and published a celebrated work on that art. From so able a master he obtained that superior knowledge of the science of linear perspective which was so conspicuous in his early architectural drawings.

Girtin and Turner soon left their respective preceptors at an immeasurable distance behind; they were the first who used the three primitive colours in laying-in the chiaroscuro of their subjects, producing by their combinations those warm and cool russets which required only the glazing to produce harmonious drawings. Subsequently, however, they worked upon a superior and more painterly plan by preparing the general effect by laying-in the local colour of each object at once, and it was not until they ventured upon that process that they produced those rich and splendid compositions that almost vied in general effect with paintings wrought in oil-colours.

Much of the knowledge which Girtin obtained in the play of contrast of colour in open landscape was derived from the study of Wilson, whose bold and effective pictures in oil Girtin might be said to have translated into water-

colour. The vigour and richness of his architectural subjects, which were no less striking, was alike ascribable to his contemplation of the pictures of Canaletti; indeed, he was alternately designated by his admirers, when he first evinced that power in his works, which had never been before seen in drawings, the Wilson or the Canaletti of water-colours, until improving by practice and increasing in power and judgment he achieved works that could be likened to nothing in art that had preceded his style.

One of the first striking efforts of his graphic powers, as they related to a knowledge of topographical effect, was displayed in a panoramic view of the city of London on a large scale. This was exhibited in Castle Street, Leicester Square, and was the precursor of that species of scenic representation. The scene which Girtin chose for his picture was, “St. Paul’s and the buildings east and west, as seen from the lofty roof of the Albion Mills,” then situated at the entrance of Blackfriars Bridge, on the south side of the Thames. This panoramic picture, which he completed when only in his twenty-third year, was one of the finest pictures of a city that was ever painted, and was universally admired by all judges of art. After his death it was sold to a Russian nobleman, who took it out of the country. There were also several other views of streets in the neighbourhood of St. Martin’s-le-Grand, where his mother had a house and shop during his boyhood, and to the scenes of which he seems often to have recurred with pleasure in his after-sketches.

The constitution of this extraordinary artist having suffered from the careless habits which he had too long indulged, in spite of his own good sense and occasional reflections—for he was conscious of his moral infirmities—brought on him a pulmonary complaint, which it was hoped might be relieved by change of climate; he therefore, acting upon the recommendation of his medical adviser, went to the Continent during the peace of 1802. Finding himself solitary at Paris, where he sojourned, his stay was not long, but such was the love of his art that he there made a series of sketches of certain streets and public buildings of the French capital which on his return to London he etched in soft ground, and having the effects, which he washed in on the spot, engraved on these outlines as facsimiles in aquatinta. The series were published by him and his brother. The brother, John Girtin, was a writing engraver, and some years subsequent to the death of Thomas Girtin lived in Castle Street, Leicester Square, where he had the misfortune to have his house and stock-in-trade destroyed by fire. His wife, who was ill at the time, died in his arms as he took her out of the house. This fire was the more unfortunate, as many of Girtin’s works were there also destroyed, thus conferring a greater value upon those which he left. It must, however, be observed that though during even his short career his performances were astonishingly numerous, yet a great number of copies by Francia and others have been sold too often designedly as his.

It might be supposed, by the bold and broad execution which characterise the works of Girtin, that they were mostly off-hand productions. The contrary, however, is the fact. It is true that he could sketch, and did occasionally dash-in his effect, with rapidity; but his finely coloured compositions, though apparently like the pictures by Wilson, the result of little labour, were wrought with much careful study and proportionate manual exertion. In some of his productions it has been demonstrated that his treatment, like Wilson’s, was careful, notwithstanding his bold execution, even to fastidiousness. It is true he did not hesitate to undo what he once laid down, for he worked upon principle: but he reiterated his tints to produce splendour and richness, and repeated his depths to secure transparency of tone, with a perseverance that would surprise those who were not intimately acquainted with the difficult process of water-colour painting to produce works that merit the designation of pictures.

The premature death of Girtin was considered as an irreparable loss to the water-colour school of the fine arts; for it was evident by the great progress he was making, even whilst reduced by disease, that what his pencil had yet developed was only a part of what his mind was capable of communicating to his hand. Indeed it may be truly said, in honour to his memory, that he was, as a painter, unquestionably one of the greatest geniuses of the age. For some years previous to his death, which occurred November 9, 1802, it is to be presumed that his habits had become considerably altered, as his surviving relatives, from their knowledge of him, deny the concurrent testimony of his former associates. It was perhaps a matter of very serious regret for Girtin that

he, as well as Harlow, was left without a father at a very early age. Had he been restrained in his youth by a father's severe control, the world of art might not have had to mourn his early death. It is a curious circumstance that the custom of placing the gravestone with its front due east was departed from in the instance of this artist. His remains were interred in the burial-ground of St. Paul's, Covent Garden, on the south side, to the left of the paved path (near the west gate of the church) to Bedford Street.

A BUILDING MAP OF LONDON.

THE question of the preparation of the ground plan of London and the 6-inch annual map of London having been referred to the improvements committee, the following information is given relating to both these matters:—

The Council on March 13, 1894, decided to prepare, for its own use, a ground plan showing the various freehold ownerships in the county of London. This course was taken in view of the fact that great difficulty had been experienced in ascertaining the ownership of property affected by street improvement and other schemes. The work consists of ownership and detail sections, and is being carried out by the valuer.

The ownership section consists of defining estate boundaries and registering the names and addresses of the owners or their agents. It was originally intended to deal with large estates only, but when particulars of most of these had been obtained, the information was found to be of such value as a means of reference that the work was extended so as to include all holdings. The information for compiling the map is derived from several sources—Government departments, local authorities, owners and agents, the Council's records and the inquiries made by the Council in its ordinary course of business.

The work of many of the services administered by the Council has been greatly facilitated by information available in connection with the ground plan. When any scheme involving the acquisition of property is approved by the Council and requires Parliamentary sanction, the scheduling of the property affected by the scheme is expedited and more economically referenced, as the plan furnishes particulars as to the majority of freeholders; and in searching for sites, whether for housing or other purposes, it is possible by means of the ground plan to expedite their selection by avoiding sites where a number of owners would be concerned, or where, for other reasons connected with the ownership, the acquisition of such sites would be likely to prove tedious or expensive. Information is also frequently obtained from the ground plan which saves delay, correspondence and expense. These advantages, of course, increase as the plan approaches completion. On May 30, 1905, it was stated:—"We are satisfied that the ground plan is of very great utility, and that the work of the Council, more especially in connection with the acquisition of property, has been considerably facilitated. We have been assured by the valuer that the advantage derived from the possession of the information which has been collected has already resulted in a saving to the Council of more than 13,400*l.*, the estimated cost of the whole plan when completed, in addition to which the Council possesses the most complete record in existence of ownerships in the county of London."

At the end of March 1907 the ownership of 109 square miles and 87 acres, represented by 23,148 estates, had been ascertained, defined upon the sheets and registered, and a further 180 estates were awaiting to be drawn upon the sheets. The area which is now being dealt with involves a much larger amount of work than that already disposed of owing to the estates being small. The rate of progress is consequently slower and *pro rata* more expensive.

The Council has authorised the expenditure of a total sum of 13,400*l.* for the ownership section. The total expenditure up to the end of March 1907 was 11,416*l.*, the average cost being 9*s.* 9*d.* an estate.

The detail section of the ground plan consists in the keeping up to date of the existing 5-feet Ordnance Survey as the several alterations arise. As the ownership work proceeded some difficulty was experienced in dealing with the outlying districts of the county, owing to the constant development of building land necessitating surveying and plotting the altered boundaries, and it was considered that by slightly extending the work of surveying the 5-feet Ordnance Survey of London might be made and kept up to date. The Council on May 16, 1899, sanctioned this addi-

tional work on the understanding that the revised information would be of such value as to warrant the expenditure upon it. Constant reference to the revised sheets is made by departments of the Council and the information obtained is of service in various ways. Particulars of the alterations have been placed on sale and persons can now obtain tracings upon payment of nominal fees.

The 6-inch annual map of London shows the progress of building operations from year to year. Having regard to the long interval between the revisions of the Ordnance Survey, such a map is very useful for public purposes. The first map was issued and placed on sale in 1903; the second edition in 1905. A third edition, considerably improved by the addition of about 3,000 road names, will be ready for issue in July 1907. The map is of considerable use in many departments of the Council, and to local authorities and others. By using this map as a basis a map for educational purposes has recently been prepared at a cost of about 300*l.* less than the lowest estimate obtained for a map which would have been several years in arrears as regards the groundwork.

EARLY HISTORY OF "CHRISTIE'S."

AT the Turk's Head tavern in Gerrard Street, Soho, the earliest conclave was held to cogitate upon the important question of the utility of a National Academy for the promotion of the arts of painting and sculpture; and from thence resulted the St. Martin's Lane Academy, the exhibitions of the Society of Artists, and the ultimate founding of the Royal Academy. Garrick, Goldsmith and others its artists who frequented this tavern afforded their friends aid in support of the project—one, indeed, which had been long before attempted by their predecessor, Sir James Thornhill, but without success.

Amongst other nightly visitors of the Turk's Head were the renowned Cock and his no less celebrated successor, Langford, two auctioneers of the age of George II. The society of the artists was judiciously sought by the worthies, over and above other considerations, as beneficial to their picture sales. Cock has the reputation of being the founder of sale-room oratory. He was a very personable man, and had an easy and elegant address. His portrait, in cravat *à la mode*, beaush peruke and coat of fashionable cut, existed over the chimneypiece of the great room up the stone staircase in the rear of the north arcade of Covent Garden, in which George Robins used to preside. Cock having ended his career, Langford had the whole field open to him. He became the most fashionable auctioneer of the Metropolis.

The fame of Cock and Langford, however celebrated in their day, was thrown into shade by the career of Christie. The principal pictures imported from abroad, and the collections that were to be sold by order of executors, had been heretofore advertised for sale at the rooms behind the Piazza, Covent Garden; but the English had never yet beheld such splendid collections as those which were subsequently consigned to the hammer of Christie. The perturbed state of the Continent soon after the commencement of the French revolution rendered England the great picture mart, and each spring season a number of succeeding years produced a magnificent exhibition of the choicest works of the old masters upon the walls of Christie's auction-rooms in Pall Mall.

James Christie the elder was originally employed in the service of an upholsterer near the top of Berners Street, and whilst young and active cheerfully assisted in beating many a feather bed upon a stage erected on the dead ground, the site on which Middlesex Hospital now stands. His manners obtained for him the esteem of many of his employers, and amongst others that of a Mr. Jones, who, being wealthy, placed Christie in a shop well supplied with books in Wardour Street, where he opened business as a book auctioneer. Diligent and successful in his calling, he improved his means, and, removing to Spring Garden, Charing Cross, commenced as general auctioneer under the firm of Christie & Ansell. It was here he experienced his first great loss, the precursor of those misfortunes which his generous nature too frequently exposed him throughout life. He became, under particular circumstances of friendship, security for a minor of great expectations the amount of 20,000*l.* The young gentleman died just before the expiration of his minority and Christie lost the whole sum. Happily he had many friends, amongst others the illustrious Garrick. No sooner was this great play-

grieved with Christie's loss than he generously advanced him the loan of 10,000*l.*, which the borrower within a given period repaid; and such was his grateful recollection of the circumstance, that when deputed by Garrick's widow to sell part of her honoured husband's effects, Christie very feelingly related the whole affair to his auditors from the rostrum.

Subsequently Christie removed his business to the Royal Academy rooms, next to Carlton House, and also occupied the well-known premises many houses westward of this site. For a short period he was joined by two partners—Sharpe, a diamond merchant from the City, and Cooper, a brother of the wife of John Bannister, the comedian—but this firm was soon dissolved.

Christie, though not exactly a connoisseur, occasionally made an eloquent display of his talent as a seller of articles of vertu. He had the advantage of a constant friendly intercourse with many of the most distinguished artists and connoisseurs; so much so, indeed, that a certain coterie, who frequently partook of his venison and claret, were dominated Christie's fraternity of godfathers, as they sometimes in the character of sponsors christened questionable graphic specimens of the genius obscure menichinos, Sebastian del Piombos, Da Vincis and other high-sounding names, delectable to the ears of certain collectors.

The elder Christie, being a man of quick perception, could not fail to derive due benefit from the judgment of such authorities as Reynolds, West, Gainsborough and other members of the Royal Academy, who were constantly indulged with a private view of every importation of valuable pictures consigned to him from abroad. Hence, quickly catching the spirit of their critical remarks, he attended the rostrum with confidence, expatiated on matters of taste with the enthusiasm of an amateur, and enlarging upon the merits of a picture in the learnedomenclature of a connoisseur, astounded the far greater part of his auditors. It must be admitted that his mettlesome fancy sometimes carried him clean over the pale of discretion into the field of hyperbole, though he rarely said far; for judgment, taking his steed by the bridle, soon walked him steadily back again.

No man of his calling perhaps ever more zealously discharged his duty to his employers. He would dwell over a picture and seduce a reluctant bidder out of another arena, with as much eloquence and patient perseverance as when selling the Pitt diamond, or a vast estate where each holding advanced a thousand pounds.

The feelings of his son it is believed never were congenial to the business of an auctioneer. It was intended by the father to place him in the Church, a profession which the son would have eagerly embraced; but it was vitally essential to the interest of the father that he should enrol himself in the firm. Young Christie yielded to his wishes, and by this noble sacrifice of inclination to filial duty he mainly helped to save the declining fortunes of a fond father, and became the main prop to the stability of his house.

The younger Christie first ascended the rostrum in the spring of 1794, when, to relieve his father from the fatigue of a six consecutive days' sale of the effects of John Alexander Gresse, an artist and celebrated collector, then lately deceased, he took the hammer for one day. He was then about one-and-twenty years of age. On this occasion it was obvious that he wanted that becoming confidence so indispensable to him who addresses a public assembly; though he was sufficiently collected to express his thoughts in elegant language, yet at times he was scarcely audible, and addressed the company with a faltering tongue. This diffidence seemed too frequently to impede the public exercise of his fine talents, even to a late period of his life.

The father, in all his transactions, acquired universal reputation for honour and integrity, and so almost boundless was his liberality that he was commonly designated the princely-minded Christie. Had he possessed these virtues in a less romantic degree, or put them into operation with more regard to self-interest, doubtless his family would have had to divide an ample fortune. He died honoured and respected, but certainly not rich.

Mr. Rowland Plumble, the assessor appointed by the Edmonton Board of Guardians to adjudicate upon competitive designs for a new workhouse infirmary, has given his award in favour of drawings by Mr. Stuart Hill, which provides accommodation for 812 beds. The estimate of the cost of the works is 152,640*l.*

THE TEMPLE OF AIZANI.

IN 1833 M. Guizot was Minister of Public Instruction in France and he commissioned Charles Texier, who was then a young architect, to explore Asia Minor and Persia. He lived for several years in those countries and made detailed drawings of the principal buildings. He was the first traveller who gave a precise account of the remarkable ruins at Aizani. Little is known about the history of the place. It is mentioned by Strabo as part of Phrygia Epictetus under the name of Azani. Pausanias says the inhabitants came from Arcadia, and adds:—"These Phrygians, who dwell on the borders of the river Peucella, have built there a temple to the Mother of the Gods" and a grotto which is circular and of great height.

The first building that attracts notice on approaching Aizani is a temple, which, being raised on a considerable eminence, forms, like the Parthenon of Athens, a conspicuous object from a distance, and commands the rest of the town. Instead, however, of being, like the Athenian Acropolis, the natural rock, enclosed on its summit with walls, but otherwise quite unshaped, and having its buildings placed quite irregularly without any regard to symmetry of general arrangement, the eminence upon which this temple at Aizani stands forms an elevated platform or terrace cut out of the hill and perfectly regular in its plan, which is a parallelogram and nearly a square, its measurements being 532 feet (English) on its north and south sides and 480 on its east and west. From the remains of walls at the north-west angle it is conjectured that the platform of the terrace formed a peribolus or court to the temple, enclosed on three of its sides, while the east one (corresponding with the entrance end of the temple) was left open, and on that side the face of the terrace was decorated architecturally throughout its entire extent by a series of twenty-two arches with pilasters between them, *i.e.* eleven on each side of the central flight of steps (100 feet wide), forming the ascent to the upper level. Thus the terrace here formed a magnificent substructure that, together with the temple, must have produced an unusually striking and imposing effect. The temple itself stands exactly in the centre of the peribolus or platform, consequently exactly facing the ascent up to it. This edifice, which appears from inscriptions found among the ruins to have been dedicated to Jupiter of Aizani, is now more than half destroyed, little more remaining than the columns of the north and west sides and the corresponding portions of the cella; yet what is left affords sufficient data for determining with accuracy the particulars in regard to its plan and the peculiar character of its order. The style is Ionic, of the Græco-Roman system, octastyle, pseudodipteral, with fifteen columns on its flanks. Its general dimensions do not exceed 104 feet by 53, or, including the broad socle on which it is raised, 121 by 72. The whole is constructed of white marble, and the columns, 31 feet high, are each of them wrought out of a single block; but what gives such interest to this monument is that it affords a very remarkable example of the Asiatic Ionic, decidedly differing, at least in its entablature, from any specimens heretofore known. The columns have the peculiar Asiatic Ionic base, but are not otherwise remarkable, except for the singularity of there being a small vase or urn carved in the upper part of each channel of the fluting; these are, of course, so very diminutive that they could hardly have been distinguishable at that height, and therefore were probably intended only to produce the effect of an enriched collarino or necking to the capital with the fluting continued through it. Far more remarkable is the entablature, both for its proportions and decorations; the architrave, which is divided into three fascias with carved bead mouldings, is considerably deeper than the frieze, which excess is caused by the unusual breadth of its coping, consisting of a large ovolo and cavetto above it, both enriched. The frieze is still more remarkable—even unique in its design, which is such as to render it most difficult to describe: large upright acanthus leaves placed singly at intervals after the manner of triglyphs are placed beneath a sort of consoles formed by the junction of two scroll-like volutes, meeting each other in front like those at the angle of a Corinthian capital, to which they bear a very strong resemblance; therefore, taken with the acanthus leaves beneath them, they give the frieze a certain Corinthianism of character. The cornice again differs both from Greek and Asiatic-Greek examples of the order, inasmuch as, in addition to the dentils of the latter, it has small modillions; the corona is narrow, the cymatium above it, on the contrary, very deep and enriched

with a flower pattern. Taken altogether this specimen of the Ionic style is an interesting and valuable acquisition to our studies of the ancient orders, and serves as another striking proof of the freedom and diversity with which they were treated.

Beneath the cella is a subterranean chamber or crypt 52 feet by 29 feet 6 inches, with a vaulted ceiling; light was admitted into it by means of *abat-jours*, or apertures in the pavement of the colonnades next the walls of the cella, and the steps leading to it were within the posticum. Several columns now lying on the ground within the peribolus indicate that the enclosure must have been adorned with them, since they evidently do not belong to the temple itself, being not much above half the size of the others, and besides the lower parts of their flutings are cabled. The temple was probably erected about the second century of our era.

After this temple the chief other monuments discovered at Aizani are a theatre, stadium and gymnasium; the first of these, which is in better preservation than almost any other ancient structure of its kind, is 185 feet in its greatest diameter, and the spectatory had sixteen rows of marble seats, but those of the upper or second tier are nearly all destroyed; the podium, however, of that tier, or the wall of the *præcinctio* separating it from the lower one, is for the greater part remaining, and shows one peculiarity, namely, niches placed at intervals in pairs, of which there were altogether twenty-four. The orchestra forms more than a semicircle with a radius of 66 feet. The scena was decorated with six pairs of coupled Ionic columns, but these have fallen down and are lying with a mass of other ruins and fragments in the orchestra. The lower range of seats only remain.

The stadium, which is a little to the south-east of the theatre, measures 725 feet in its extreme length and 152 feet in its extreme breadth. There were two *pulvinaria* or *loggias*, one for the magistrates, the other for the directors of the games, and ten rows of seats along each side, capable of accommodating between 12,000 and 13,000 persons.

Of the gymnasium, or what is supposed to have been such, and which is situated to the south of the peribolus of the great temple, little more remains than a Doric colonnade extending upwards of 200 feet, whose pillars are all of white marble and of a single piece. To the north-west of the temple are also some ruins of what is supposed to have been a basilica. The river *Rhyndacus*, which passed through the city, was crossed by two bridges of white marble, each consisting of five semicircular arches. Both are remaining, as also the parapets of the quays along the river, which, like the bridges, are constructed of white marble and ornamented with sculptures. Reproductions of a dozen of Texier's plates will be found in R. P. Pullan's volume, "The Principal Ruins of Asia Minor."

BIRMINGHAM ART GALLERY.

AT a meeting of the Birmingham Museum and Art Gallery committee on Monday letters were read from two donors, who wish to remain anonymous, presenting to the gallery several valuable studies by John Ruskin. The drawings consist of a water-colour, "A Coast Scene near Dunbar," a work in sepia, "A View near Florence," two drawings entitled "Alpine Peaks" and "A Coal Merchant's Shop," the latter being a work executed when Ruskin was little more than a lad; a study of "Primroses" in pen and colour, and two studies in pencil after works by Turner. The trustees of the Griffith's fund have presented a pencil drawing, "Two Bridges of Coblenz"; and the trustees of the Public Picture Gallery fund have given a water-colour drawing "Aiguilles of Chamouni," a coloured Venetian drawing of arches and capitals, and two works in pencil, "Lady Glenorchy's Chapel, Edinburgh," and "An Italian Village." These drawings form a valuable addition to the series by John Ruskin acquired some years ago.

The Government of Victoria, Australia, have offered to pay an annual ground rent of 874*l.* for a site for the erection of offices at the corner of the Strand and the eastern spur street between the Strand and Aldwych. The land has an area of about 1,440 square feet, and has frontages of 25 and 65 feet to the Strand and to the spur street. The offer is to be accepted by the London County Council.

GENERAL.

Mr. E. G. Dawber, the assessor appointed by the Wednesbury Corporation for the new Carnegie Library plans, awarded as follows:—First prize of 50*l.*, Messrs. Croft Butler & Savage, Birmingham; second prize, 30*l.*, Edwin F. Reynolds, Birmingham; third prize, 20*l.*, J. H. Vernon Cale, Birmingham.

Viscount Turnour on Tuesday asked the First Commissioner of Works by what date the new road between the Mall and Trafalgar Square would be completed. Harcourt replied the date would depend upon the completion of the building. It is expected that it will be finished early in 1909.

The Parishioners of Sarum St. Edmund last week celebrated the five hundredth anniversary of the rebuilding of their church. St. Edmund's dates from 1268, in which year it was founded by Walter de la Wyle, canon and sub-dean, and afterwards fifth Bishop of New Sarum, and dedicated to St. Edmund of Abingdon, Archbishop of Canterbury who when he was called to the Primacy in 1233 was rector of Calne and treasurer of the cathedral. The church was rebuilt in the reign of Henry IV. and the episcopate of Robert Hallam, being finished and opened in 1407. The fabric has undergone many changes since that day, but the greater part of it remains.

The Edinburgh Architectural Association set out for York for their annual excursion to-day, the 21st inst. The excursions arranged for Saturday include visits to Guildhall, St. William's College, the treasurer's house, Minster and St. Mary's Abbey. A return to Edinburgh will be made by the 6.15 P.M. train.

The Bill for the Incorporation of the National Trust Places of Historic Interest or Natural Beauty was Monday before the Examiners of Standing Orders in Parliament. This measure has already passed the House of Lords, and was now ordered to be advanced to the second reading stage in the House of Commons.

The Laying of the foundation-stones of Hexham Abbey will take place at a service to be held on St. Peter's Day, June 29. Messrs. Temple Moore and C. C. Hodges, the architects, estimate the cost of the work to be done at between 9,500*l.* and 10,000*l.*, of which 1,200*l.* is for heating apparatus, 1,100*l.* for lighting and 1,400*l.* for seating the nave. They suggest that the chapter-house should be restored at a cost of 9,000*l.* The rector states that this could be used to house local antiquities.

The Claim of Sir A. Brumwell Thomas, architect, against the Corporation of Belfast has been settled. The sum of 4,551*l.* 6*s.* is to be accepted. Previous payments amounted to 7,500*l.*

Sir Weetman Pearson has presented to the House of Commons the two pictures which are now hanging in the members' dining-room. One is a portrait, by C. Janssen, of Lord Cottington, and the other a portrait, by Sir John Kneller, of Spencer Compton, Lord Wilmington. Both pictures came from the Duke of Fife's collection recently sold.

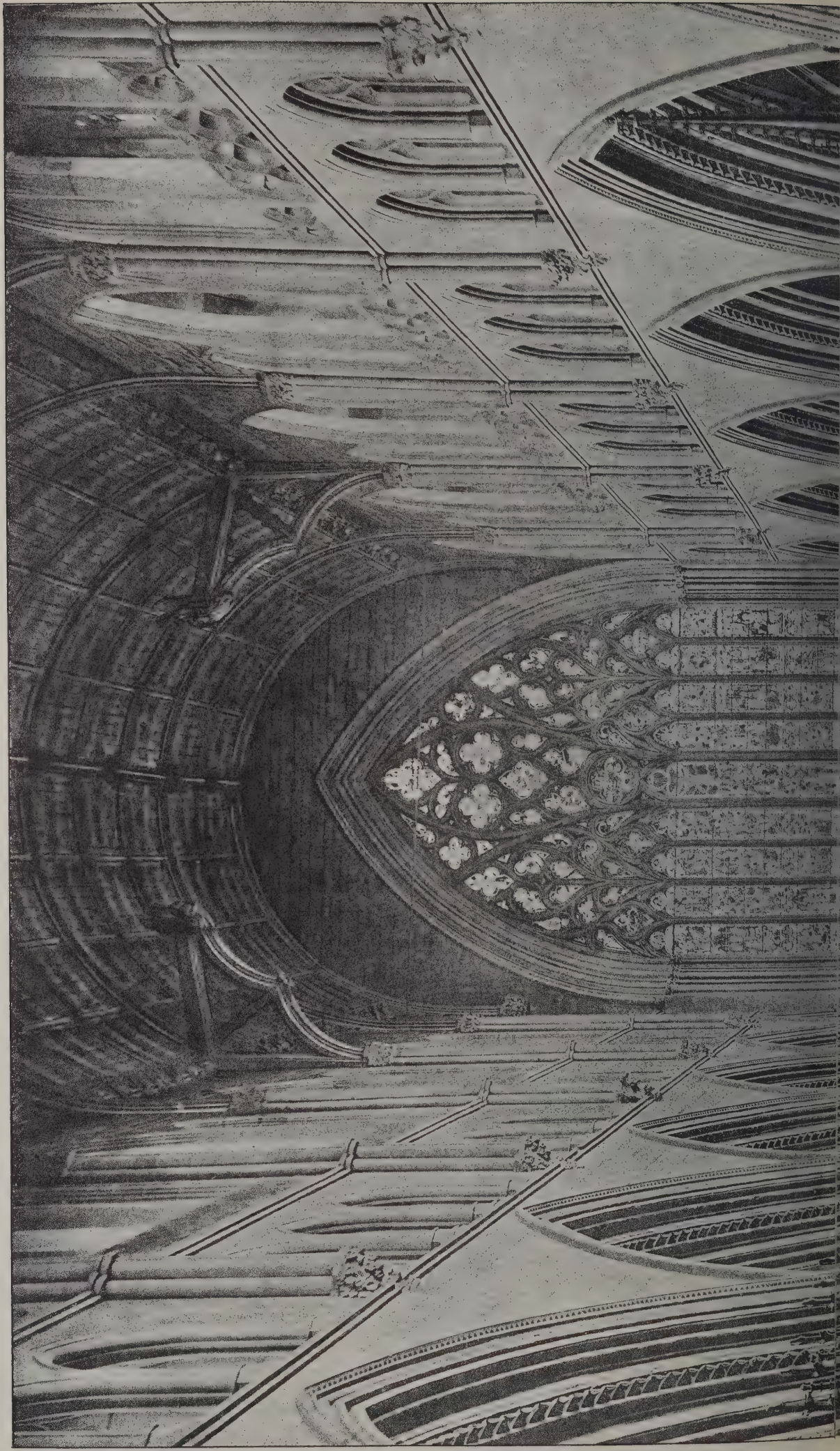
The Provisional Committee in charge of Edinburgh Art School had a meeting last week to make temporary arrangements for the carrying on of the present art school pending the erection of the new Municipal Art School at Lauriston. The committee decided that so far as possible the present arrangements should be adhered to and the staff kept until at least the new buildings are ready.

At the Last Meeting of the Sunderland Town Council one of the members, on a proposal that a certain plan be adopted for a branch library, asked for an inquiry, on the ground that the plan was marked and certain councillors were informed what the mark meant. The statement caused a sensation, and after discussion the report was taken back so that the matter might be investigated by the committee.

The Dundee College Council last week considered details of plans for the new physics laboratory. Members expressed themselves as greatly satisfied with the accommodation provided and the elevation of the building, and it was remitted to the works committee to meet Sir Rowland Anderson, the architect, next week, adjust points of detail and take in estimates for the work.

Public Baths are to be erected in Derby Road, Weaste, by the Salford Town Council. The cost, including site, is estimated at 24,000*l.*

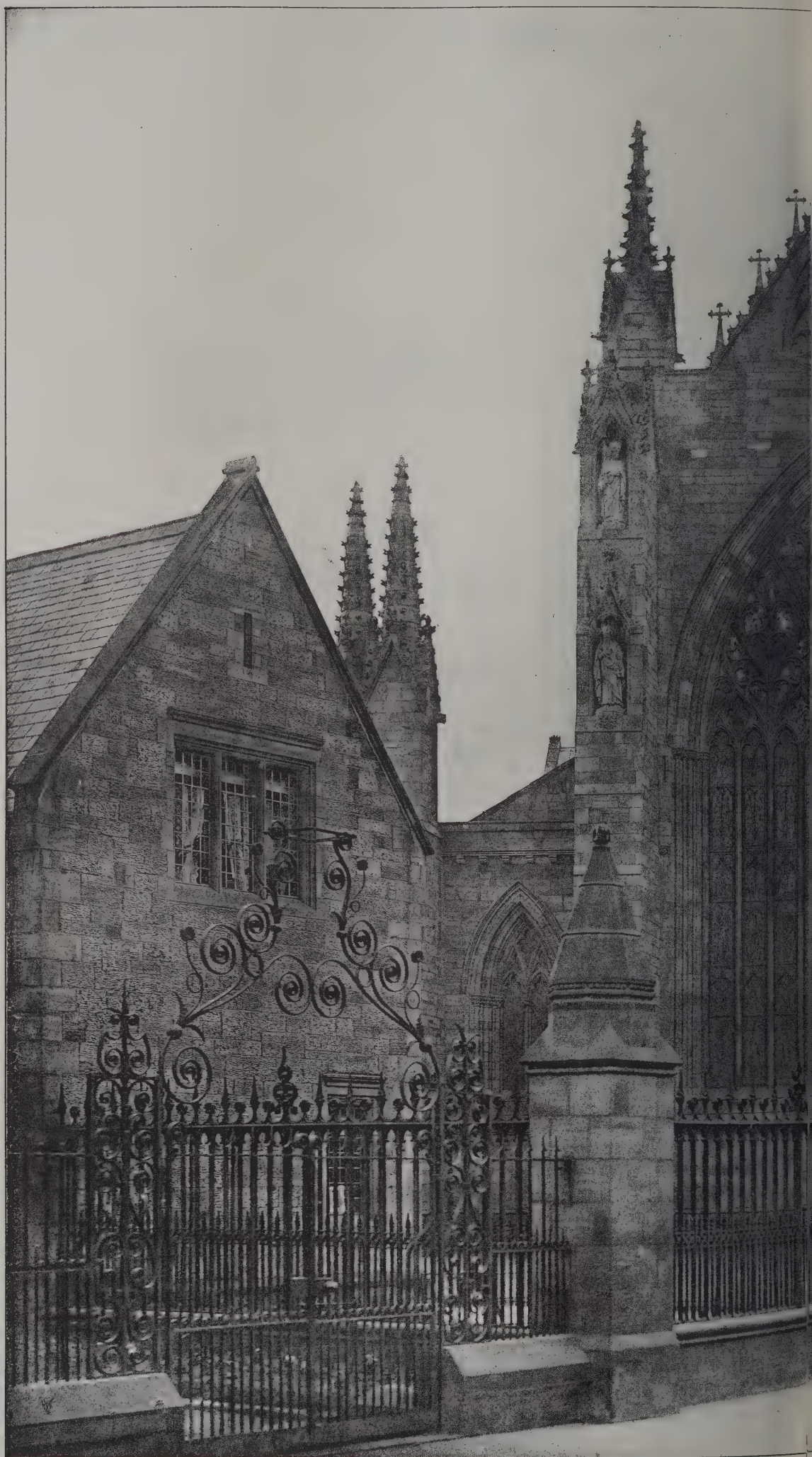
The Architect, June 21st 1907.





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CATHEDRAL SERIES, No. 604.—CARLISLE: THE CHOIR FROM ORGAN LOFT.

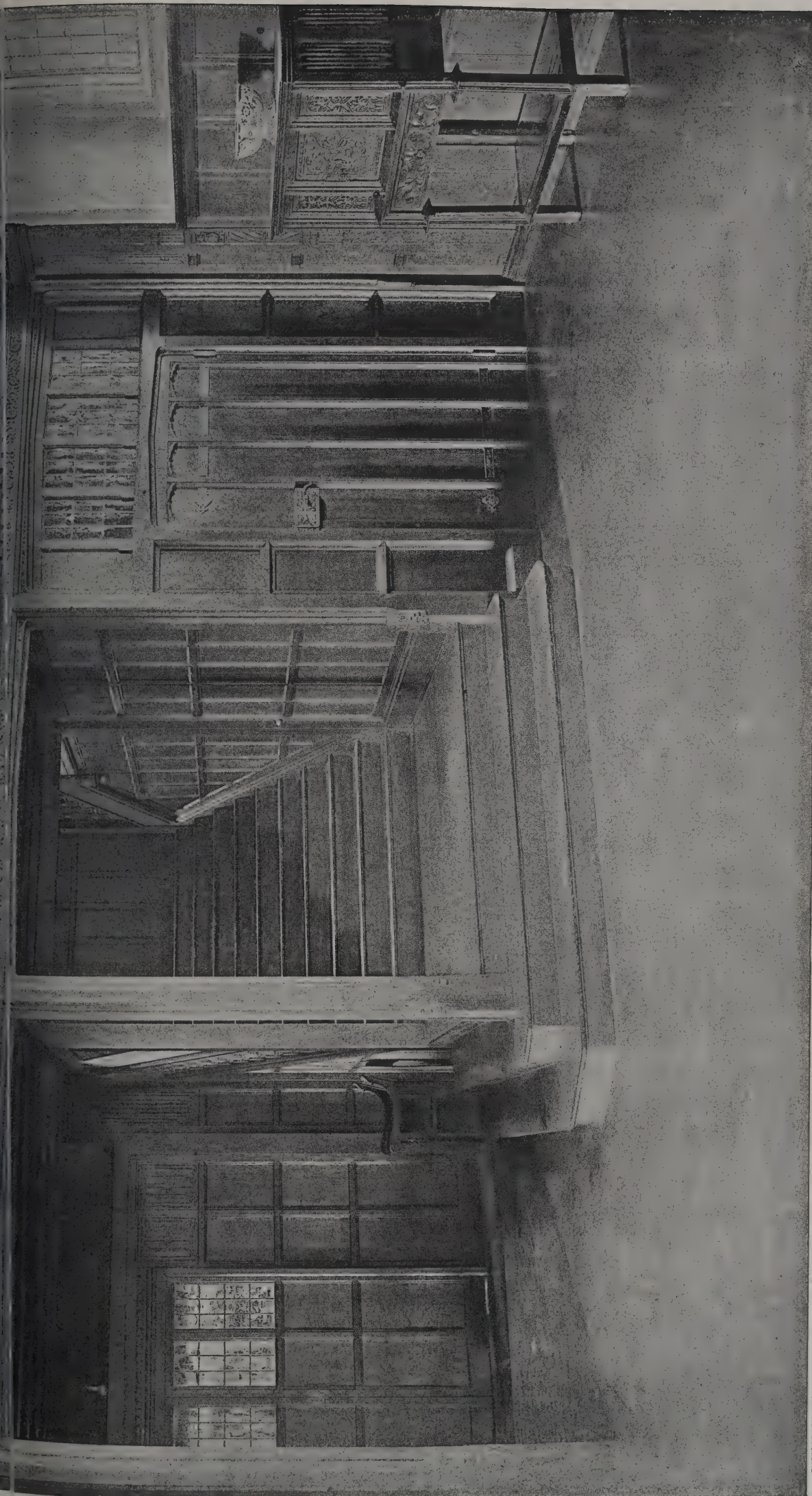




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The Architect, June 21st 1907.





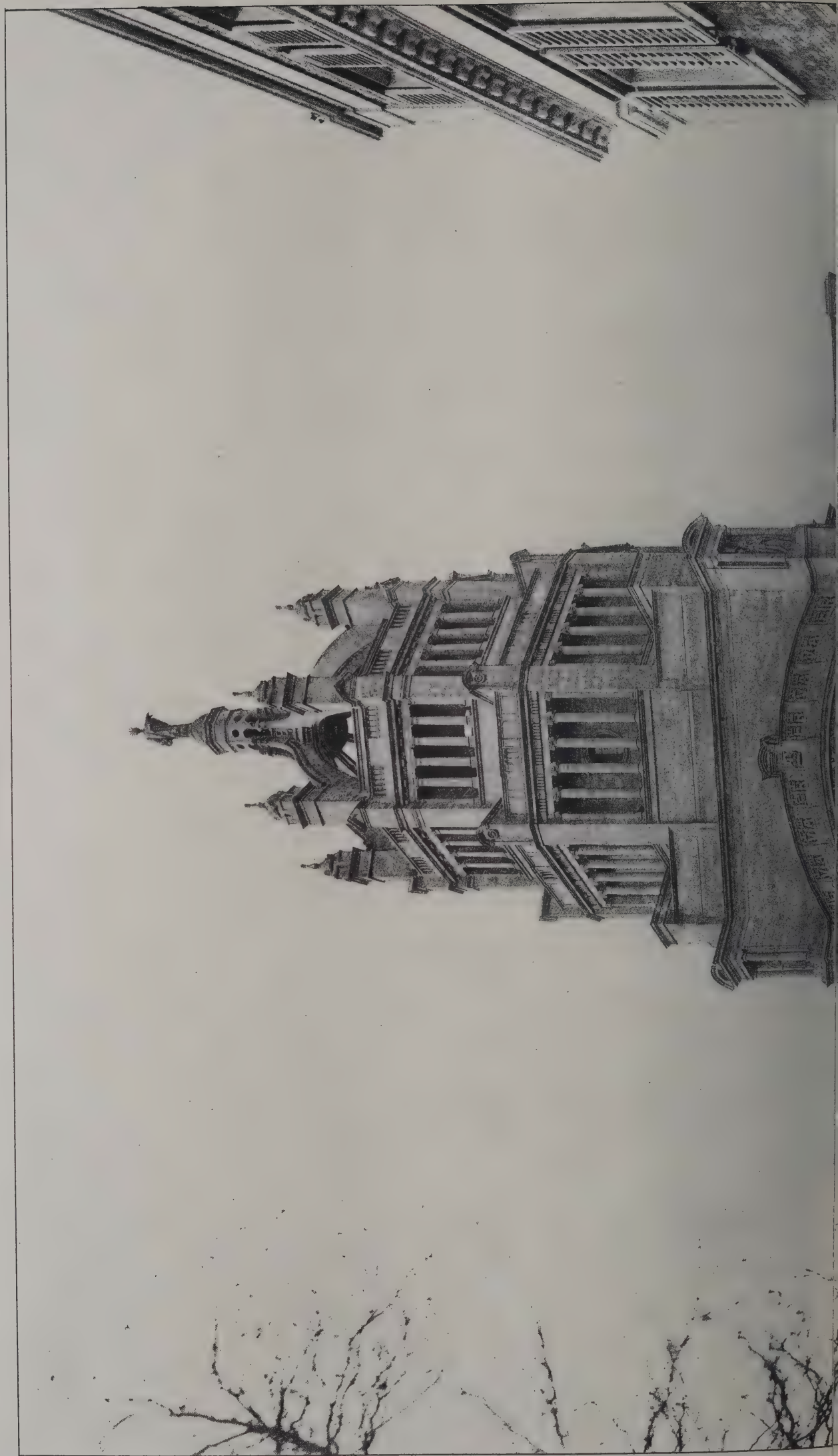
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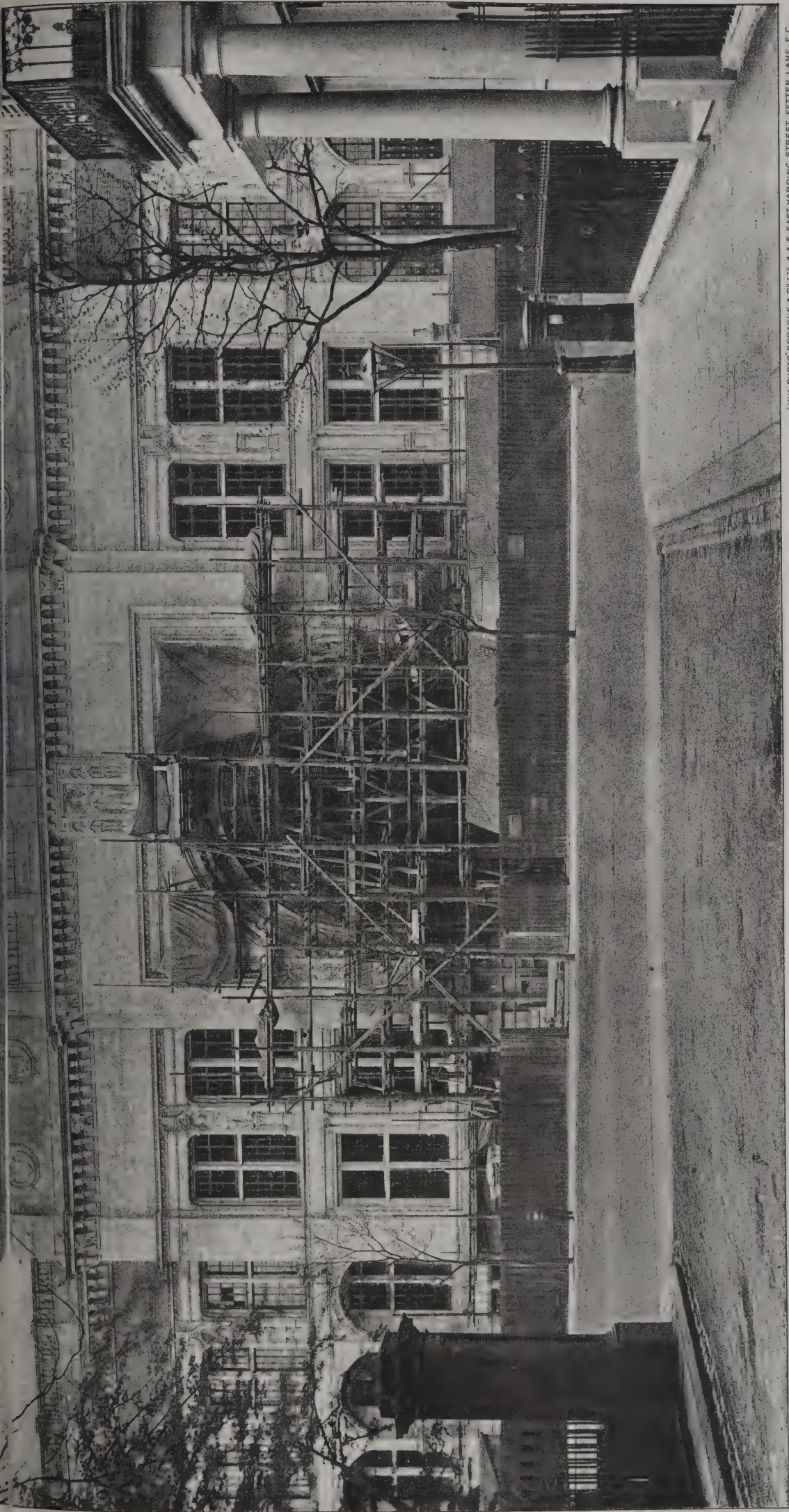
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"FOXCOMBE," BERKS.

Messrs. ERNEST GEORGE & YEATES, Architects.

The Arsenal, June 21st 1907.





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VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON.

SIR ASTON WEBB, R.A., Architect.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.

The Architect.

THE WEEK.

late S. J. WARING must have had the satisfaction of having all his ideals realised. As a maker of furniture he was not satisfied with keeping in the track with others; he sought improvements and his work was appreciated. His business grew rapidly in Liverpool, and it was found necessary to set up another establishment in Manchester. His sons fully shared in his aims, and consequently there was a controlling power in the business of a strength and vision which could not be matched elsewhere in the land. It seemed a rightful consummation that the business of GILLOW, which was so renowned in the north, should become amalgamated with the firm who had led to have the future of the trade in their hands. Another sign of growth was seen in the opening of the premises in Oxford Street, which undoubtedly are the finest among the business exhibitions of the world. In another direction the creation of the Waring-White Sewing Machine Company was a sign of further progress. The recognition is not given to many men that they had accomplished similar aims, and that the name they bore was sure to be recognised in the future as a synonym of success.

It is satisfactory to learn that His Highness JAM RANJITSINHJI has profited by his experience in England, and is resolved to encourage building as far as possible in his territory. Subscriptions were received for raising a statue of the late JAM at a cost of £200. His Highness proposes to add a sufficient sum to enable a training school, hospital and boarding-house for students to be erected instead of the statue as a memorial. A trust has been formed for the improvement of Nawanagar. Facilities are to be given for the erection of dwellings for the humbler classes outside the capital, and a better style of building for others will be encouraged. A grain market is to be constructed and the public buildings are to be repaired. In that way English ideas will be disseminated in a more efficient manner than by school books or imitation of our official system.

ALTHOUGH the London County Council have not formally approved of all the arrangements of the competition for the new county hall, the establishment committee have brought forward a proposal for the erection of a place for the exhibition of the designs. It is anticipated that the accommodation will be required for three or four weeks, and, owing to the nature of the work to be done by the assessors in considering a number of large designs, the space required should be of special character. It is suggested that one of the libraries of the London University should be hired for twenty-eight days at the rate of 7l. 10s. a day. It will also be necessary to provide screens on which to hang the designs, and it will be more economical to hire them at an estimated cost of 60l. A small sum is required to cover expenses in conveying designs from the county hall to the University and for assistance in packing and unpacking the designs. The total sum, therefore, which should be provided is approximately £1,000. The latest date for the reception of designs is August 27, 1907.

HERE may be new regulations in connection with the latest amended Workmen's Compensation Act. But we have heard in the Liverpool County Court on Friday that a builder runs a risk when he consults a medical referee as if he were an ordinary practitioner. A builder employed by Messrs. THORNTON & SONS fell

while laying a floor and sustained injuries. He was removed to the hospital, where he underwent an operation. He recovered, and it was considered he was able to work. The workman's doctor declared he was unfit for labour, and the man declined to submit himself to the medical referee. The insurance company asked the latter to examine the man, but it was not formally stated that he was the medical referee. The workman's solicitor therefore objected to the report when the employers sought to have the weekly payment reduced. The Judge referred to the position of a medical referee, and said that in cases of doubt he could not be recognised apart from his office. As the workman was not made aware who was examining him, the report could not be accepted as conclusive, and the application was dismissed with costs.

HOUSE-PAINTERS, builders and architects also are made responsible for defects in work which are the result of the adulteration of white lead. Although it has been demonstrated that zinc oxide, besides being safer to use owing to its non-poisonous character, produces purer colours, yet habit prevails, and white lead is commonly employed. It is needless to say it is often adulterated with substances which have an injurious effect on the painter's work. It is now, however, possible to make such adulteration a punishable act. Last week a case was heard at the Hereford police court which deserves attention. When it is said that two King's Counsel appeared the gravity of the proceedings is suggested. The prosecutors were the London Chamber of Commerce. Four 28-lb. tins of white lead were ordered by the Guardians of the Hereford Union. It was supplied through the local contractor by Messrs. BLUNDELL, SPENCE & Co., LTD., of Hull. A sample of it was sent to the London Chamber of Commerce, and on analysis it was found to contain 30 per cent. of sulphate of baryta—a material which is the painter's enemy, although it is sometimes called his friend. For the defence, evidence was called to prove that for years white lead containing barytes was sold as white lead Nos. 1, 2 and 3. The magistrates said they were glad the final decision did not rest with them, and they did not believe defendants had any intention to defraud. But, as it was a test case, they resolved to impose a penalty of 10l., with 100 guineas costs, subject, of course, to the right of the defendants to appeal to a higher Court. It should be mentioned that the tin was marked "No. 2 white lead," and the initiated would therefore know the character of the mixture. But whether the Courts can approve of the arrangement remains to be seen. "Genuine white lead" is the mark of an unadulterated material, while "Reduced white lead" is another designation for a mixture.

WE have already mentioned some of the gifts of the late M. OSIRIS for the benefit of the French people. During his lifetime he had presented Malmaison with furniture and works of art suited to it which must have cost him a very large sum. For the removal of the statue of JOAN OF ARC in Nancy and the erection of railings around it he bequeathed 4,000l. A similar sum is bequeathed to Lausanne, to which he had already given a statue of WILLIAM TELL, by MERCIÉ. For erecting a chapel as a memorial of TELL he left 2,000l., and a like sum for the construction of a synagogue. The city of Paris is to receive 4,000l. for the erection of a group which will symbolise the charity of Mme. BOUCICAUT and Baroness HIRSCH. The city of Bordeaux will receive 80,000l. for a day home for the poor, and which will resemble a house-boat on a large scale. His estate at Sauterne is presented to the nation in order that it may serve as a school in wine-making and wine-growing. Several prizes have also been founded. The residue of his estate is to be applied towards assisting investigations at the Pasteur Institute.

ROADS, RAILWAYS AND BUILDINGS.

ON two days in succession last week there were some public utterances respecting means of communication which are worth the consideration of architects. The President of the Board of Trade on Saturday officially opened a "Tube" railway which connects Hampstead and Golders Green with Charing Cross. According to Mr. LLOYD-GEORGE, the new line will do more to solve the housing problem in London than the most skilfully devised Act of Parliament. He pointed out that last year 240,000,000 passengers made use of the underground railways, and yet the streets of London continued to be congested. Sir EDGAR SPEYER, the chairman of the company, declared that the tube railways had caused thousands of acres of land to advance greatly in value, with consequent advantage to their owners, as well as increase in the taxable and rateable value of the districts in which they lay. They would also save vast outlays in connection with the widening and maintenance of streets, and in relieving the congestion of traffic would be the means of saving time to the users not only of the tubes themselves, but also of the streets. But he did not inquire whether the creation of the new residential areas was not followed by a corresponding decline within the metropolitan district.

The municipal and county engineers had been also considering the subject of communication the day before in Liverpool, and they resolved to memorialise the Board of Trade not only to make special grants from the Exchequer for road maintenance, but also for an Act "to enable local authorities to regulate and control the planning of main thoroughfares and building areas, and to prescribe the number of houses to be erected on an acre of ground; also to give power to local authorities, with the sanction of the Local Government Board, to acquire land for open spaces, and to facilitate an improved development of their respective building areas." Those expressions of opinion may be taken as evidence not only of the inadequacy of existing roads in town and country to serve the requirements of our time, but also of the costly projects which alone are offered for their future improvement.

The business of the civil engineer was formerly defined as consisting in the construction of aids to facilitate communication between men. The humble road surveyor, the railway engineer of the old school and the later designers of tubes for underground passages and of immense viaducts over precipices, rivers and arms of the sea would, in that way, be found to have aims in common, however different might be the manner of realising them. By the ordinary economic law and because they have all done their work so well, they have created a demand for further facilities. It is not only roads and ordinary railways which are found to be inadequate, but every new tube demonstrates the necessity for others of a higher class. Having gained time and overcome distance by means of electric power and roads which present no obstacle, men now grumble about the time spent in travelling unless it is reduced to a minimum. Where it is to end nobody can foretell.

It is remarkable that while the traffic exceeds the estimated number of passengers, the railways which provide for it are generally worked at a loss. The history of the District Railway would by itself be enough to scare speculators from attempting similar work. The tube railways, although especially adapted to existing conditions, and although they escaped the enormous outlay which was required for purchasing ground for the earlier underground railways, cannot be considered at present as profitable enterprises. Whether shareholders will derive consolation from Mr. LLOYD-GEORGE's optimistic anticipation that hereafter they will reap profit is a doubtful question. But a railway like that from Charing Cross to Golders Green, and which cost 720,000*l.* per mile, should at least yield as much dividend as Consols to those who provided the money. It

is well to bear those facts in mind when questions of road improvement are discussed. Managers and engineers, although they may possess experience, should always be certain of results; and, judging by what has taken place, it might be said that the more nu- merous the tube railways, the greater will be the loss to shareholders. The limit is reached when expenditure cannot be recovered from receipts.

Everyone knows that a belief is now prevailing in the ground concerning the duty of the State to make compensation for the deficiencies in the provision of such railways as those which serve for the traffic of the Metropolis. Mr. LLOYD-GEORGE spoke of the trap which had been set for him in order to compel him to explain the views of the Government about a Traffic Board, increased fares and delimitation of public and private enterprise. In other words, managers who are interested in finance wish the State to take over railways what the municipal and county surveyors have asked for in connection with highways, viz. to make special grants towards the additional cost of maintenance. Neither shareholders nor surveyors would like to know whether the whole country should be compelled to contribute or those parts of it which received the greatest benefits. It may seem a short and easy method of getting over the difficulty. It is, no doubt, contrary to the ordinary practice in this country, but economists approve of governmental road-making. DE LAVELEYE lays down the principle that, "after a certain instruction, there is no more powerful cause of improvement than an improvement in the means of communication." Accordingly he concludes that "since the nation is benefited by any increase in the revenue of taxes, or in the productivity of all the sources of production, it follows that the construction of railroads, &c., even though they do not yield a direct profit, is yet a most advantageous investment of the public funds." People on the Continent, who are accustomed to their Government meddling in or directing up any kind of business which may seem to be desirable, would accept such a theory. Indeed they dare to do so otherwise. But people in Cornwall or Northumbria, who have not the wide views of foreign theorists, would object to the payment of a large sum, however small, in order to enable those who have business in London to reach Golders Green in a brief time. They would say, and with reason, if Londoners have obtained additional facilities, let them pay for them by an increase of fares. Those who profit by the creation of new business in or about Golders Green should also contribute towards the cost. But it would be an injustice that Northumbria should assist in the support of the line on the same scale as the people of Middlesex.

The opening out of new districts offers opportunities to architects and builders. But they are not so minded enough to desire that irregular means should be adopted to gain for them commissions or contracts. The charges on railways as on other things should be proportionate to the services rendered, and a passenger who gains time by using the tube should be prepared to pay as much for the convenience as he was accustomed to pay for a slower mode of carriage. In such cases it is not to be expected that money as a time should be saved.

The recommendation of the municipal engineers for a closer relation to the interest of our readers. Our roads have become inconvenient because, in the past, when they were first laid out, there was no thought of motor traffic. If that mode of travelling ceased to be a fast one, quickly as it became one the roads would serve as well as before. It is not only increased width for the cars which is required, but householders along the roads would desire to have margins which would absorb the noise and malodours of temporary poisoning of the atmosphere. They have as much right to be consulted in any new scheme as the owners of the cars. Among the latter would deny that, no matter how easily or how quickly they move, their motors

ad surface more than large carriages drawn
ses. In ordinary equity they should be made to
ute to repairs at a higher rate than those who
-fashioned conveyances. If it were possible there
be special tracks laid out for motor-cars, entry
ch would involve the payment of a toll. Car
g has become an important industry, and the
e the means of a new pleasure, to say nothing of
ility. But in such a country as ours that is not
to give the privilege of exemption from pay-
f any losses which are sustained.

one sense the proposal of the municipal engi-
which we assume was inspired by municipal
ties, about the control of building estates so far
es to new roads is the most important. In the
ace, it is an additional interference with what
onsidered to be the "rights of property." The
is expected to succumb to the interests of the
ality, and probably in many cases to imaginary
s. Overcrowding is a public danger, and an
ent against the erection of more than a certain
r of houses per acre would be a preventive of
l. But owners and lessees of land will, of
oppose such a proposition. They generally take
age of circumstances in each case, and if detached
are needed they are not likely to erect terraces
all houses. Such men are also acquainted with
hich gain approval with the public. They know
a desire for roads which will display houses to
age, which in a great many places are now laid
a much larger scale than formerly. Indeed,
oads and "avenues" with sounding names are
en which are weedgrown because enterprising
as are not forthcoming to take advantage of those
sites. It is to be hoped the municipal authorities
eager in their desire to regulate and control the
ig of new roads to have the direction fixed in
veyor's office. To perform that kind of work
require special assistance, not easily to be found
rate, or qualifications in the surveyor which
it within the scope of his office when appointed.
s now desirable in laying out roads is more than
venience.

le it is satisfactory to recognise the least effort
the improvement of large and small towns, it
not be overlooked that many of the proposals
ly to be considered as tending to a revolution,
consequence the minds of many people will be
td. If State-supported railways carry people to
ce, it is unwise to erect buildings in the streets
s. The widening and maintenance of streets,
g to Sir EDGAR SPEYER, can be avoided if
are constructed. To purchase land with the
f converting it into a building estate is also
or there is no knowing what powers will be
ed by the local authority, and which may nullify
er's intentions. Capital is the most susceptible
ings, and unless project-mongers exercise more
it may be diverted to uses which are less profit-
in building when carried out under ordinary
as.

ÆGINETAN SCULPTURE.

ometimes of use to recall official blunders, and
which is memorable in connection with art
neglect to purchase the sculpture which was
the island of Ægina, and for which the eligible
s the British Museum. Among the discoverers
ers of the treasure was the late CHARLES R.
ELL, and on that account the case possesses
n usual interest for architects.

island of Ægina is about twenty miles distant
e Piræus, which is the port of Athens. There
ny legends associated with its history which
ve given it importance in the eyes of the
s. But the Athenians were jealous of its naval

strength, and in consequence it suffered. The capital
of the island was visited by PAUSANIAS, and he mentions
the existence of a school of sculpture of which the
products were different in treatment to those of the
other schools.

In 1805 EDWARD DODWELL visited Ægina, for the
capital town in a Grecian island bore the same name
as the island. He found two imperfect Doric columns
which he imagined to be part of the Temple of Venus.
But the principal ruins were those of the Temple of
Jupiter Panhellenios, to the study of which he devoted
no less than three days. Next to that of Corinth it
was supposed to be the most ancient in Greece. No
ruin, he says, was more picturesque. But the site was
overgrown with bushes and the interior was obstructed
with large blocks of stone. The trees were afterwards
removed, which allowed the architecture to be fully
revealed. According to DODWELL the temple was built
with a soft porous stone and coated with a thin stucco.
The architrave and cornice were painted. Most of the
columns were composed of several frusta, but some
of the shafts were of a single block. In 1811 C. R.
COCKERELL and his friend GEORGE FOSTER arrived, to-
gether with two Germans, the Baron HALLER and Herr
LINCKH. They at once commenced the removal of the
rubbish accumulated during centuries about the temple.
After three weeks work they were rewarded with the
discovery of an unique collection of sculpture. The
whole of the figures, eleven in number, which adorned
the eastern pediment came to light, together with five
figures from the western pediment.

COCKERELL sent an account of the discovery and a
description of the figures to his father in London. His
letter was read at a meeting of the Dilettanti
Society, when Lord HARDWICK undertook to recom-
mend to his fellow trustees of the British Museum
to obtain authority from the Government to offer
6,000*l.* for the sculpture. Unfortunately the Govern-
ment, or rather their agents, would not venture
on an offer in a business-like way. It was stipu-
lated that if the sculpture was not approved it was
to be again exported, but free of duty. The conditions
were, of course, rejected by the four owners, for it was
impossible to tell what would be the fate of their pro-
perty. They decided to have a public sale of the pieces
in November at Malta. The trustees of the British
Museum became alarmed when they heard of the
arrangement, and despatched COOMBS, their superin-
tendent of antiquities, with authority to bid up to
8,000*l.* if necessary. He waited in Malta until the end
of November, but as there was no sign of a sale he
retired, leaving his commission with the Governor of
the island. Meanwhile the Prince Royal of BAVARIA,
who realised the importance of such examples, found no
difficulty in purchasing them at Zante, and it is be-
lieved he had not to pay more than 6,000*l.* for both figures
and fragments. Messrs. COCKERELL and FOSTER had
consented to relinquish their share of the purchase
money if the sculpture was secured by England. But
the bungling of the officials made that impossible, for it
is understood they began by offering only 2,000*l.* for a
collection which revealed the existence of a school of
sculpture hitherto unknown, and which, moreover,
exemplified the application of sculpture to fill a pedi-
mental space, and the employment of colour and gilding
to heighten the effect of a sculptor's work.

English amateurs had to console themselves by the
belief that the sculpture from Ægina was more curious
than beautiful. As some compensation for the loss the
trustees of the British Museum were enabled to obtain
casts of the figures which will always have to serve as
substitutes. If the Museum possessed the originals we
should then have examples which were almost
sufficient to exemplify the most important phases of
the history of Greek sculpture. The Æginetan, the
Phigelian and the Parthenon marbles would be enough
to suggest the progress as well as the most important
peculiarities of the art.

It was really owing to the exertions of WILLIAM HAMILTON that the country did not also fail to possess the Phigelian marbles. COCKERELL and his party of travellers were the discoverers. He sent drawings of them to London, but the dismal collapse of the negotiations for the Æginetan sculpture convinced amateurs that British officials did not possess sufficient tact or energy to compete with foreigners. An English gentleman offered 6,000*l.*, which was the value set upon them by LUSIERE, but the four discoverers wished to have a public sale, which was considered to be the most straightforward arrangement. HAMILTON appealed to the First Lord of the Treasury, the Chancellor of the Exchequer, and the Colonial Secretary, and having the influence of the Prince Regent to support him he succeeded in obtaining approval of the outlay of 60,000*dols.* or 15,000*l.* He took care to immediately despatch an agent to Corfu, and although the rate of exchange increased the price to 19,000*l.*, all risks were accepted, and the sculpture became English property. The purchase may be said to have made it easier to acquire the still more valuable and extensive collection of Lord ELGIN which he derived from the Parthenon.

At the time of the purchase of the Æginetan sculptures it was considered by some of the Academicians who were consulted that they were allied to Etruscan work. Both are undoubtedly mysterious in their difference from typical Greek work. In our time it is supposed that they were produced by ONATAS or by some sculptor of his school. There are traces of archaic treatment in many parts of the figures which support that belief. By others it is supposed they are in the traditional manner of a Dorian school which exercised influence in Ægina. DODWELL, who saw them soon after their exhumation, considered that, while the Doric severity of the early Æginetan school was diffused throughout, yet there was a correctness in the muscularity which belonged to a later time. What seems most strange to a modern observer is the unmeaning smile on all the faces. It is as marked in the dying warrior as in the central figure of the goddess, and it has not vanished from the dead. It is not easy to explain so misplaced a manifestation of pleasure, although there is a resemblance to it in some of the earliest work of the Greeks. The figures were all painted, and as the action was supposed to take place in the open air the background was painted blue. The sculpture on the western pediment is assumed to be a representation of the death of PATROCLUS, the Trojans appearing on one side with the Greeks on another, while ATHENÉ presides over the combat. In one of the angles of the eastern pediment HERCULES is shown as an archer, and appears to be endeavouring to rescue his companion, who was the son of the King of ÆGINA. Both are examples of the observance of rigorous laws of symmetry. Although conventionalism had to be recognised, the sculptors were more disposed to give preference to realism. It is the combination of two manners which imparts the peculiarity to the group and allies the figures with archaic Greek and also with Etruscan work.

It is to be regretted that the sculpture has not an honoured position in the British Museum. But it may be some extenuation of the blundering if we remember that the officials were without experience in purchasing on a large scale. Besides it was architectural sculpture, and there was no certainty it would be appreciated by the public. The Townley Collection, which was bought a few years earlier, was of a varied kind which visitors to the Museum could understand without much difficulty. There is no likelihood that another opportunity of purchasing important architectural sculpture can arise. If found in Greece, Italy, or Egypt, the figures would be retained. But the Ægina case should be remembered as a warning against delay whenever there is a chance of obtaining a valuable example of art at a reasonable price.

ROYAL INSTITUTE OF BRITISH ARCHITECTS

A MEETING of the Institute of Architects was held Monday evening last at Conduit Street, W., Mr. Colclutt, president, in the chair.

MR. ALEXANDER GRAHAM (hon. secretary) announced the decease of John Charles Traylen, who was elected associate in 1882.

The Royal Gold Medal.—Presentation to Mr. John Belcher, A.R.A.

The PRESIDENT said:—Ladies and gentlemen,—with very great pleasure that I find myself presiding on such an auspicious occasion as this, the presentation of the Royal Gold Medal to one of our most honoured confreres. The Royal Gold Medal was instituted by Queen Victoria for the promotion of architecture, and I venture to say has never been more worthily bestowed than upon John Belcher, A.R.A., who has done so much to advance our art, not only in his buildings, but also in his public works, and in saying this I feel sure I am expressing sentiments not only of our profession, but of the architectural world generally. In the selection of the name for this year presented to His Majesty the Council have done honour to their own judgment no less than they have done honour to Mr. Belcher. With regard to Mr. Belcher's career, I cannot do better than quote from the *Architectural Review* of September 1898, wherein you will find an interesting record and review of his work:—"Article after article his father, Mr. Belcher brought to the beginning of his career the knowledge he had gained as a boy in London, where he had been sent to study and sketch, with particular instructions to pay special attention to the Renaissance as understood in France. For some years after that he worked in partnership with his father, but, when the latter retired, the subject of this record and review, to quote his own words, 'After swallowing Street's "Academy of Architecture," forthwith proceeded on a wild Gothic career.' A deal has happened since then, and he has long since ceased to be influenced by the words or works of such masters as Street or the other bright particular stars of the Gothic revival." I have a dim recollection that Mr. Belcher's tendencies were towards a phase of Gothic architecture, but he appears to have quickly discovered that his real inclinations lay in another direction. He very soon seems to have fulfilled the prophecy of his father, who, when he found his son being influenced by the Gothic revival, exclaimed, 'He will soon come back to what I have taught you.' His son is so well known to members of the Institute that it is unnecessary for me to give a detailed account of his achievements, but it will doubtless be of interest if I give a short summary of his more important buildings. Among these are:—New lower hall and stables, Stowell Park; Northleigh; Institute of Chartered Accountants; Coldstream Town Hall; houses, Chiswick Mall; house and stables, Holcombe, Chatham; Bearroc, a mansion, Berkhamstead; Electra House, Moorgate Street; Winchester House, exterior; Cornbury Park Mansion; Tapesley Park, Marlborough; Lancaster Memorial. The works that are perhaps best known to most of you are the great building in Moorgate Street, Electra House, and the building in which the Society of Accountants find their home. Electra House is broad, imposing and masculine in its treatment, though showing great beauty and delicacy of detail. The building of the Institute of Chartered Accountants is the work that perhaps impresses the artistic public more than any other; it is treated with great originality, the interior no less than the exterior. The judicious use of sculpture and painting is nowhere more successfully shown than here. The building is, in fact, a standing monument to the happy results that can be attained by the sympathetic collaboration of the architect, sculptor and painter. Unfortunately this fine work is hidden away in back streets, crowded in by ordinary warehouse architecture, but so rounded as it is by mediocrity, "it shines like a good light in a naughty world." It is peculiarly fitting that one who has so greatly distinguished himself in English Renaissance architecture in these later days should have erected his greatest work in the city where the earliest masterpieces of that style are to be found. Mr. Belcher was elected as Associate of the Royal Academy in the year 1900. I think I may say that the whole profession was unanimous in the feeling that this distinction could not have been better bestowed. It was a very arduous duty of presiding at the meeting of the International Congress held in London in last July, undertaken by him as president. He also delivered

interesting paper on "The Education of the Public in Architecture." It must be fresh in your memories how admirably he filled this onerous position, and with what indefatigable ardour he threw himself into the task of rendering the Congress a success. I do not remember that Mr. Belcher was thanked by the Institute for the valuable services he rendered, but I take this opportunity of saying that I feel we are all most deeply indebted to him. Mr. Belcher has won deserved recognition by the valuable literary services he has rendered to architecture, but however much we may value these services, it must not be forgotten that the Gold Medal is presented to him solely on the distinguished merit of his building work. In collaboration with Mr. Mervyn Macartney he published most exhaustive volumes on English Renaissance. I think there is no doubt that the study of this book has had a very beneficial influence on the more recent attempts in architecture of this style. In making the necessary studies for this important work we may surmise that Mr. Belcher was confirmed in his sympathies for that style in which he now practises so successfully. Mr. Belcher's most recent book, "Essentials in Architecture," can hardly yet be known to many of you, as it is only just published. It is dedicated to this Institute in acknowledgment of their desire to stimulate a popular interest in architecture. I am fortunate in already having had the opportunity of becoming acquainted with its excellences. It is written in a very simple and convincing manner, and the undue use of technical terms is avoided. It will certainly appeal very strongly not only to the architectural student, but also to the general public, to whom, indeed, it is chiefly addressed. We have long felt the need of such a work, and we hope it will influence the revival of an intelligent study and appreciation of our art. Mr. Belcher is to be warmly congratulated on the able manner in which he has supplied this want.

The PRESIDENT, addressing Mr. Belcher, concluded:—"We look upon you, sir, as one of those who are successfully carrying on the great traditions of English architecture. It is with the greatest pleasure and sincerest regard that I now invest you with His Gracious Majesty's Gold Medal, and you may be assured that all your brethren delight in the honour conferred upon you, and hope to see many more noble works from your hands."

Mr. BELCHER, in his reply, said:—It is with very conflicting emotions that I rise to express my sense of the great honour that is done me this evening. Your kind words, Mr. President, I very much appreciate, and I am grateful to you also, ladies and gentlemen, for the cordial way in which you have signified your endorsement of those words. The fact that this Gold Medal, bestowed by His Majesty the King, is awarded on the recommendation of my colleagues in the profession adds immensely to its significance and value. I have ever sought to serve the highest interests of architecture, and this proof and token of my brother architects' regard is most welcome. But I am overwhelmed with confusion when I call to mind—and it is so easy to call to mind—the names of many great architects, both at home and abroad, who are far more deserving of this great distinction than I am. As regards many, if not most, of these I am able to console myself with the thought that they are younger than I am, and I may hope to have many an opportunity of being here to see such honoured with the Blue Riband of the profession. But even so, allowing the consideration that this Gold Medal is awarded annually to have its full weight, the sense of my own defects and limitations is strong upon me; but the way in which the President has made the best of the material at his disposal leads me to hope that you may give me credit for some at least of the virtues and good works he has ascribed to me. You have encouraged me to believe, Mr. President—and I am sincerely grateful for the encouragement—that if my work has not been large or extensive in area, at least its quality is appreciated, and that it has been fruitful of suggestion to younger members of the profession who are devoting themselves to carrying on that elastic form of Renaissance work which is now becoming so popular. I have always aspired to do really good work, and particularly work which should embrace and include in its scope the sister arts of sculpture and painting, and you almost persuade me, Mr. President, that I have not laboured in vain. If, indeed, I have achieved success in this respect, let me acknowledge at once my indebtedness to my association with so many great sculptors; such, for instance, as my old friend Mr. Hamo Thornycroft, also Mr. Harry Bates, Mr. Geo. Frampton, Mr. Goscombe John, Mr. Drury, Mr.

Pomeroy, Mr. Bertram Mackennal and others, all of whom at one time or another have lent their aid in giving expression and artistic embellishment to my buildings. But let me assure you also that I have been most fortunate in the men who have been associated with me in the carrying out of my work—men of ability and enthusiasm, responsive to the call of art in its highest forms, kindred spirits with whom I have spent many happy hours and passed through some thrilling experiences of the kind familiar, no doubt, to all who work in an architect's office. Amongst the earliest of my friends was Mr. James Walter James, whose remarkable powers of organisation proved invaluable in the introduction and ordering of business methods in my office. Then came Mr. (now Professor) Beresford Pite, of whose strong personality and versatile genius there is but little need to remind you. I think it was while he was still with me that he won the Soane Medallion with his celebrated design of a Mediæval West End club. Since then he has surpassed us all in the beauty of his Renaissance designs, and is, too, a distinguished exponent of the pure and refined methods of Greek architecture. Professor Harry Wilson, of South Kensington, now distinguished not only in architecture, but as a painter, sculptor and worker in metals, was also with me for a time, leaving me, in the first instance, to join my old and sincere friend Sedding. Professor Reilly, of Liverpool, was not long in my office, but long enough, I hope and believe, to have enjoyed some of the work we had in hand then. Besides these three professors there are many others I could name who have won distinction, such as Needham Wilson (Institute Medallist 1884 and Soane Medallist 1886); Thomas Phillips Figgis; Hubert Corlette (Owen Jones Student 1896 and Institute Medallist 1899); also Messrs. James Fulton, James Charles Cook, James Scott, Balfour Paul, Lionel Detmar, Curtis Green, Herbert Ibberson, George Malcolm and others. Many of my pupils also have done credit to their sojourn in my office. Messrs. Philip Johnston, Alexander Hennell (Tite Prizeman), William Chadwick (now in South Africa), T. H. Russell and Maberly Smith and others. Then there is my present loyal and efficient staff, every member of which I appreciate; and last of all, one who is a host in himself, my trusty friend and partner, John James Joass (Pugin Student 1892, and Owen Jones Prizeman 1895). I may say we are so thoroughly in sympathy that my burdens are lightened by his efficient aid. These have all been real friends and true fellow-workers, and one of the happiest occasions in my life was when recently all the members of my staff, both past and present, met to entertain me at dinner during my term of office as President of this Institute—a token of their esteem and affection which was, as you may easily imagine, most gratifying to me. An architect may well count himself happy when he is loyally supported by men who know and lend themselves to his methods, even when they regard them as peculiarities, or even weaknesses. The last-named, the weaknesses, are especially open to the quantity surveyor, and I esteem myself fortunate in the services in this capacity of so able and so conscientious a man as Mr. Gleed, with whom my younger brother, Mr. Arthur Belcher, having very wisely devoted himself to this lucrative branch of the profession, is in partnership. Then there are the builders, to whom I am greatly indebted for the careful attention paid to my wishes and directions, notably Messrs. Colls & Sons, who have carried out so many of my City buildings in the perfect manner for which they are justly noted. Amongst the hosts of individual workers, craftsmen and others whose skill has been so faithfully employed in my service, I must mention by name my old friend Mr. Brindley, if only to acknowledge how much I have learnt from him. We all know Mr. Brindley as one of the greatest of living authorities on the different kinds of marble and their right use, but I know also how true is his love of art generally, and how good his judgment in all that pertains to his craft. It is of great consequence to an architect that his associates should be such as can interpret and carry out his work sympathetically and intelligently. The architect has been likened to a general directing the operations of an army of workers; but to my thinking a happier and more suggestive comparison is that of the conductor of an orchestra leading and directing the executants in the interpretation of a work of his own composition. I prefer this because, as I understand the art of war, even in these scientific days the vast majority of the units engaged are mere machines, whereas the architect, like the conductor of the orchestra, has to do with many minds. The various musical instruments in

their sensitiveness and capacity of expression are responsive to the mind of the performer, and the musician has not only to understand the powers and limitations of each that he may build up his harmonies correctly, but if he would himself conduct the orchestra there must be mutual confidence and a sympathetic understanding between him and the executants. Only thus will he be able to secure a proper balance and proportion, a right tone or colour, and such subordination of one part to another as will constitute the whole a perfect work of art. The executants, of course, must one and all be of the very best. A single incapable or ineffective unit may spell disaster to an army; the disaster is certain and inevitable if there be a single weak or faulty performer in the rendering of a musical composition. The architect may well address his subordinates in the words which Pericles is said to have used to Phidias and other artists at Athens:—"O ye who expect me to undertake great works, zealously prepare yourselves and harbour no inert self-confidence. None whose hands are not experienced and on whom Athene has not looked kindly will ever be employed by me." It is obvious also that the more frequently the same men work together, the more thoroughly will they understand one another and adapt themselves each to his part in its relation to the whole. The several workers will acquire confidence in the architect and an intelligent insight into his thoughts and purposes as expressed in his designs. He on his part, gaining confidence in them, will be able to allow a certain amount of freedom of expression to the craftsmen under him, and thus give them a fair opportunity for the exhibition of their powers. Now, more than ever, we want "men, not machines." The architect will not use his fellow-workers as an organist uses the stops of an organ; for the organ is a single instrument controlled by one mind, whereas the architect has to deal with a full orchestra of minds, all working together to one end, viz. the interpretation and expression of the architect's designs. The more perfect and sensitive this combination is, the more closely will the accomplishment of the work approximate to the ideal. The organ, wonderful and perfect as the king of musical instruments, is not a true type of the architect's work, but of the painter's, the various stops being employed, like the pigments of the artist, to obtain colour effects. As regards the work of the painter and the sculptor, I have always contended and struggled for the collaboration of these with the architect, even in the days when such an idea was regarded as quite utopian. I am glad I have lived to see the arts drawing closer together and even now working in unity. It is the architect who is (or should be) in a position to bring about this combination, which in its completeness is the most powerful that can be attained. The building which shelters and provides scope for the art of the painter and sculptor is the work of the architect, and it is his to furnish the opportunities and the settings and to determine the subjects of the joint work. In all cases the artists should work together *ab initio*—in the case of a building under the leadership of the architect; in the case of a monument under that of the sculptor; and in the case of a gallery or other place for the exhibition of his art under that of the painter. This is quite a different thing from the mere (and sometimes casual) providing space or place for the independent exhibition of works of art. The true collaboration of the arts leads to far higher and nobler results than the haphazard kind of arrangement that has so long prevailed, and I trust that the day is not far distant when the students of the various arts will be more completely organised and associated than they are at present, and will be set to work out problems together, and together accomplish noble works in which they can join hands and hearts.

Ladies and gentlemen and colleagues, I trust you will pardon these somewhat lengthy remarks, and let me assure you that I am grateful for the hearty and encouraging reception you have accorded me, not only now, but always—a kindness which will ever remain graven deep on my heart.

The President announced that the next meeting would be held on Tuesday, July 2, and the proceedings terminated.

The Commission for the statue of the late Sir Daniel Dixon has been given to Mr. W. H. Thornycroft, R.A., who has undertaken to carry out the work in two years. The statue will be set up in Belfast.

THE SOCIETY OF ARCHITECTS.

BY invitation of Mr. H. W. Matthews, a local member, a party representing the Society of Architects met at Bath on the 13th inst. About sixty members attended. According to the account in the *Bath Herald*, Lacock Abbey was first visited, where, in the absence of Sir John Dickson-Poynder, they were received by his steward, Mr. J. S. Corbett. He announced that he hoped in a short space of time to start a small private company, composed of workmen, who would carve stones for garden ornaments, the Bath freestone being most suitable for that purpose. It would not only increase the earnings of the banker masons engaged, but increase the output, and generally conduce to the prosperity of the neighbourhood. In order to inspect the principal quarries of the locality the party was subdivided into three, one proceeding to the Bath Stone Firms' Company's quarry at Monk's Park, another to the Hartham Park quarries of Messrs. Marsh, Son & Gibbs, and a third to the quarries of Messrs. Yockney & Co. A fourth stone quarry was mentioned in the programme, that of the Corsham Quarrying Company, whose managing partner, Mr. H. J. Lucas, was present, but in the end time did not permit of more than a surface inspection in this case. For the visit to the Bath Stone Firms' quarry Mr. T. Sturge-Cotterell was the guide; at Messrs. Marsh, Son & Gibbs's three directors were present—Messrs. F. H. Gibbs, H. P. Lyle and W. West Mabson—and Mr. Yockney himself was at the head of the third party.

The party at the Monk's Park quarry were singularly fortunate in arriving at the precise moment when a very fine 10-ton block was being removed by the crane. The technical experts present were able to see at Messrs. Marsh, Son & Gibbs's another fine specimen piece of 7 tons weight. In the latter the perpendicular shaft, lined with moss and studded with ferns, which is still used for raising stone, was inspected with much interest, and wherever they went the party learned much of the methods of winning the world-famous constructive material, and heard with amazement the evidence of the inexhaustibility of the supply.

To most of the visitors the exploration was a complete education, for some were even under the impression that the stone is always obtained from the surface of the ground. The negotiating of from 100 to 150 steps down the incline of 70 to 100 feet in depth at the different quarries completely removed that misapprehension. Opportunity was also taken to dispense some of the prejudices which exist about Bath stone. There is only one system of extracting the Bath freestone in all the rival quarries, and this has been described as an inversion of the method of working coal. The coal miner undercuts, so that the mass may fall and break; the quarryman has to commence his operations at the roof by picking with an adze-shaped pick. Afterwards a one-handed saw is used to separate laterally the block that is being removed from the parent rock, and by the introduction of levers, which are weighted and shaken as necessary, the block is forcibly detached at the back and removed by a crane, the broken end being dressed with the axe. Once the first block is removed there is access for the quarrymen by means of the opening that has been made to the back of the bank of stone, and they are, therefore, able to use the saw transversely, and to separate the block from its back or hinder attachment so as to render all further breaking off unnecessary.

The three parties having completed the different inspections arrived by instalments at Monk's House, under which some of them had actually been walking in the Monk's Park quarry. Here Sir John and Lady Goldney gave each visitor a personal and cordial welcome, and tea was served in the billiard-room. The house has its traces of "Adam's" work, and was therefore full of interest. A delightful drive to Bath was taken *via* Box Hill, but on the way a brief halt was made at Corsham Court, which was inspected externally together with the church.

On the next day there was a partial inspection of some of the places of interest in the city. The architects were abroad soon after 10 A.M., spending an interesting hour at the Pump-room and the baths, ancient and modern, Mr. L. H. Wilson, the manager, and Mr. A. J. Taylor, architect, being there to receive them. Vehicles were afterwards engaged, and under the guidance of Mr. H. W. Matthews, Mr. S. S. Reay and Mr. R. E. Brinkworth a comprehensive drive was taken, concluding at the Art Gallery, and resumed after luncheon at headquarters for Beechen Cliff and Combe Down. In the early evening the mayor (Mr.

S. W. Bush) held an "At home" at the Roman Promenade, and invited to meet the visitors a number of citizens, including the members of the Corporation and all local architects.

At the service in the Abbey on the Sunday which the members attended, the Rev. Prebendary Boyd preached. He referred to the dignity of architecture. It was dignified, first, because of the strength and purpose of building. We had in this country the remains of Roman walls that had stood for certainly 1,500 years, or they might go to Rome and see there mighty structures which had stood for 2,000 years. They looked at those things with just awe and reverence. Architecture was, in the next place, a dignified art—the expression of noble ideas. While it was expressive of individual genius, of course it was expressive, and highly so, of national character. Instances were cited of characteristic Grecian and Roman architecture, and the preacher said architecture was powerful in expressing religious belief. The Grecian temple was said to be an expression of religious belief, and it was remarked as being notable that when the Romans, whom perhaps they did not wrongly think of as being more materialistic, came to rear their temples, they borrowed from the Greek. Architecture was a dignified art, too, because of its power of influencing men. Christian architecture inspired reverence and tended to provoke aspiration and noble effort. They might try these assertions that architecture was a dignified art by thinking of the great regard that was entertained for public structures in this land. In viewing their own cathedral at Wells everybody must feel the noble ideas that were embodied there, and no one could see it without having many emotions affected, and so their earnest hope was that those to whom was entrusted the work of carrying out the architecture of the day might always maintain the highest ideals and repel vigorously and successfully all those influences that would be hurtful. Painting and sculpture were open to these influences also, but in addition, in the case of architecture there were the considerations, perfectly right, indeed necessary, but to be held in their proper place, of convenience and utility. They wanted these considerations to be redeemed and transfigured by the touch of serious purpose. A noble art to be nobly pursued.

Some of the members visited Glastonbury and Wells in the afternoon. They were accompanied over the cathedral by Canon Church.

A public dinner was held at the Empire Hotel. Mr. A. E. Pridmore presided. In proposing "Success and continued prosperity to the ancient city of Bath," he expressed the hope that their excellent building material would be used in abundance when the building trade was in a better condition than it was to-day. They would go away with a grateful recollection of the kindness they had received, and would not fail to proclaim the city's attractions. They greatly appreciated the hard work of Mr. H. W. Matthews, their local friend and member, who had assisted their secretary in London and arranged a programme all had enjoyed.

The Mayor responded. He said he knew that the tendency was nowadays to allow considerations of economy to hamper the freedom of architects, and he hoped they would always seek to induce their clients to hand over their bank-books and to have such implicit confidence in their integrity, their honour and their genius that they would gladly pay for what they erected.

Mr. D. Maclean, M.P., also replied, and promised his support to the Registration Bill.

Mr. G. P. Gooch, M.P., proposed "The Society of Architects." He said that heaps of societies had got Bills which they wanted to get through, and some of them had been waiting even longer than had the Society of Architects. The lesson was not to despair, but to go on influencing those who had influence, and it might not be long before their Bill found itself on the statute book. At any rate, they had the good wishes of the members for Bath, because, as he understood the matter, it was one of simple justice and common sense.

The President expressed heartfelt thanks to Mr. Matthews for the trouble he had taken in making the arrangements which had been so successful, and as a mark of their appreciation asked his acceptance of a silver christening cup for the infant daughter whose baptism had been observed during the stay of the Society in Bath.

Mr. Matthews replied, associating Mr. Cotterell and his professional colleagues in the city generally who had assisted him with the success which had been achieved.

THE VICTORIA MEMORIAL, WINCHESTER.

THE group and enthroned figure of the late beloved Queen Victoria on the Abbey Grounds, Winchester, which Mr. Gilbert never finished, has, as we have often noted in our columns, says the *Hampshire Advertiser*, had many vicissitudes—its removals and its joint ownership. Intended to be canopied by the fine old hall of the Norman and Plantagenet kings, it was first placed out of doors on Castle Hill, in a mere courtyard of the Assize Courts, and this treatment of the fine work of art in bronze displeased alike the donor, the late Mr. Whittaker, high sheriff of Hants in the Jubilee year, which it commemorates, and the accomplished academician and sculptor. It was moved to the Abbey grounds by the Hants County Council and to the custody of the Winchester Corporation, and all that was required was a canopy. This adjunct is now in a fair way of attainment, provided the funds are obtained. The difficulties of design and approval have been surmounted by that enthusiastic and accomplished artist and veteran, the Rev. G. A. Seymour, of Winchester, whose drawing of a canopy in the Græco-Roman style has received the approbation of the President of the Royal Academy and other connoisseurs and of the County Council, who have consented to the scheme. Mr. Seymour informs us that Mr. Ambrose Poynter, son of Sir Edward Poynter, P.R.A., has written, "I am prepared to make the necessary architectural drawing in accordance with the general lines of the scheme proposed by you." That the reverend gentleman's design has met with such high testimonies of excellence speaks volumes for his artistic ability and taste, and we hope he will be spared to see a fruition of his strenuous efforts to have this splendid group completed at our local memorial of the late queen, who was a Hampshire resident for so many years, and many of whose Saxon predecessors are inhumed and enshrined in this city. The next step is monetary and voluntary; about 1,800*l.* is required, and this sum, it may be hoped, will be speedily forthcoming.

PERTH CITY HALL.

SOME time ago Mr. J. J. Burnet, A.R.S.A., architect, Glasgow, was appointed by Perth Town Council to examine the city hall and its foundations and to report as to suitability for reconstruction, or whether a new hall was advisable. His report has just been received. Having detailed the position of matters and pointed out that with one exception the entrance and exits were all on one side of the building, and that in case of fire in that portion the audience would have but one means of egress—the gallery fire door in the south gable—Mr. Burnet says that after most careful consideration he has come to the conclusion (1) that the present hall buildings are quite inadequate both as a hall and in respect of the modern adjuncts to a hall for such a city as Perth; (2) that as the present walls are dilapidated, it is highly inadvisable that any portion whatever of the existing structure shall be incorporated in any scheme of reconstruction, and consequently (3) an entirely new building is necessary. In considering a scheme for a new town hall he submitted block plans suggesting the formation of streets on the north and south sides. He is of opinion that a creditable hall of simple design without a tower could be erected for 20,000*l.* The tower might cost from 3,000*l.* to 4,000*l.* In his plans he had taken the hall to accommodate 2,500, of which at least 1,000 would be in the gallery and platform. Had he felt at liberty to suggest any other site he would have preferred to make the hall buildings part of the same block as the present municipal buildings, either at the corner of High Street and George Street or facing the river in Tay Street, but he inferred that the Council had decided that King Edward Street was the proper site, and had therefore endeavoured to outline a scheme for buildings there separate from the municipal buildings. They might be less convenient on civic ceremonial occasions, but would still be dignified and worthy of the beautiful city of Perth.

Mr. C. Mawson, head-master of the Shipley School of Art and director of the local museum, has been selected, out of a large number of applicants, as head-master of the Warrington School of Art, in succession to Mr. C. B. Aylward, who has held the post for many years and is about to retire.

NOTES AND COMMENTS.

WHEN one reads the account of the Fleet River, and of such approaches to it as Breakneck Stairs, one is gratified that it is no longer visible. But Paris still possesses a Fleet in the Bièvre. For over thirty years, or, in other words, since sanitation was considered worth scientific attention, the little river has been condemned. An occasional English visitor to the Gobelins may have the courage to look out for it, and students of painting in search of the picturesque sometimes utilise it for a subject. It is bounded by many of those tumble-down houses which in most places are found wherever tanners or skin-dressers and dryers follow their occupation. The water, or the fluid which passes by that name, is continually varying in colour, according to the refuse poured into it. It is now again proposed to conceal the Bièvre by covering it. But for that purpose it will be necessary to come to agreement with the owners of various establishments along the sides, for whom it serves the purposes of a sewer. Twenty-eight out of ninety-one are opposed to any change. It is one of the blots of Paris which the Municipal Council avoid when they are conducting foreign visitors through the city. Vanity may be more influential than sanitation, and it is now believed that if the Bièvre is allowed to sluggishly pass into the Seine it will be beneath the close covering of masonry.

FOR painters of costume, archæologists and designers the exhibition of the Golden Fleece which was opened in Bruges on Tuesday will be attractive. The Order was founded in the old city on the occasion of the marriage of the Duke of BURGUNDY with ISABELLA of Portugal in 1430. The King of SPAIN, who is the sovereign of the Order, has taken great interest in the exhibition, while the Emperor of AUSTRIA and the King of the BELGIANS have also co-operated. We need not say how distinguished the Order has been, for the Duke of WELLINGTON set greater value on the golden badge than on any of his decorations, and on some occasions he wore it alone. The exhibition is intended mainly to exemplify the history of the Order from 1430 to 1598. Portraits of the sovereigns and of the chevaliers, insignias of the chapters, illuminated manuscripts and representations of ceremonies have been brought together for the first time. From Paris forty-four miniatures by JEHAN FOUCQUET have been contributed. The Emperor of AUSTRIA has lent costumes and gold plate. The King of SPAIN has not only contributed a collection of various things relating to the Order, but he has lent a dozen of his halberdiers, who are to remain in Bruges until the close of the exhibition in September.

ILLUSTRATIONS.

VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON.

THE public will shortly be able to see the whole frontage of the South Kensington Museum without any obstruction to the view. The masonry which Messrs. HOLLOWAY & GREENWOOD have executed will sustain close examination. The Portland stone employed has been derived from the Coombe Down Quarries at Portland, belonging to the Bath Stone Firms, Ltd. The total quantity supplied was about 16,800 tons.

HENLEY HOUSE AND THE HOMESTEAD, GREAT MISSENDEN, BUCKS.

THESE two houses have been built for Mr. ALFRED DUNHILL, stand on a branch of the Chiltern Hills near Great Missenden, Bucks, and have extensive views of the surrounding country. They contain respectively morning-room, dining-room, drawing-room, kitchen and usual offices, and four and six bedrooms.

In Henley House a feature has been made of the staircase window, which also lights the entrance hall. This window shows in lower gable on front elevation, inside the ceiling follows curve of window, and shelves are arranged at each side for curios, &c.

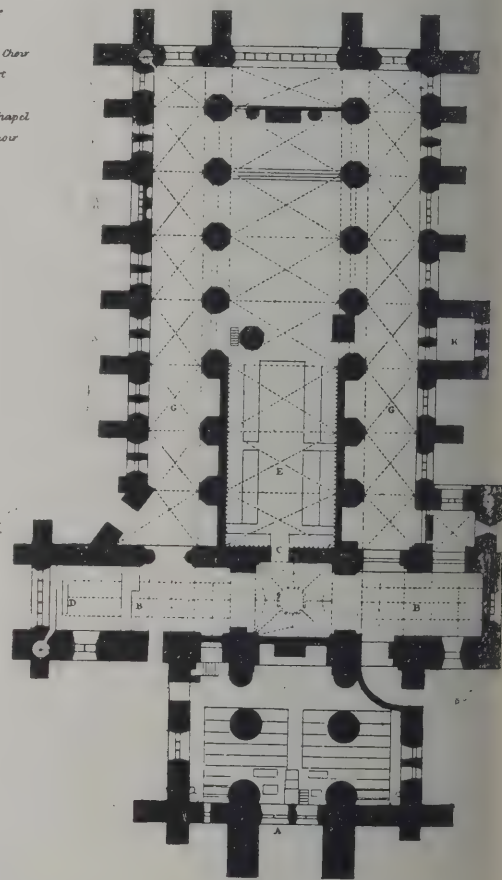
The walls are of brick covered with rough-cast outside and whitened, and the roofs are covered with Bedfordshire hand-made tiles. All windows are of the casement type painted white; the frames, as also all outside wood and ironwork, are painted green.

The architect was Mr. J. BRUCE MERSON, of 17 St. Swithin's Lane, London, E.C., and the contractors were Messrs. ALDRIDGE, of Willesden.

MESSRS. DEBENHAM & FREEBODY'S PREMISES, WIGMORE STREET, W.

CATHEDRAL SERIES.—CARLISLE: VIEW ACROSS TRANSEPTS FROM SOUTH.

- A West Entrance
- B B. Transept
- C Entrance to the Choir
- D Consistory Court
- E Choir
- F St. Catherine's Chapel
- G Gables of the Choir
- H Pulpit
- I Bishop's Throne
- K Vestry



Scale of Feet
50 100

PLAN OF CARLISLE CATHEDRAL.

HOUSE AT BEZING, BASSES PYRENEES, FRANCE.

THIS house was erected at Bezing, a village about thirteen miles from Pau, at the foot of the Pyrenees, for Dr. EDWARDS, of Pau. The basement was formed of rough stones and cement. The stones were taken from the river Gave running at the foot of the grounds. This part of the house was erected by a local French builder. The whole of the woodwork for the upper portion was sent out from England and erected by English workmen sent out to the site. The elevations illustrated face east and south and have an uninterrupted view of the Pyrenees. The chief feature is the verandah running round three sides of the house. This affords an excellent shelter from the fierce sun in the summer, and keeps the house warm in winter and protects it from the prevalent winds. The architects are Messrs. HAYWARD & MAYNARD, of 20 John Street, Adelphi, W.C.

EXHIBITIONS IN GREAT BRITAIN AND IRELAND SINCE 1890.*

SINCE the publication in the Society's *Journal* of November 8, 1889, of the Memorandum on Exhibitions held in Great Britain and Ireland, which was prepared at the request of the Secretary of State for Foreign Affairs for the use of the committee then occupied in organising the exhibition at Chicago, there have not been many exhibitions held in this country of an important character, or properly entitled to the epithet international.

The largest and most successful was that held in Glasgow in 1901. This resulted in a surplus of over 5,000*l.* One held in the following year at Wolverhampton was less successful, as it resulted in a deficit of about 1,000*l.* This was on a smaller scale than Glasgow. A still smaller exhibition was held at Bradford in the year 1904, which left a surplus of nearly 15,000*l.* A successful exhibition was also held at Cork in 1902, but the surplus over 6,000*l.* was due to the liberality of the subscribers, without whose assistance the exhibition would not have paid its expenses. In 1896 one was held at Cardiff; it had a small balance on the wrong side. Many smaller exhibitions were held at some of the chief centres of industry—Manchester, Liverpool, Bristol, Birmingham, &c. Some of these were of the nature of private speculations, others were promoted by local committees. Most of them may be said to have been popular and successful. In many cases they were certainly profitable to their promoters and beneficial to the local industries.

In London no large exhibitions have been held, though there have been a great number of various characters, particulars of some of which are given a little later on. It is certainly the fact, as far as this country is concerned, that the tendency of late years has been towards exhibitions of a special character dealing with particular trades or industries. These are of necessity small as compared with the large international exhibitions of the past, but they seem on the whole to be regarded as more useful for business purposes by manufacturers and traders than such large exhibitions. They do not necessarily appeal specially to the general public, but they offer useful opportunities for the transaction of business, and, judging from their success, such opportunities are much appreciated and generally utilised.

It must not be forgotten that exhibitions on the scale of Paris, Chicago or St. Louis can only be carried on at a very heavy loss, which loss has to be made good by subscriptions or grants from one source or another. The receipts from the admission of visitors and from the various payments made by those visitors, a large proportion of which of necessity reaches the exhibition coffers, can never be sufficient during the season for which an exhibition is opened to meet the very heavy charges for buildings, installation, &c., when these are on the large scale and of the elaborate character induced by international rivalry. It may be worth while for a country or a city to incur this loss in view of the indirect benefits gained, but it must be regarded as most probable that in the future the occasions on which such indirect benefits will counterbalance the certain loss will be few and far between, though they are quite likely at intervals to recur. It is probable that in the case of Paris the indirect profits to that great city are sufficient to induce the Government to keep up the series of Paris exhibitions, and it would be a matter for regret if the series were not continued, but it is difficult to name any other city which would gain in the same way. A new and rising country, anxious to develop its industries, might be inclined to face the cost of advertising them by an exhibition on the international scale, but so far as careful consideration of the conditions may justify prophecy, it seems unlikely that in the immediate future any of the older countries will be willing to meet the necessary expenditure. It therefore seems reasonable to expect that in the future we shall have a number of smaller exhibitions, of which a considerable proportion will be confined to some special subject, a group of subjects, rather than any of the great international exhibitions of the past.

I.—London Exhibitions.

During the period under consideration there have been in London no important exhibitions of an international character, but it may be useful to put on record some

account of the exhibitions which have been held. The two most important exhibitions held in London during the period 1890-1906 were certainly the Royal Military Exhibition at Chelsea in 1890 and the Royal Naval Exhibition at the same place in 1891. Both of these were extremely successful. They were held on ground belonging to the Chelsea Hospital, an area of about $7\frac{1}{2}$ acres. The exhibits were mainly loans, but trade exhibitors were charged 5*s.* per square foot.

The number of visitors to the Royal Military Exhibition, 1890, was 923,761. The total receipts of this exhibition were a little over 55,000*l.*, of which 36,750*l.* came from admissions and about 9,000*l.* from concessions, sale of space, &c. A little over 6,000*l.* was received from donations. The expenses amounted to over 45,000*l.*, of which 18,500*l.* was for buildings, installation, &c. The surplus was nearly 10,000*l.*

The attendances at the Royal Naval Exhibition, 1891, were much larger—2,351,683. The total receipts were nearly 155,500*l.*; of this admissions accounted for 109,000*l.*, and concessions, space, sale of catalogues, &c., for about 46,500*l.* The expenditure amounted to about 108,500*l.*; of this 36,000*l.* was for buildings, installation, restoration of grounds, &c., 10,700*l.* for entertainments, 6,500*l.* for illuminations. There was a balance of 47,000*l.* The profits from these two exhibitions were devoted to certain military and naval benevolent institutions.

As mentioned in the previous memorandum, a series of exhibitions was started at Earl's Court after the last of the South Kensington exhibitions—the Colonial and Indian Exhibition held in 1886. These have been continued since and have proved very popular and well attended. They are in the hands of a private company, and are believed to have been profitable, the grounds being a very popular place of resort during the summer,* and providing what is much appreciated in London, a place of outdoor recreation under good and careful management. During the same period a number of exhibitions of different characters have been held at the Crystal Palace, Sydenham. These have most of them been of a special character, and though some of them have been termed international, they were none of them genuine international exhibitions.†

At the Imperial Institute several exhibitions have been held, all of them devoted to some special subject. The first of these was in 1894, and dealt with pottery; in the next year (1895) the subject was photography, in 1897 there was a yachting and fisheries exhibition, in 1898 an exhibition of acetylene generators, in 1899 an exhibition of ecclesiastical art, and in 1900 one of English education.

In 1899, at the suggestion of the Society of Arts, the Science and Art Department held an exhibition of lithography to commemorate the invention of lithography by Senefelder in 1798. This was followed by a series of exhibitions of methods of illustration:—1901, illustration by typographical methods; 1903, engraving and etching; 1905, photogravure and other photographic methods. These were international, and included large and representative collections of foreign work.

A small general industrial exhibition was held in the People's Palace, East London, in 1896.

In addition to these were many other smaller exhibitions, and also a number of exhibitions dealing with special subjects, most of which were at the Agricultural Hall or at Olympia. The more important of these dealt with such subjects as tramways and light railways, bicycles, electrical appliances, engineering, motors, building materials, colliery and mining plant, gas, confectionery, furniture, brewers' products, groceries and provisions, tobacco, boots and shoes, &c.

* The present series commenced in 1895, and include the following:—Empire of India Exhibition, 1895; Empire of India and Ceylon Exhibition, 1896; Victorian Era Exhibition, 1897; International Universal Exhibition, 1898; Greater Britain Exhibition, 1899; Woman's Exhibition, 1900; Military Exhibition, 1901; Paris in London Exhibition, 1902; International Fire Exhibition, 1903; Italian Exhibition, 1904; Naval, Shipping and Fisheries Exhibition, 1905; Imperial Royal Austrian Exhibition, 1906.

† The Secretary of the Crystal Palace has kindly furnished the following list of exhibitions held there since 1890:—Photographic, 1890; Mining, 1890; Horticultural, 1891; Photographic, 1891; Electrical, 1892; Photographic, 1893; Sports and Pastimes, 1893; South African, 1895; Horse-drawn and Horseless Carriages, 1896; Imperial Victoria Exhibition, 1897; Photographic, 1898; Article Club, 1899; Music, 1900; Naval and Military, 1901; American, 1902; Engineering and Hardware, 1903; Music, 1903; Food and Grocery, 1903; Indian and Colonial, 1905; Food, Health and Hygiene, 1906; Pianoforte and Music Trades, 1906.

* Prepared at the request of the Board of Trade for the information of the Japanese Government by Sir Henry Truman Wood, secretary of the Society of Arts.

The occasional exhibitions of arts and crafts promoted by a committee formed for the purpose should be mentioned, as affording interesting evidence of the character of and the changes of method in the artistic industries of the country.

II.—Provincial Exhibitions.

Glasgow.—A second exhibition was held at Glasgow in 1901. This, like the previous exhibition of 1888, attracted a very large number of visitors, and was a considerable financial success. The total receipts amounted to 404,105*l.*, of which 283,024*l.* was from admissions, 84,122*l.* from refreshment and other concessions, and 34,923*l.* payments for space. The surplus, as estimated in the published balance sheet, was 30,571*l.* It was expected this would be somewhat increased by the sale of the buildings. The cost of the buildings and grounds was 222,886*l.*, 37,936*l.* was paid for music and entertainments, and there was a women's section costing 1,314*l.* The general administration expenses were given as 51,574*l.* and the engineer's department 36,890*l.* The total number of admissions was 11,559,649. The admission was 1*s.*, children half-price, and during a certain portion of the exhibition the entrance after 5 P.M. was reduced to 6*d.*

Bradford.—In the year 1904 an exhibition was held in Bradford to inaugurate the opening of the Cartwright Memorial Hall, which was presented to the city by Lord Lister. This was not entitled an international exhibition, but there were a few foreign exhibitors. The exhibition was not on a large scale, but it was a distinct financial success. There were in all nearly two million and a half visitors, but this number appears to have included rather more than 40,000 free admissions. The total receipts amounted to 66,114*l.* The expenditure was 51,148*l.*, leaving a surplus of 14,966*l.* This surplus was devoted to the expenses of the Cartwright Memorial Hall—5,000*l.* towards the cost of erection, and 10,000*l.* to the purchase of works of art and furnishings for the hall. The receipts from admissions were 41,828*l.* The amount received in payments for space was 4,551*l.*, the charge to exhibitors being 3*s.* per square foot; 11,688*l.* was received from the various concessions and entertainments.

Wolverhampton.—In 1902 an international exhibition was held at Wolverhampton. Financially, this was unfortunately very far from successful, as it resulted in a deficit of about 34,000*l.*, which had to be met by the guarantors. The total expenditure was about 93,000*l.*—buildings 35,174*l.*, power and light 9,088*l.*, entertainments 13,986*l.*, fine arts 2,000*l.*, advertisements 5,514*l.* The total receipts were about 59,000*l.*—season-tickets 9,117*l.*, admissions 27,000*l.*, sale of space 6,033*l.*, concessions 12,056*l.*

Cork.—An international exhibition was held at Cork in 1902. This resulted in a surplus of 6,179*l.*, but it can hardly be said that this was earned by the exhibition, inasmuch as donations were received amounting to nearly 16,000*l.* The total receipts were 61,519*l.*; the expenditure was 55,340*l.* Besides the amount of donations above mentioned the principal items of receipts included 26,000*l.* admissions, 8,500*l.* sale of space, and various concessions and other receipts 9,500*l.*

The exhibition was reopened in 1903, and a portion of the surplus was carried forward towards the expenses of the second year. The remainder was applied to the purchase of ground for a park.

Cardiff.—A fine art, industrial and maritime exhibition was held in this city in 1896. The exhibition was held in Cathays Park, the use of which was granted by the late Lord Bute for the purpose. The number of admissions amounted to about a million. The expenditure amounted to 31,000*l.*, of which buildings and machinery came to about 15,000*l.* and electric light 3,000*l.* The receipts amounted to rather less than 30,000*l.*, the balance of 1,700*l.* being made up by the guarantors. Of the receipts 22,500*l.* was from admissions and 5,700*l.* from rent of spaces, concessions, &c.

Dublin.—An international exhibition is now being organised in Dublin. The arrangements are now (January 1907) far advanced towards completion, and hold out every promise of success.*

The Huddersfield Town Council have rejected a proposal to extend the technical college at a cost of 3,825*l.* for the purpose of providing special facilities for dyeing.

* Since the date when this memorandum was prepared the exhibition has been opened and is now believed to be pursuing a successful career.

ARCHITECTURAL EXHIBITION, EDINBURGH

THE Architectural Exhibition which has been organised in connection with the jubilee of the Edinburgh Architectural Association was formally opened on the 19th inst. in the galleries of the Royal Scottish Academy. Sir Thomas D. Gibson-Carmichael, Bart. The chair was occupied by Mr. Hippolyte J. Blanc, R.S.A., president of the Association, and the chairman of the exhibition committee. According to the *Scotsman* there was a large representative company present.

The President said he felt that no apology was required for intruding such an exhibition as that upon the group of attractions that claimed a citizen's attention in these busy times. The Edinburgh Architectural Association, in promoting the exhibition, offered as a reason the circumstance of its having reached the fiftieth year of its existence. The fact was not too well recognised by the citizens, probably because, while constant in labour to stimulate a popular interest in architecture, its methods had been rather those of quiet persuasion than of aggressive assertion. It was, however, conscious of having exercised some influence for good; but with the true modesty characteristic of artists it "might blush to find it fame." That they had already marked time during their career of fifty years was evidenced in an exhibition, similar to the present, promoted about twenty-five years ago. The present exhibition differed from its predecessor in respect that it was more comprehensive as regards quantity of material exhibited. The exhibits comprised works of over a period of sixty-seven years, collected from all parts of Scotland. The aim and object of the exhibition were to enlist the public in a more intelligent understanding of architecture, and greater appreciation of the learned profession who made the practice of it their daily occupation. The city could be made—it might also be marred—by its architecture. Happily for us, we could boast a score of men who within the past hundred years have furnished to the city monuments of their genius, models for all time; and if their works were seriously and reverently studied, the genius of their authors would reveal itself in the appropriateness of conception and the studied suitability to situation. For examples they had only to look to the dignified tower of St. Stephen's Church, arresting the slope of the hill from George Street; to Charlotte Square, with its setting of St. George's Church; to St. Andrew Square, with its Royal Bank; to the Bank of Scotland, perched in full view from all parts of the Prince Street mile; to the Free Church, with the fine effect produced by its combination with the spire of the Assembly Hall behind it; to Waterloo Place, with its graceful, elevated porticos guarding the approach; and to the High School, sublimely nestling and staged upon its rocky bank—all these noble examples of thought, academic ability and artistic skill. These were a few of the works which had contributed to the traditional fair fame of our beautiful city. It might be that familiar daily contact with them made us regardless of their merit and teaching. It was to be feared, however, that what had been styled the "Franco-Berber-American" invasion, unless intelligently controlled, might rapidly overwhelm our best thoroughfares, to the destruction of all that was good, true and beautiful. It was confessed by one of the favoured Lord Mayors from England who had been invited to take part in the recent festivities at Lyons that the visit had opened his eyes. He stated that in his city they were not a patch on Lyons in architecture and in matters of art, and that his people treated art in such a way that he wished his councillors might go to Lyons annually to see how things ought to be done. Did we continue the character of such compositions as those to which he had referred we might offer invitations to civic rulers to visit Edinburgh and show them how it had been done here. But, alas! while our civil and municipal architecture were all that could be desired in the treatment of many of the city's extensions, we had, unfortunately, markedly degenerated. In the Dalry and Gorgie districts we had repeated the distortions and slums of the Canongate without the charms of its grand old history, and the confined tortuosity of the Pleasance had found an unfortunate echo in the ill-conditioned Morningside Road. Could not our rulers look ahead and see to it that, where amenity existed, it should not be intruded upon by anything foreign to its original setting, and recognise also that utility and amenity should always and could be associated? If such an exhibition as that helped them to realise more the beauty of our city, in which lay its fortune, and the duty they owed to it, as trustees for posterity.

Mr. Thomas Gibson-Carmichael said he had much pleasure in declaring the exhibition open. He gathered from the remarks of Mr. Blanc that its objects were to raise the interest of the public in architecture and to show the respect in which the public held architects. Mr. Blanc had sent him a newspaper the other day, from which he gathered that the architects of Edinburgh had the reputation that there was a scarcity of large orders for country houses given to Scotland. It might be that there was not so great a demand for country houses as formerly, but he thought that there would be never quite certain what the future would cost. As to the appreciation of architecture by the general public, he did not suppose that at any time in the history of the world, or in any country, was there ever a more complete appreciation of architecture. It was quite possible that the inhabitants of one country, or the people in one town, might have admired, or professed to admire, works of art for these would always appeal to people because of the scientific skill which they required. Mr. Blanc had said that the architecture of Edinburgh had somewhat fallen off during the last fifty years, and that the influences of France, Germany and America might do harm to Princes Street. He did not know, but he was inclined to think that there were a great many lessons to be learned from the architecture of other countries. He believed there was no country in which the appreciation of architecture was greater than in America. So far as he could learn, it was in American towns where there was an immense feeling of pride in their own architecture, where adaptation was most diligently practised. If architecture was to be a flourishing art, a live art, an art which would appeal to the people, it could only be so if the architects showed that they were able to adapt themselves to the latest developments of science. For his part, he was glad to think that the architects of Scotland, or the architects, owed as much to the introduction of turnpikes as to anything else. By the development of agriculture the Scottish people were enabled to employ architects in beautifying their country and to spend the surplus income which they derived from their estates on works of art. That time was, however, past, and people had now to live more in the towns than in the country. The future of architecture, he believed, was in those who could devote themselves to making fine buildings suitable for the towns, and in that way the architects of the future had an infinitely larger public to appeal to than the architects of the past. It seemed to him, therefore, that the thing they ought to be interested in and try to do was to get the people interested in town architecture. He admitted that there was a sad want of interest in the architecture of towns. They had only to look at what had been done in London to realise that. All that laymen like himself could do was to see what beauty there was in a work of art, and to criticise it in a hostile spirit. Mr. Blanc had said that there was a falling off in Edinburgh, and that it was very possibly the case. It was a pity to see structures moved in which they saw beauty, but he was afraid that this was not the only town in which that was done. A man who resided in or near Edinburgh, looking

The wayfarer passing along the high road leading from Carisbrooke to the village of Calbourne sees little of Swainston excepting its woods and broad meadows, and it is only as a matter of special privilege that the members of the Hampshire Field Club are to-day enabled to visit the

house at Swainston. To the archæologist the district we are traversing is of great interest, as hereabouts are to be found evidences pointing to settlements of extreme antiquity. On the downs lying to the southward of Swainston many Anglo-Saxon remains have from time to time been unearthed, and in the British Museum and at other places, and also in the museum at Newport, are to be seen objects of great interest which have been obtained from the burial-places on the chalk hills in this locality. That such settlements took place in this valley to the northward of the hills one may reasonably, and no doubt correctly, infer from the place-name of Swainston itself, which signifies the "tun" or settlement of a "Swain," Sweon or Swede. In this connection it is of importance to note the old spelling of the name "Sweyneston." Our late friend, Mr. T. W. Shore, in his learned work on the "Origin of the Anglo-Saxon Race," deals very fully with the evidences which point to men of Swedish origin having accompanied the Frisians, Jutes and Goths in the colonising of the old kingdom of Wessex, which included the Isle of Wight. Dealing with the migration of the Danes and other tribes from the Baltic coast, he mentions various place-names which clearly have an Anglo-Saxon origin and point to the settlements of Swedish men. Among these are places called Swanesisg, in Berks, and Swanetun, in Norfolk, the latter being almost identical in sound with Swainston, in the Isle of Wight. Mr. Shore says on page 140:—"In searching for traces of Swedes in England we must look for them in proximity to Goths, Norse or Danes, with whom they probably migrated, and look for traces of their names under the names of Sveal, Sweon, Swein, and perhaps Swin." We have a clear trace of Jutish settlement in the place-name of Gatcombe, being the Celtic "cwm," a hollow or valley where dwelt a Gat or Geat, the latter being an ancient name denoting a Goth or Jute. The Goths of Gatcombe and the Swedes of Swainston were settlers who may have come into the island at about the same time and formed their settlements in near proximity, the two places being about $3\frac{1}{2}$ miles apart.

Turning to more recent and historical times we find much interest in recalling the fact that to-day our itinerary takes us along roads which traverse the district where was situated in Norman and later times the royal park attached to the castle of Carisbrooke. Known as Alvington Park, its existence is recorded in the names by which the farms and other places in this valley are still known. Park Cross and Park Place we passed just now when coming from Carisbrooke. New Park Farm, Great Park Farm, North Park Copse, Park Green and Parkhurst are all place-names which record the existence of the park. Amid the fair acres bordering on the western side of the park stood the house of Swainston, but of that older house few traces now remain excepting the very fine old chapel and the hall. Around the old house centre historical associations of an interesting character. Held by the Bishop of Winchester as abbot of the monastery of St. Swithin, the manor of Swainston or Calbourne was, as it were, the centre from which were administered the affairs of the old borough of Francheville, or Newtown, the bishop's free town and port, the manor having been granted to the Bishop of Winchester by King Egbert about the year 826, and the boundaries of the manor, as then constituted, included the town of Francheville. Probably a dwelling of Saxon origin, possibly erected by the earliest settler, existed here at one time, and it gave place to a more important edifice erected in the eleventh century, which again was remodelled by Edward I., who acquired the manor from the then Bishop of Winchester in 1284. In 1285 Edward I. himself came to Swainston, attended by his chancellor and others, and the burgesses of Francheville obtained from him a confirmation of their charter which had been granted by Aymer, Bishop of Winchester, in 1256, and the confirmation of that charter was sealed at Swainston by Edward I. on November 5, 1285. Edward II. granted Swainston to his son, the Earl of Chester (afterwards Edward III.), who, in his turn, granted it to William de Montacute, Earl of Salisbury, from whom it descended to the Earl of Warwick, the king-maker. On the death of the Earl of Warwick the manor came to his son-in-law, the Duke of Clarence, and from him it descended to his daughter Margaret, the Countess of Salisbury, by whom it was held until it escheated to the Crown through the execution of the Countess of Salisbury by Henry VIII. in 1541. It was granted by Queen Mary in the fifth year of her reign to Winifrid, daughter and co-heir of Henry Lord Montagu, son of the Countess of Salisbury. Winifrid married firstly Sir Thomas Hastings, and secondly Sir Thomas Barrington, of

Barrington Hall, Essex. The manor descended to Sir William Barrington, and in the Barrington family manor remained for 300 years. Ultimately the manor passed to the Simeon family by the marriage of Sir Richard Simeon, Bart. (grandfather of Sir Barrington Simeon), the heiress of Sir Fitz-William Barrington. The manor Swainston, or Calbourne, has had a very chequered career as it has been escheated to the Crown no less than times through the attainer of its various owners.

The present house, as we now see it, is a good example of Georgian work, and it is light and airy, with lofty rooms of good proportions. In the entrance hall and on the stairs are preserved the fine set of carved oak chairs which formerly stood in the old town hall of Newtown. The chairs are good examples of seventeenth-century work, possibly they may be of somewhat earlier workmanship. The chapel and old hall also merit our attention, and apparently the only remains of the earlier building which now exist. In conclusion, let me call your attention to the beauty of the situation of the house, and also remind you that our best thanks are due to Sir Barrington Simeon for granting to the members of the Hampshire Field Club permission to visit this charming place.

Mr. Dale said there had been Anglo-Saxon remains discovered in the hill close by; these were remains of a race known as the Jutes, who had a settlement in Kent. The objects discovered in the island were identical with those found in large quantities in Kent, and which were carefully preserved in the British Museum. Similar remains had been found in the Meonstoke Valley, which was also in the British Museum. Mr. Colenutt had referred to some remains that were in Newport museum; it was true they were there, but when he saw them they were a top room covered with dust. Some of these objects were peculiarly Jutish work, and when he was there in May 1906 he called attention to their value, and he hoped they would be rescued from their present position so that they might be better seen. With regard to Newtown, it was many years since the Club visited the interesting building there known as the town hall. One of the most interesting objects from that place was the mace to which Mr. Colenutt had referred, and which he was sorry they were not able to see that day; but Mr. Percy Stone's book was on the subject, and they would find a very good drawing of it there. The mace was of the fifteenth century. In Southampton they had no less than four of these early maces. They were from 18 inches to 2 feet long, and they were interesting illustrations of the evolution of the battle-mace to the modern mace. The Newtown mace was particularly interesting because of the arms at the top. When the British Archaeological Association visited the island some years ago they showed to them, and during the inspection the top fell off and it was then seen that the arms of the Commonwealth were there, having been substituted for the royal arms which were replaced at the Restoration.

Mr. Percy Stone said the ancient arms were not those of Edward IV., but of Henry VII. He suggested it would be well if these interesting island antiquities could be brought together in a museum, and perhaps some day they would find a place in the very nice museum which had now been established at Carisbrooke.

Mr. Colenutt said it would be of interest to those of a literary turn to know that a life-long intimacy existed between the late Sir John Simeon and the poet laureate, Alfred Tennyson. The cedar tree to which he had directed attention was known as Tennyson's tree, and it was said that while visiting Sir John, Tennyson wrote "The Charge of the Light Brigade." Several lines in that poem very well fitted in with the surroundings of the place. There was also a poem written there by Tennyson on the death of Sir John Simeon, which occurred in 1870. He called attention to a suite of oak carved chairs which were formerly part of the furniture of the old town hall at Newtown.

The party then visited the old hall or chapel, the portion of the original house remaining. Mr. Colenutt read a few words concerning this building, and added that Calbourne, which they were about to visit, was described in "The Silence of Dean Maitland," and that the features described in that book would be recognised. The old Newtown charters were then inspected, and Mr. Colenutt was quitting the house the Rev. G. W. Minns proposed a vote of thanks to Sir Barrington Simeon for having permitted the visit. Sir Barrington, he said, was very well known in Southampton, and the members of the club coming to that town would particularly regret that his absence that day was caused by illness, and would hope most

that in due course he would be restored to health. He also thanked Mr. Gunner for having received them, and said the charters he had brought for their inspection were extremely valuable.

Mr. Gunner, in reply, said it was a pleasure to him to meet the Club for the first time. He was a Hampshire man, and in the Isle of Wight was only what was called there an "overner." He was sure Sir Barrington Simeon extremely regretted he was not able to be present to meet them, and he should certainly write and inform him of their kind expression of thanks.

AN IRISH COMPETITION.

A SPECIAL Council meeting of the Royal Institute of the Architects of Ireland was held on Friday last to consider the conditions of competition for the proposed consumption sanatorium for the County Cork joint hospital board. Mr. C. H. Ashworth occupied the chair, and there were also present Messrs. R. C. Orpen, J. Holloway, H. Allberry, F. G. Hicks and James H. Webb, hon. sec. The hon. secretary reported that he had sent the "Conditions of Competition" as approved by the Institute to the secretary of the joint board, together with a letter pointing out that the conditions of the competition advertised by the joint board were not in accordance with the regulations therein, which fact would preclude architects of standing from competing. In reply a letter had been received from the secretary of the joint board, reiterating the main provisions of the competition, with the additional information that the work would be executed under the supervision of the joint board's engineer, and that the engineering and medical experts of the Local Government Board would be asked to act as assessors. The hon. secretary was instructed to write to the secretary of the joint board regretting that the board had not seen its way to amend the conditions, and informing him that the Council thought it its duty to point out to the members of the Institute the undesirability of entering the competition.

CAPACITIES OF CAST-IRON SECTIONAL BOILERS.*

A CASUAL reference to a boiler-maker's catalogue appears to give the necessary information as to the capacity of any boiler. But as a matter of fact this information, which possibly is accurate, is never complete. The capacity of a boiler is never constant. It is subject to variation from several causes. The quality of the fuel, the intensity of the draught, and, more important still, the duration of the test at which its capacity was estimated—all have a considerable influence on the result. For the two first causes the boiler-maker cannot, of course, be responsible. But with regard to the third, all heating engineers should, and I believe when its significance is more fully appreciated will, demand definite information. Everyone is aware that the heating power varies with the amount of air which is being supplied to the furnace. If we require a high temperature a large supply of air is necessary. The blast furnace and a smithy fire afford good examples of this, as do also the old-fashioned household bellows, which are sound in principle although they are dying out of fashion. But in all these cases the effect of forcing the air through the furnace is to consume the fuel more rapidly, and it is here that the element of time creeps in. It is absolutely useless to say what the heating power of a boiler is unless we are also told how long the charge of fuel is able to maintain the amount of radiation given, under the heading "Actual heating power," at the desired temperature.

In a power plant, where steam is being rapidly used in some mechanical operation, and where it is economical to run your boiler at a high pressure, the nature of the circumstances demands constant and watchful care; and having this constant care, it is of course possible to continually replenish the fires. But in an ordinary heating apparatus the circumstances are different. Our customers cannot and will not set aside to one of their men, unless it is an installation of considerable magnitude, the sole duty of stoking. What they require is a boiler which they can stoke over night and find still alight in the early morning. Because a boiler will maintain, say, 1,000 square feet of radiation at the desired temperature for five hours, it is not correct

to rate its actual heating power as 1,000 square feet. What we want is a boiler to run unattended for eight or ten hours; and the catalogue rating should, to my mind, be the amount of radiation it can carry that time in severe winter weather.

Let us examine this more closely. We will suppose the above boiler is installed in an apparatus where there is 800 square feet of steam radiation and 200 square feet of exposed mains. The boiler is attached to a chimney, the draught of which will burn out the fire in five hours. If at the end of that time the fuel charge is not renewed, the fire will die out and the radiators become cold. This would naturally happen during the night, and in horticultural work the results might be disastrous. We should naturally appeal to the manufacturer, and he would maintain that the boiler will heat 1,000 square feet of surface, and in the present unsatisfactory state of boiler catalogues he would be right, because the basis of his calculation is not stated. As a matter of fact, this boiler on an eight-hour basis should only be rated at 625 square feet. The reason is that a 1,000 square feet of steam radiation, at a temperature of 220 degs. Fahr. will condense 300 lbs. of steam per hour, or 1,500 lbs. in five hours. If the evaporative power of the available fuel charge is 1,500 lbs. of steam, and the boiler must run without attention for eight hours, we must divide 1,500 into eight parts, which will give 187.5 lbs. of steam per hour for eight hours, and 187.5 lbs. of steam per hour will supply only 625 square feet of radiation and no more. In the same manner the ten-hour rating would be 500 square feet. This is assuming that one square foot of radiation will condense .3 lbs. of steam per hour with steam at 2 lbs. pressure.

It may be interesting here to refer to the amount of steam which various forms of radiating surface will condense, as it gives yet another instance of the complexity of the boiler rating question.

A series of tests of a very effective type of radiator gave the following results. I was not present at these tests, but I believe the method adopted was by carefully collecting and measuring the condense over a period of one hour. The steam was at 2 lbs. pressure, and the results were as follows:—

Steam condensed in lbs. per sq. ft. per degree difference of temperature.				Heat radiated.
4-column radiator	.	.	.00166	1.60 B.T.U.
3 "	"	"	.00177	1.70 "
2 "	"	"	.00181	1.74 "
1 "	"	"	.00226	2.10 "

With a temperature difference of (220-60) 160 deg. F., and assuming the amount condensed to be constant for each degree, an assumption which is not strictly accurate, but is nevertheless near enough for practical purposes, the amounts condensed per square foot of surface per hour would be:—

Steam 160 degs. F. difference of temperature.				
4-column radiator	.	.	.26560	lbs. steam.
3 "	"	"	.28320	" "
2 "	"	"	.28960	" "
1 "	"	"	.36160	" "

These results are instructive both to boiler-makers and heating engineers. To the former it shows that even though a boiler is somewhat over-rated, it may yet be able to heat quite comfortably the stated amount of surface if it takes the form of four-column radiators, and quite fail to do so with single-column radiators; and to the heating engineer it shows that he will be able to maintain a guaranteed temperature with a smaller amount of radiating surface if he uses single-column radiators instead of four-column radiators. The explanation of this is simple. Radiation takes place always at right angles to the tangent of any point of the radiating surface. The form of the four-column radiator is such that a large amount of radiant heat must fall upon the other heated surfaces in close proximity to it; all that so falls is lost. It does not assist in warming the room. It is only that which escapes directly into the room, without encountering any intervening portion of the radiator which does. In a three-column radiator the condition is better; in a two-column radiator it is better still, and in a single-column radiator, if it is of good design, you get the best result.

What is known as the hospital radiator is even better than the ordinary single column. In this radiator the sections are rather wide apart, and this allows of a larger proportion of the heat rays passing freely away from the radiator. In addition to the radiant heat, heat is imparted to the air by contact. In this respect the boxed-in surfaces

* A paper by Mr. Kenneth Gray, read at the meeting on Tuesday of the Institution of Heating and Ventilating Engineers.

of radiators are effective, provided, of course, that there is an opening at the top of the sections to allow the heated air to pass freely away. It is rather an interesting fact that when ventilating radiators are used the result of opening the ventilators and so allowing the outside air to pass through is a rise in temperature. There is yet another factor which complicates the question, and that is height. Two low radiators, say each of ten sections, will condense more steam than one ten-section radiator of twice the height. This is because the surfaces near the upper part of all radiators are surrounded by warmed air rising from below, and so reducing the heat emission. The taller the radiators the more this fact comes into operation. The best radiating surface of all is a single horizontal pipe. Here no radiant heat is lost, all the rays passing away at right-angles to the pipe, in lines which radiate from its centre. Therefore, if the capacity of a boiler is given in the form of square feet of pipe surface, we may be sure it will be capable of heating an equal number of superficial feet in every other form of radiating surface.

It may appear that we have wandered somewhat from our subject. This, however, has been done intentionally, because, in order to clearly show what the capacity of a boiler really is, it is necessary to have a clear conception of heat emission in its relation to boiler capacity.

In testing a boiler for house heating or horticultural work, it seems to me we must consider it from three points of view, viz.:—(1) Its capacity, (2) its efficiency, (3) its working qualities.

On what does its capacity depend? It depends on the source from which the heat is derived, which is of course the fuel. This being the case, we look to the size of the fire-box, which should show the space available for the fuel, not the length \times the breadth \times the height from grate to the surface directly over the fire, but the length \times the breadth \times the height to which it is possible to charge the boiler with fuel. In the type of boiler with which we are dealing, with the feed door in the front and the grate of reasonable length, as a rule a fair estimate of the depth of fuel charge is the distance from the grate to the centre of the feed door, so that strictly speaking the dimensions of the fuel space (or fire-box) are the length by the breadth by the height from grate line to middle of feed door, the space above this being essentially the combustion chamber.

In some boilers where the feed door is near the top of the front section, you cannot of course fill to the middle of the door. A little practice and careful consideration will enable you to form a fairly accurate opinion.

Having determined the amount of fuel that our boiler will hold, we must remember that the total heat of this charge is not available. A certain portion of it must still be unconsumed when the time comes for replenishing the fires, and this will vary from 15 to 20 per cent., the former being approximately the amount where coke is being used, and the latter when coal. Having made this deduction we know exactly how many pounds of fuel we have to consume during the test. We have already considered the time for which it is necessary for this fuel charge to last and decided it should be 8 to 10 hours. In basing our calculation we will use the former. As the heat loss from a building is calculated on an hourly basis, we must get our fuel down to an hourly basis and therefore divide the number of pounds by eight. For example, we will assume a boiler which will hold 300 lbs. of coke; 85 per cent. of this amount is 255 lbs., which divided by eight gives practically 32 lbs., which is the amount available per hour.

Now that we have arrived at the number of pounds of fuel per hour, we must assume a certain calorific value per pound. Time does not permit of our considering the relative values of the different classes of fuel, and therefore in dealing with this subject we will assume a fair average to be 12,000 B.T.U.'s per pound.

We now come to the efficiency of a boiler, and the next question is to determine the proportion of these heat units that will be utilised. From numerous tests of these boilers, it has been found that it is possible to obtain an efficiency of 70 to 75 per cent.; in other words, that 8,400 to 9,000 B.T.U.'s are available per pound of fuel, of which the calorific value is 12,000 B.T.U.'s per pound. Knowing that the conditions under which boilers operate in general use are not so favourable as in a test, it would seem that 8,000 B.T.U.'s per pound would be a fair estimate for calculation. But here a great deal depends upon the design of the boiler, and our estimate is based on the assumption that the heating surface of all boilers is equally efficient. Due consideration, however, must be given to the fact that the

surface in the fire-box and the combustion-chamber is of much greater value than the more remote surfaces in the flues, and therefore it is incumbent on heating engineers to make a study of the relative efficiency of heating surface in different positions. My own experience has been that a boiler with a large amount of direct heating surface and a reasonable amount of flue surface in general gives the best result, because it can be made to respond readily in case of a cold spell, and will give a good result when connected to an indifferent draught, such as is so often the case in horticultural work, and can also be kept in check with a sliding damper in the chimney, should the draught be excessive.

Having found that the available amount of heat per pound of fuel when burned in a well-designed boiler is 8,000 B.T.U.'s in the case assumed above, where 32 lbs. of coke is consumed per hour, we have $32 \times 8,000 = 256,000$ B.T.U.'s available per hour.

The above information may seem at first glance a rather long and complex calculation, but it can be condensed for practical purposes into a very simple form, which can be noted in a pocket book and readily applied for both water and steam boilers:—

	Water. Degs. F.	Steam. Degs. F.
Mean temperature of water and steam (2 lbs. pressure) in radiators	150	220
Temperature of air in rooms	60	60
Difference of temperature of air and heating fluid	90	160
B.T.U.'s emitted per square foot per hour per degree of temperature (radiation coefficient)	1.6 B.T.U.	1.6 B.T.U.
Total radiation per square foot of surface	144 B.T.U.	256 B.T.U.

NOTE.—Measure fire-box (not including combustion chamber) to find amount of fuel, deducting 15 per cent. for coke and 20 per cent. for coal.

If 1 lb. of fuel is burnt in eight hours the available B.T.U.'s per hour will be $\frac{8000}{8} = 1000$.

" 1 lb. of fuel will supply $\frac{1000}{144} =$ say 7 s. ft. water radiation for 8 hours.

Also " " $\frac{1000}{256} =$ say 4 s. ft. steam radiation for 8 hours.

In the example we previously mentioned, when we found the available fuel capacity of a boiler was 255 lbs., the number of square feet of radiation it will carry is:—

Lbs. Coke.	Square Feet.
$255 \times 7 =$	1,785 square feet water radiation.
$255 \times 4 =$	1,020 square feet steam radiation.

I hope I have succeeded in clearly distinguishing between the capacity and efficiency of a boiler. To put this more concisely I will say the capacity of a boiler is the number of square feet of radiating surface it will supply (for eight hours) with one charge of fuel. The efficiency being the number of B.T.U.'s per pound of fuel burnt it utilises for heating purposes. A boiler with a high heating capacity may yet have a low efficiency. The difficulty in designing a boiler lies in combining a high capacity with a high efficiency, and I can assure you it requires great skill and care and patient trial before this can be accomplished.

The third important feature that must be closely investigated is what I have called the "working qualities."

First of all there must be, in a water boiler, a rapid circulation of the water. This can only be secured by having small waterways so arranged that there is no possibility of the divided streams of water meeting each other. All should converge through channels with easy bends towards the flow tappings. The more rapid the circulation the greater the heat transmission from the fire to the fluid, just in the same way that the heat emission from indirect radiation increases with the velocity of the air passing over it. I have a record of experiments on this subject which shows a heat emission of 3.42 B.T.U.'s per square foot with the air velocity at 3 feet per second, increasing to 4.94 B.T.U.'s at 6 feet per second, 6.93 at 12 feet per second to 9.79 at 24 feet per second. This fact alone will show how greatly the efficiency depends on the design.

The same rule applies in a less degree to steam boilers. They must also maintain a steady water line for all pressures

they are likely to be worked at. This means, of course, that no priming must take place. To secure this the flow tappings must be of such a size to keep down the velocity of steam passing from the boiler. If this is too great it will carry small particles of water with it. In both steam and water boilers it is essential that all surfaces are accessible for cleaning. The furnace doors must fit tight and, with the clinker doors, should be ample for their purpose. The draught doors and regulating damper should be so designed that the amount of air passing through the fire can be accurately controlled. These are the chief features, and a heating engineer who has the interest of his customers at heart, will inquire closely into them before selecting a boiler.

In conclusion I will refer shortly to chimneys, which in this country are often so unsatisfactory. On the Continent architects are more closely acquainted with the technical part of their work than is sometimes the case here, and accordingly they provide in a new building a chimney of suitable size and construction to insure a good draught in the boiler. I may say here a good draught should give you a temperature of about 1,200 deg. F. in the combustion chamber, and with this temperature a well-designed boiler will give from 300 to 500 deg. in the stack. Every chimney should be fitted with a sliding damper, to cut down the draught if necessary to the right amount. When once its correct position has been ascertained, it should not be moved again, all regulation being done by the dampers on the boiler. For this purpose it is most advantageous to have an automatic draught regulator, which will maintain an even temperature in the boiler, prolonging its life and incidentally saving fuel, for the efficiency of a boiler varies with the draught. The chimneys should be as straight as possible, a round section giving a better result than a square one. It should not be contracted in sectional area at any point. This often happens where the pot is fixed. Where the iron flue enters the chimney it should not be allowed to project beyond the thickness of the brickwork. Soot doors in chimneys should fit closely. The top should be carried up to a level which assures it will not be affected with down-draught. All these points are important to the heating engineer, because they are often held responsible for the unsatisfactory working of an apparatus which is entirely due to a faulty chimney. At the same time it is clearly the duty of an engineer to find out what kind of chimney is available for his apparatus, because it should guide him in selecting a suitable boiler. When he is in doubt about the efficiency of the draught he should select a boiler with a large direct heating surface and very little flue travel, for although a fair proportion of flue surface is useful when the draught is good, it is worse than useless when the draught is sluggish.

Let me add in conclusion that we shall, I believe, be taking a step in the right direction, and I trust you will agree with me in this, when we unite in calling upon all boiler-makers to furnish us with a clear and definite statement of what the boilers are really able to do.

TOWN PLANNING.

THE annual conference of the Incorporated Association of Municipal and County Engineers was held last week in Liverpool.

Mr. John A. Brodie, city engineer, delivered the presidential address. His subject was the laying-out of towns and the improvement of roads. Liverpool being a great commercial depôt needed particularly easy and wide and direct roads of communication in and out of the city. The general policy of the small local authorities on the borders of large towns had been to construct narrow roads sufficient merely for local traffic and quite unsatisfactory as outlets for a great centre. In Liverpool alone no less than 1,250,000% had been expended in the last ten years in widening main thoroughfares to meet the traffic needs. The policy of the Liverpool Corporation had been to secure a minimum width of 60 feet for all main lines of communication, and much had been done in advance of building by arrangements with the landowners. Public authorities should have larger powers in connection with the laying-out of all main thoroughfares, and he commended the methods in operation in Germany, the United States and Canada. It would no doubt be difficult to obtain powers in England equal to the German powers, but it was to be hoped that some of the larger municipalities in this country would make a bold attempt to obtain control of the laying-out of building areas, as there could be no doubt that such powers should be in the hands of the authorities

as would enable all building areas to be so laid out as to provide necessary roads and means of communication of ample width; and also to provide ample spaces for playgrounds and sites for public buildings, whilst the land was still undeveloped and was therefore obtainable at a cheap rate. Greater powers were necessary also in connection with the laying-out of those small and irregular areas commonly to be found under separate ownerships in the neighbourhood of towns in this country. At the present time local authorities had very little control over the laying-out of streets in such areas except by arrangement with the landowner, and cases often arose in which the landowner could comply with the by-laws and yet set the authority at defiance. Some method was required by which the authority should have the power to disapprove of such plans, and to prevent under a penalty the construction of streets otherwise than in accordance with such conditions as they might approve in the matter of direction, width and levels of roads. In cases of small and irregular areas, failing agreement between the respective owners as to the adjustment of boundaries, powers might well be given to the local authority to adjust boundaries, of course after hearing evidence on behalf of the parties interested.

Mr. E. G. Mawbey, of Leicester, said no useful purpose would be served by abusing motorists, who were entitled to gratitude for bearing the expense of developing a new industry. It was their business to make roads in such a way as to provide for the future development of the motor industry. He moved:—"That the Council be empowered to prepare and present to the Local Government Board a memorial in favour of a Bill being introduced to Parliament to enable local authorities to regulate and control the planning of main thoroughfares and building areas, and to prescribe the number of houses to be erected on an acre of ground, and also giving power to local authorities to acquire land for open spaces, and to facilitate the improvement and development of their respective building areas."

Mr. E. R. Pickmere (town clerk of Liverpool) said they must not ask for too much or they would stand the risk of having their Bill thrown out. The most they could expect was that a local authority should have power to say how wide their streets and roads should be, what materials they should consist of, and decide in what direction they should run on the various estates. As to the number of houses to the area, it had been thought that the desired object might be obtained by requiring that a certain number of houses should be specified, or by stringent by-laws as to air spaces.

Mr. T. L. Dodds (mayor of Birkenhead) said that local authorities did not possess sufficient power in regard to the planning of their own towns. He had studied especially four German municipalities, and he had been impressed by the much larger powers possessed in Germany than were held by the public bodies of this country. The German authorities had absolute freedom to take land and make an equitable arrangement with the owners, and he had been informed that no difficulties at any time had ever arisen in regard to the enlargement and improvement of main thoroughfares. That was a condition of things which ought to exist in England. He was of opinion that there should be immediate legislation for acquiring the control of outlying districts which were likely to be brought within the areas of borough boundaries, while there was a pressing need for greater powers for the supervision of buildings and for the widening of back streets and passages.

SOCIETY OF ENGINEERS.

A VISIT was made by the members of the Society of Engineers on Wednesday, June 19, to the new reservoirs of the Metropolitan Water Board in course of construction at Honor Oak and of which the following is a description:—

These reservoirs will contain nearly sixty million gallons of water, and will probably be the largest covered reservoirs in the world. They are being constructed near Homestall Road, Honor Oak, Camberwell. The construction generally is of brickwork and concrete, with division walls, separating the reservoir into four divisions. The longitudinal centre wall runs approximately north and south, so for the purpose of reference the reservoirs will be known as the north-east, north-west, south-east and south-west.

The outside walls of those portions of the south-east and south-west reservoirs which are below or level with the natural ground represent in plan a series of flat arches so

as to resist earth pressure. The north-east and north-west reservoirs have concrete retaining walls, faced with brickwork. The centre dividing walls are also arched in plan, and are practically double walls filled in between with concrete, the thickness varying from 6 feet in the centre of each bay to 10 feet at each buttress.

Around all the outer walls and the division walls buttresses in brickwork project into the reservoirs. These buttresses are carried up solid to the drums on the roof covering, and in themselves form substantial counterforts to the walls. The floor of the reservoir is of concrete, and its surface will be formed with curved inverts groined so as to form bases from which the brick piers carrying the roof will rise. This inverted floor will be finished with $\frac{3}{4}$ inch of cement rendering to a smooth polished face with a drain down the middle of the invert, draining all the water into the collecting channel.

From each base a brick pier is built, which is continued up 14 feet, where jack arches are turned, connecting each pier north and south. From the top of the wall thus formed the drums of covering arches spring. The drums form a series of tunnels running north and south. The haunches of the arches are filled with concrete, on the top of which clay puddle will be placed, followed with earth and, finally, soil. A drain with open joints is laid on the surface of the puddle for the purpose of draining the top of the reservoir. A puddle wall 3 feet in thickness extends all round the outer walls, and is keyed into the clay, thus making the work watertight.

At the centre of the four reservoirs where the division walls intersect will be the central well, from which the charging and emptying will be directed. All the opening valves—42 inches, 36 inches and 30 inches—will be arranged round the well and worked by means of headstocks from a gallery running round the well. By means of special connections, it will be possible to work each or every reservoir at the same time without interfering with the others. Above the central valve well will be a valve house, in which the electrical recording indicators will be arranged. When the works are completed, the tops of the reservoirs and the slopes will be soiled and sown with grass seeds.

The bricks used in the construction of the reservoirs have all been manufactured by the Southwark and Vauxhall Water Company, and later by the Metropolitan Water Board, from the excavation. Not only has the material been utilised in the making of the bricks, but the ground has been excavated on the site of the reservoir, thus reducing the quantity of earth to be handled by the contractor. It will be seen that the works involve the use of a large amount of concrete, in the production of which four of Taylor's one-yard concrete mixers are engaged. In these mixers each charge of material is measured and mixed separately, and each of the machines employed will mix 24 cubic yards of concrete per hour.

The whole of the works were designed by Mr. J. W. Restler, M.Inst.C.E., and are being carried out under his direction and supervision by J. Moran & Son, Ltd., as contractors. The estimated cost of the works, including pipes and valves, but exclusive of land, is approximately 170,000l.



Rebuilding Hexham Church.

SIR,—I note your paragraph in last issue, and write to say that there never was an *abbey* at Hexham. The church in question was the *priory* church.—Yours faithfully,

JOHN A. RANDOLPH.

GENERAL.

Sir Benjamin Baker, K.C.B., K.C.M.G., F.R.S., civil engineer, of 2 Queen Square Place, Westminster, and Bowden Green, Pangbourne, whose death took place on May 19, left a fortune of 170,513l. By a will of October 1902 he gave 2,000l. to the Institute of Civil Engineers, and his share of the goodwill of his businesses, with the furniture, books, &c., to Arthur Cameron Hurtzig and Frederic Shelford.

The Foundation-stone of the new wing of the British Museum, designed by Mr. J. J. Burnet, was laid by the King yesterday.

Mr. Walter Crane, as president of the Arts and Crafts Exhibition Society, writes contradicting an unfounded report that the Society has been disbanded. So far from that being the case, he says:—"We are a stronger band than before, having elected many new members since our last exhibition in 1906, and we are now, according to triennial custom, contemplating our next show, which we hope to open in the autumn of 1908."

A New Statute will be proposed to Congregation next term establishing a Professorship of Engineering Science at Oxford, with a stipend of 800l. per annum. The professor will give laboratory—but not workshop—instruction.

At the Last Edinburgh University Court a copy of declaration of trust by Sir John Jackson, civil engineer, London, was submitted providing an endowment yielding about 200l. per annum, which he desired to be designated a Professor Tait's Memorial Fund for the purpose of encouragement of physical research in the University of Edinburgh.

The Executive of the Scottish National Exhibition are not confining themselves strictly to the plans recently accepted, and the views of the executive and the manager are being met by modification or alteration. It will be the end of July or beginning of August ere an actual start is made with the buildings.

A Special Committee of the Gresham Committee, which has the control of the Royal Exchange, has been making investigations into the sanitary condition of that building, and, after hearing expert evidence, has decided that the premises are in urgent need of redrainage. It is estimated that the cost of this work will be about 4,000l.

Sir Horatio Davies, who recently sold the site on which Crosby Hall stands to the Chartered Bank of India, Australia and China, will offer, in the event of the bank authorities deciding to adopt no steps to preserve the antiquarian parts of the hall, to give the building to the Corporation, who would be able to take away any article of historic interest and place it in the Guildhall Museum; or, if they so liked, could remove the whole building and reconstruct it elsewhere. Crosby Hall is to be closed in July.

Mr. W. T. Dannat, the American painter, has received the distinction of Grand Officer of the Order of the Crown of Italy. He is also Commander of the Legion of Honour.

Mr. W. H. Goodyear, of the Brooklyn Museum, has been elected honorary Academician of the Royal Academy of Fine Arts, Venice, in recognition of his services in investigating the construction of St. Mark's.

The Special General Meeting of the R.I.B.A. summoned by the Council to receive the recommendations of the Council for the revision of the charter and by-laws will be held on Tuesday, July 2, at eight o'clock.

Mr. Wm. Woodward, F.R.I.B.A., F.S.I., of 13 Southampton Street, Strand, W.C., has taken into partnership his two sons, Charles and Frank.

At the Annual Meeting of R. Waygood & Co., Ltd., it was stated by Mr. H. C. Walker, the managing director, that on the asset side of the balance-sheet, goodwill and patents were represented by 67,576l., and freehold and leasehold property by 71,233l. The increase in the last item was accounted for by the purchase of property at Coventry, in view of the fact that at some time the company might be driven out of London, partly on account of the rates in the Metropolitan being so heavy.

The House of Lords, consisting of the Lord Chancellor, Lord Robertson, Lord Atkinson and Lord Collins, were occupied on Monday in commencing the consideration of an appeal by the Corporation of Dudley against the Dudley, Stourbridge and District Electric Traction Company. The question raised was whether a light railway which was being purchased by the Corporation from the company was to be valued upon the basis of a structural valuation regarded as a railway fixed in position, capable of earning a profit, or upon the basis of the value of the railway to the company as an income-earning concern, that is, upon the capitalised value of the net profits which have been earned by the railway.

The Chairman of the Belfast Harbour Commissioners has announced to the Trust that Messrs. Harland & Wolff had lodged with the Board plans for an extension of their shipbuilding plant, the carrying out of which will involve the outlay of 50,000l. There is reason to believe that this outlay was but an instalment of much larger sums which might be expended in the near future.



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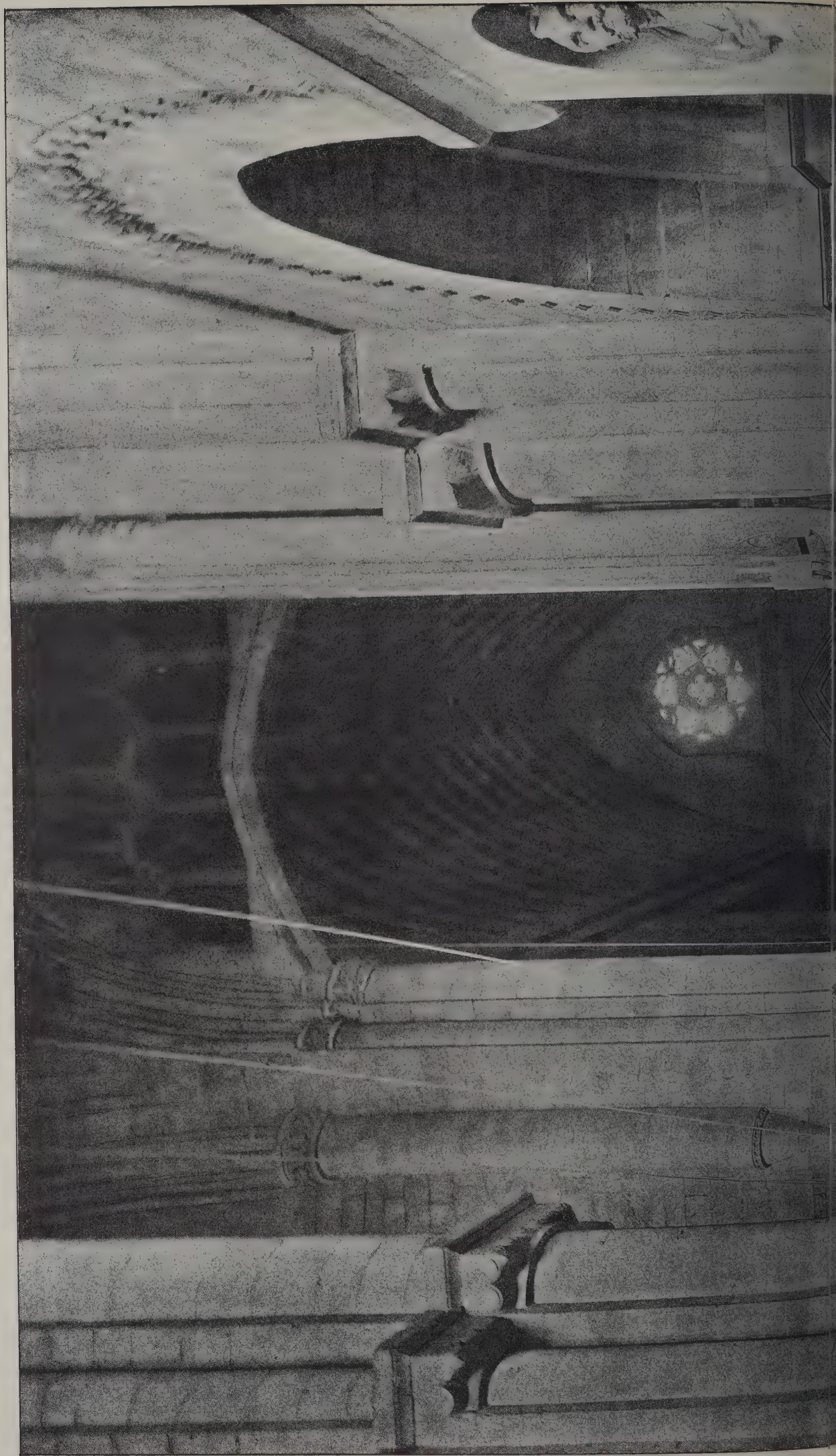


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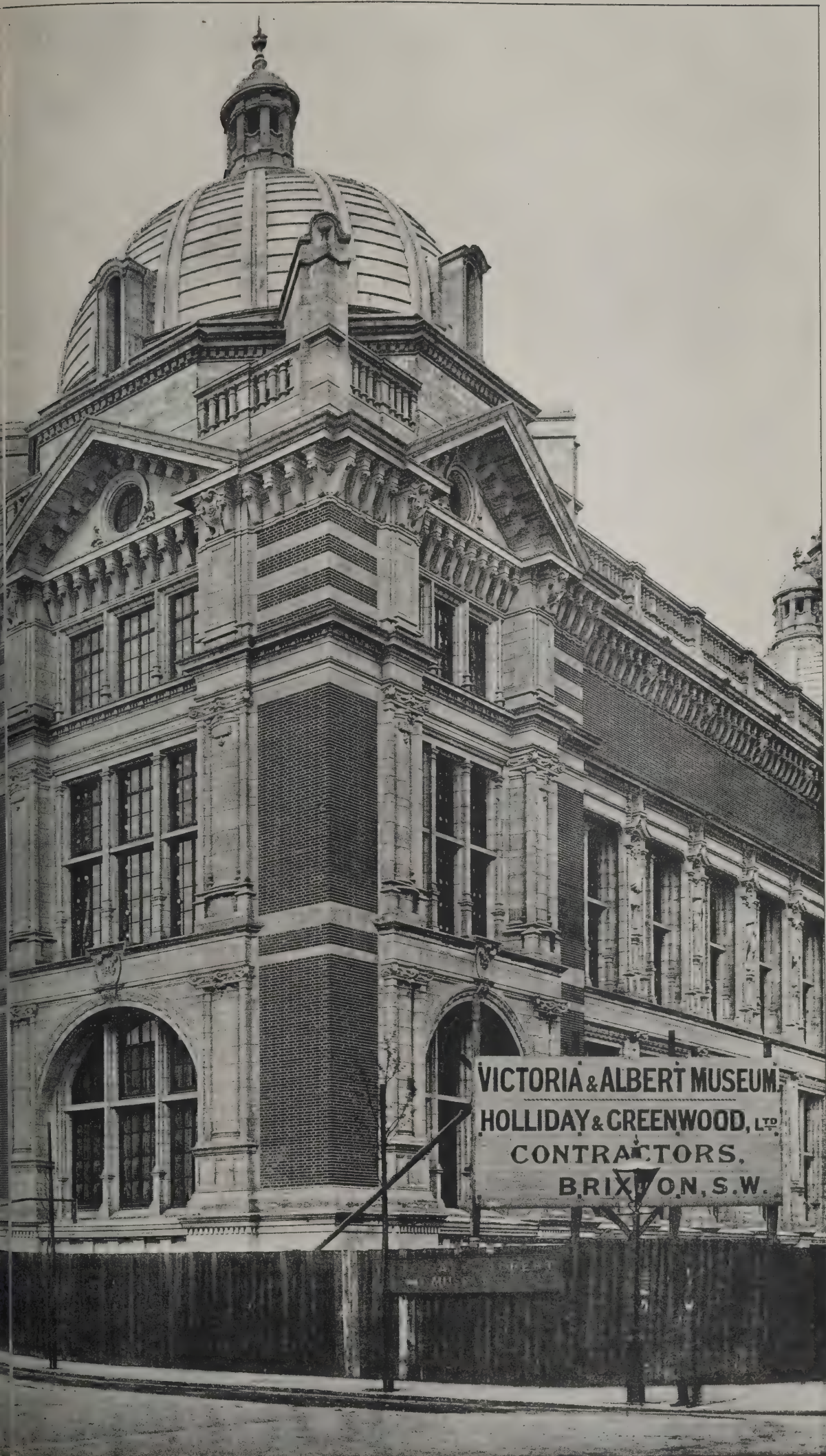
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THE
Architect and Contract Reporter.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tender and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25l. will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

NEWCASTLE-ON-TYNE.—Jan. 15.—For the North of England Model Cottage Exhibition. Site planning for this exhibition, which is 16½ acres in extent, twelve houses to the acre. Further particulars from Mr. R. Aldridge, do Burt Hall, Newcastle-on-Tyne.

SHEFFIELD.—Jan. 10.—For the Yorkshire and Midlands Model Cottage Exhibition to be held in Firth Park, Sheffield. Site planning for the exhibition to be held, with twelve houses to the acre. Further particulars of the organising secretary, Mr. R. Aldridge, 45 Bank Street, Sheffield.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

WALES.—Jan. 12.—The committee of the George Edwards Memorial hall, Cefn, Ruabon, offer a prize of 10l. for the best design (including plans and elevations) of the hall. Full particulars may be obtained from Mr. W. Ryland Jones, secretary, High Street, Cefn, Ruabon.

CONTRACTS OPEN.

AUSTWICK.—Jan. 28.—For the mason, slater, plasterer, joiner, plumber and glazier's work required in the erection of various buildings, comprising administration, isolation, laundry, discharge and mortuary blocks, scarlet-fever pavilion, stable and cart-shed, for their new isolation hospital at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, surveyor, Town Hall, Settle.

BANBURY.—Jan. 12.—For alterations and repairs at 1-4 Cherwell Terrace. Messrs. Fortescue & Sons, clerks to the Trustees, 45 High Street, Banbury.

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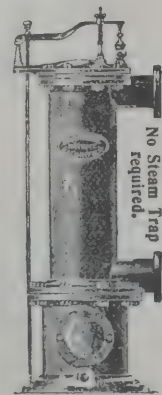
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BOOTLE.—Jan. 18.—For supplying and fixing thirty-one sliding and folding partitions in the schoolrooms at the various Council schools in the borough, for the education committee. The Borough Surveyor, Town Hall, Bootle, Lancs.

BOVEY TRACEY.—Jan. 15.—For the erection of a store and stable building at Bovey Tracey, Devon. Messrs. J. W. Rowell, Sons & Locke, architects, 2 St. Paul's Road, Newton Abbot.

BRIDLINGTON.—Jan. 8.—For erection and completion of shop and premises, Marshall Avenue. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

BURNLEY.—Jan. 17.—For the construction of settling-tank, storm-water filter, screening chamber, storm overflows and other contingent works connected therewith, for the Burnley Rural District Council. Mr. S. Edmondson, engineer to the Council, 18 Nicholas Street, Burnley.

CARLISLE.—Jan. 5.—For the erection of a wall and iron railing at the Warwickland school. Mr. Roden, School House, Penton.

CROSSHILLS.—For erection of additions to a warp-dressing shed at Junction Mills, Crosshills, Yorks. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

DUTTON.—Jan. 5.—For the erection of a nurses' home at Dutton workhouse and the alteration of certain existing buildings, for the Runcorn Union, Cheshire. Deposit 3*l.* 3*s.* Messrs. W. & S. Owen, architects, Warrington.

ELTHAM.—Jan. 22.—For the erection of a refreshment house at Avery Hill, for the London County Council. Mr. G. L. Gomme, clerk, Spring Gardens, S.W.

ENFIELD.—Jan. 15.—For erection of a junior mixed school at Bush Hill Park. Deposit 1*l.* 1*s.* Send names by Dec. 29 to Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

ERITH.—For extension of the electricity supply station, Erith, Kent, for the Urban District Council. Deposit 2*l.* 2*s.* Mr. Charles H. Fry, clerk, Bexley Road, Erith.

EXMOUTH.—Jan. 14.—For the erection of a pair of semi-detached houses in Albion Hill. Mr. Ernest E. Ellis, architect, Exmouth.

GATESHEAD.—Jan. 9.—For converting tinner's shop at Gateshead locomotive works into offices, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

GATESHEAD.—Jan. 12.—For the erection of additional classrooms, laboratory, &c., at the Secondary schools, Durham Road. Deposit 1*l.* 1*s.* Mr. N. Percy Pattison, borough engineer, Town Hall, Gateshead.

GLASGOW.—Jan. 5.—For the construction of the basement of the north wing of the Gatehouse block at the Glasgow Royal Infirmary. Deposit 1*l.* 1*s.* Mr. James Miller, architect, 15 Blythswood Square, Glasgow.

IRELAND.—Jan. 7.—For taking-down and rebuilding No. 111 Grafton Street, Dublin. Deposit 2*l.* 2*s.* Mr. G. P. Sheridan, architect, 25 Suffolk Street, Dublin.

IRELAND.—Jan. 7.—For the erection of a manse in Milford, co. Donegal. Mr. John M. Robinson, architect, 7 East Wall, Londonderry.

IRELAND.—Jan. 12.—For making alterations and additions to manse, Lylehill, Templepatrick. Mr. W. D. R. Taggart, 2 Wellington Place, Belfast.

KENDAL.—Jan. 14.—For taking-down and rebuilding wall, &c., in connection with the improvement of Singleton Park Road, near Birklands. Mr. F. W. Oxberry, borough surveyor, Town Hall, Kendal.

KIRTON.—Jan. 8.—For the erection of out-offices at the Church End Council schools, Kirton, near Boston, Lincs. Mr. James Rowell, architect, Church Lane, Boston.

LANDPORT.—Jan. 9.—For the erection of a store at the factory of Doudney & Co., Ltd. Messrs. Cook & Tutte, architects, 394 Commercial Road.

LEEK.—Jan. 7.—For the building of coal breaker, waggon tipper and weighbridge pits, gas-engine house, tunnel under Newcastle Road and other appurtenant works at the Council's gasworks, near Leek station. Deposit 2*l.* 2*s.* Mr. W. E. Beacham, surveyor, Town Hall, Leek.

LONDON.—Jan. 15.—For the erection of an underground convenience at High Cross, Tottenham. Deposit 10*s.* 6*d.* Mr. W. H. Prescott, engineer to the Council, Council Buildings, The Green, Tottenham.

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LONDON.—Jan. 17.—For certain alterations and additions to the infirmary, Lower Road, Rotherhithe, S.E. Deposit 10s. Names and addresses before December 8 to Mr. E. Fenton, clerk, 283 Tooley Street, S.E.

LONDON.—Jan. 18.—For the erection of conveniences at Mountfield Park, Hither Green, S.E., for the London County Council. Mr. G. L. Gomme, clerk.

LONDON.—Jan. 22.—For the execution of certain works on bridges at Highbury station and Holloway Road, in connection with the reconstruction of further portions of the London County Council tramways. Full particulars, Chief Engineer, County Hall, Spring Gardens, S.W.

MARGATE.—Jan. 9.—For the erection of laundrymaids' quarters at East Cliff House, Cliftonville, for the Metropolitan Asylums Board. Mr. W. T. Hatch, M.I.C.E., A.I.M.E., engineer-in-chief, office of the Board, Embankment, London, E.C.

MORLEY.—Jan. 10.—For proposed additions to Tingley Mills, Morley, Yorks. Messrs. T. A. Buttery & S. B. Birds, architects, Queen Street, Morley.

NAFFERTON.—Jan. 14.—For the rebuilding of the Wesleyan chapel and schools, Nafferton, near Driffield, Yorks. Deposit 17s. Messrs. Gelder & Kitchen, architects, Hull.

NEW MALDEN.—Jan. 8.—For the erection of buildings at Norbiton Common farm, New Malden, Surrey, for the Guardians of Kingston Union. Mr. William H. Hope, architect and surveyor, Hampton Wick.

OXENHOPE.—Jan. 10.—For the erection of Council offices at Oxenhope, Yorks. Messrs. John Haggis & Sons, architects, North Street, Keighley.

ROMFORD.—Jan. 14.—For the erection of four sanitary annexes at the workhouse, for the Guardians of Romford Union. Deposit 37s. Application by December 29 to Mr. James Kennedy, architect, 25 Bedford Row, London, W.C.

SCOTLAND.—Jan. 7.—For the mason, carpenter, plumber, slater, plasterer, painter and iron works of additions and alterations at Gray's Hospital, Elgin. Deposit 10s. Mr. John Wittet, architect, Elgin.

SCOTLAND.—Jan. 10.—For the erection of a police station at Dunning. Mr. David Smart, architect, Perth.

SCOTLAND.—Jan. 10.—For (1) Digger, brick and mason-work in one contract; (2) carpenter and joiner works; (3) slater and plumber works in connection with keeper's house, &c.; (4) plaster, cement and rough-cast works; and (5) drainage, levelling and road-making at Stewarton cemetery, for the Parish Council office. Deposit 17s. Messrs. J. & J. Armour, architects, Irvine.

SCOTLAND.—Jan. 22.—For the erection of the superstructure of the post office at Kilmarnock. Deposit 17s. 1s. Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

SEATON CAREW.—Jan. 17.—For the erection of about 104 lineal yards of 9-inch brick boundary wall, with piers, at Holy Trinity churchyard, Seaton Carew, West Hartlepool. Mr. Nelson F. Dennis, A.M.I.C.E., borough engineer, Municipal Buildings.

SOUTHAMPTON.—Jan. 8.—For the erection of stabling accommodation at Clock House, Shirley. Deposit 37s. 3s. Borough Engineer's Office, Municipal Offices, Southampton.

SOUTH MOOR.—Jan. 8.—For the erection of Council school at South Moor, Greenland, Durham, for about 950 scholars. Messrs. Clark & Moscrop, architects, Feethams, Darlington.

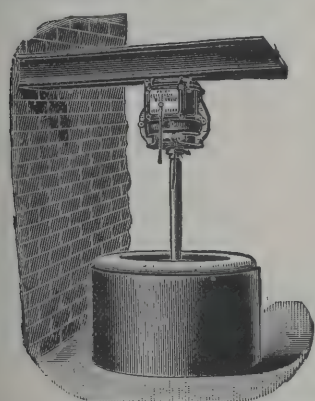
STIFFORD.—Jan. 12.—For disinfector block and sundry work at the hospital, Long Lane, Stifford, two miles from Grays, Essex, for the Orsett Joint Hospital Board. Mr. C. M. Shiner, architect, The Gate House, Grays.

SWALLOWFIELD.—Jan. 11.—For building a school for 250 scholars at Swallowfield, Berks. Deposit 37s. 3s. Names by January 2 to the Secretary to the Education Committee, The Forbury, Reading.

TOTTEN.—Jan. 14.—For (1) Erection of a school at Totton, Hants; (2) installation of low-pressure hot-water apparatus therein. Deposit 27s. 2s. for each specification. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

WALES.—Jan. 9.—For the following works, for the Glamorgan County Council, viz. (1) New temporary cookery and infants' school at Troedrhwiwuch; (2) new school at Pentyrch; (3) new infants' school at Seven Sisters, near Neath. The Glamorgan County Council Offices, Westgate Street, Cardiff.

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PRICES AND SAMPLES ON APPLICATION.

WALES.—Jan. 10.—For building a vestry adjoining Methodist chapel, Trimsaran. Mr. D. Williams, 31 New Houses, Trimsaran.

WALES.—Jan. 11.—For enlarging the Aberbargoed and Lower Rhymanney mixed Council schools, including alterations and improvements to the existing buildings and the erection of a caretaker's house in connection with the first-named school. Deposit 2*l.* 2*s.* Mr. C. Dauncey, County Council Offices, Newport, Mon.

WALES.—Jan. 14.—For the rebuilding of the People's Hall at Porth, Rhondda. Deposit 2*l.* 2*s.* Mr. Arthur Marks, M.S.A., architect and surveyor, Merthyr.

WALES.—Jan. 14.—For building additions to Darranlas infants' school, Mountain Ash, to accommodate 150 children. Deposit 2*l.* 2*s.* Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALES.—Jan. 16.—For the erection of cloak-room, shelter, &c., at the Castle Street Council school, Abergavenny, Monmouthshire. Mr. C. Dauncey, solicitor, secretary to the Monmouthshire education committee, County Council Offices, Newport.

WALES.—Jan. 30.—For supplying and erecting the steel and ironwork of the proposed Rhiwarthen bridge, Penllwyn. Mr. Hugh Hughes, clerk to the District Council, Aberystwith.

WALSSEND.—Jan. 18.—For the erection of police buildings, Wallsend, Northumberland. Mr. J. A. Bean, county architect, the Moot Hall, Newcastle-on-Tyne.

WHITBY.—Jan. 11.—For alterations and additions to property at Lealholm. Mr. A. E. Young, architect and surveyor, 77 Baxtergate, Whitby.

For the foundations of new county lunatic asylum at Colchester the contract has been let to Messrs. Chessum & Sons, of Bow, London, at 18,939*l.* Mr. George C. Harper has been appointed clerk of works.

MESSRS. CARMICHAEL, of Wandsworth, London, have secured the contract for the erection of new buildings in Wood Street, Westminster, which will be the headquarters of the Society for the Propagation of the Gospel.

TENDERS.

BIRMINGHAM.

For sewerage and constructing a new road at Sparkhill. Messrs. J. MATHEWS & SONS, surveyors, Birmingham.

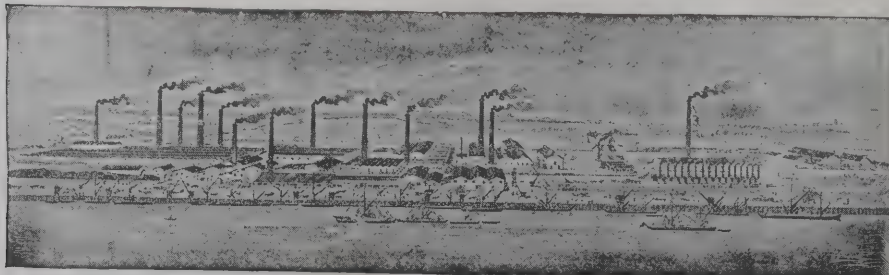
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Law	2,624	0	0
Cunliff	2,617	11	
Lowe & Sons	2,499	0	
Currall, Lewis & Martin	2,476	17	4
Jamieson	2,467	0	0
Young	2,396	0	0
WHITE, jun. (accepted)	2,342	17	4

For the erection of a factory at Tyseley. Mr. G. A. Cox, architect, Birmingham. Quantities by Mr. C. SILK, Birmingham.

Marshall	£9,116	0	0
Mills & Sons	8,869	0	0
Langley	8,644	0	0
Whittall & Sons	8,597	0	0
Pitts	8,198	0	0
Bryant	7,999	0	0
Bawm & Sons	7,990	0	0
Fenwick	7,900	0	0
Allen	7,880	0	0
Barnsley & Sons	7,866	0	0
Webb	7,840	0	0
Briley	7,769	0	0
Sapcote & Sons	7,677	0	0
Stone	7,632	0	0
Whitehouse & Sons	7,582	0	0
Bishop	7,551	0	0
Lowe & Sons	7,495	0	0
Goodwin	7,477	0	0
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Motherwell Bridge Co.	2,025	0	0
Dalziel Bridge Co.	1,916	0	0
Horseley Co.	1,792	12	6
Davies Bros.	1,732	0	0
Wright.	1,706	10	0
Hayward & Sons.	1,685	0	0
Ashmore, Benson, Pease & Co.	1,685	0	0
Keay	1,672	0	0
Piggott & Co.	1,670	10	6
Redpath, Brown & Co.	1,658	7	6
New Islington Iron Co.	1,654	0	0
Thompson & Co.	1,631	10	0
C. & W. Walker	1,596	2	6
Cross & Cross	1,551	0	0
Lambourne & Co.	1,539	0	0
Wood & Co., Manchester (accepted)	1,520	0	0

ELY.

For street improvement works in Brook Lane. Mr. JAMES HOLDEN, surveyor, Cardiff.

Williams	£244	7	4
Hatherley	214	18	10
Davies	211	13	8
Williams	201	0	3
OSMOND, Ely (accepted)	199	17	2

GOSPORT.

For construction of covered service reservoir in ferro-concrete. Mr. T. HILDRED, engineer, Gosport.

Palmer	£13,519	12	2
Liverpool Hennebique Contracting Co.	10,698	3	9
Yorks Hennebique Contracting Co.	9,570	19	6
Playfair & Toole	8,984	0	0
Bevis	8,887	10	8
Holloway Bros.	8,537	0	0
Cooper & Co.	8,413	18	2
Thomas & Co.	8,297	15	11
NEAL, LTD., Plymouth (accepted)	6,852	0	0

EDMONTON.

For additional storey, &c., and extension of the laundry at the Edmonton workhouse, for the Guardians of the Edmonton Union. Mr. STUART HILL, architect, 106 Cannon Street, E.C. Quantities by Mr. JOSEPH PEEBLES, 7 Southampton Street, Bloomsbury, W.C.

Jackson & Co.	£3,136	0	0
Nightingale	2,989	0	0
Loasby & Salmon	2,986	0	0
Greenwood, Ltd.	2,967	0	0
Sands & Burley	2,913	0	0
Thomas	2,900	0	0
Wall, Ltd.	2,900	0	0
Lawrence & Son	2,844	0	0
Roberts & Co., Ltd.	2,800	0	0
F. & G. Foster	2,792	0	0
Parsons	2,767	0	0
Knight & Son	2,675	0	0
Fitch & Cox.	2,667	0	0
Monk	2,625	0	0

LONDON.

For the erection of residence in Victoria Avenue. Messrs. BENNETT & RICHARDSON, architects, Finchley, N.

Phillips	£900	0	0
For the erection of residence in the Grove, Finchley, N. Messrs. BENNETT & RICHARDSON, architects, Finchley, N.			
Jackson	£800	0	0
Scott	800	0	0
Nicholls & Sons	720	0	0

For the erection of residence, Dollis Avenue, Finchley, Messrs. BENNETT & RICHARDSON, architects, Finchley.

MacEwan & Sons	£750	0	0
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For the erection of a block of offices to be called Ashley House, on the site of Nos. 252, 254, 256 Vauxhall Bridge Road, Victoria, S.W., for the Central London Estates, Ltd., and Mr. F. G. Streeter. Messrs. PALGRAVE & Co., architects. Quantities by Mr. J. FARRELL, Parliament Chambers, Westminster, S.W.

GRAY, Kensington and Shepherd's Bush (accepted).	£10,600	0	0
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xxxi; Supplement, 4, 10, 14, 30.

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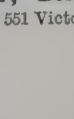
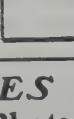
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LONDON—continued.

For the erection of six shops and stationmaster's house next Brondesbury station, for the London and North-Western Railway Company. Messrs. JOSEPH & SMITHEM, architects, 83 Queen Street, E.C. Quantities by Mr. C. W. LATTER, 14 Great James Street, W.C.

Simpson & Sons	£3,155	0	0
Smith	3,142	0	0
Higgs & Hill	2,984	0	0
Miskin & Son	2,977	0	0
Sabey & Son	2,950	0	0
Hudson Bros.	2,950	0	0
Ford & Walton	2,885	0	0
Ashby Bros.	2,885	0	0
WALLIS & SONS (accepted)	2,843	0	0

For new Baptist chapel, High Street, North Manor Park, E. Mr. FRANK SCRIVENER, architect, 30 Knighton Road, Forest Gate, E.

Sims	£2,500	0	0
F. & A. Willmott	2,323	0	0
Carter	2,260	0	0
Lawrence & Son	2,144	0	0
Maddison	2,099	0	0
Battley, Son & Holness	2,070	0	0
Lascelles & Co., Ltd.	1,950	0	0
Jerram	1,939	0	0
Hammond & Miles	1,900	0	0
F. & T. Thorne	1,897	0	0

For the above work, including seating.

Jerram	£2,045	0	0
F. & T. THORNE, Isle of Dogs (accepted)	2,000	0	0

For above, seating only, pitch pine, net.

Robinson	£175	6	0
Smith Bros.	140	12	0
Spencer & Co.	137	14	0
Lascelles & Co., Ltd.	134	0	0
Addison & Co., Ltd.	119	5	0
Hammer & Co., Ltd.	118	15	0
Smith & Co., Ltd.	117	7	0

LONDON—continued.

For new roof and other repairs to the brewhouse building at the Brewery, Bow, London, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Todd & Newman	£1,898	0	0
Perry & Co.	1,788	0	0
Irwin	1,782	0	0
Courtney & Fairbairn	1,765	0	0
F. & T. Thorne*	1,750	0	0

* Accepted with modifications.

For new brewer's office at the Brewery, Bow, London, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Perry & Co.	£348	0	0
F. & T. Thorne	337	0	0
ROBEY (accepted)	325	0	0

For repairs and decorations to the George, Poplar, London, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Barker	£259	0	0
Robey	193	0	0
Newell & Lusty	181	0	0
Elkington & Sons	175	0	0
WARNER BROS. (accepted)	149	0	0

MEARS ASHBY.

For constructing sewers and sewage-disposal works. Mr. J. B. WILLIAMS, engineer, Moot Hall, Daventry.

Wilmott	£1,195	16	3
Painter & Son	1,180	19	0
Holme & Sons	1,179	12	0
Henson & Son	1,172	15	8
Goodman & Murkett	1,147	0	0
Siddons & Freeman	1,120	0	0
Cosford	1,076	0	0
Bosworth	1,035	0	0
Brown & Son	1,033	18	0
Manton	1,020	0	0

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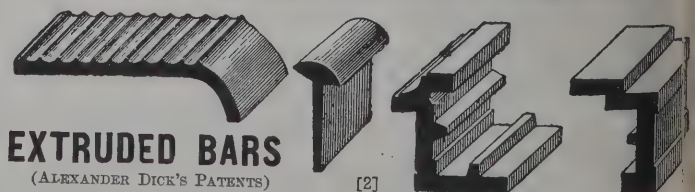
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LOSTWITHIEL.

For taking-down part of Collamere House and building additions. Mr. T. H. ANDREW, architect, St. Austell.

Rundle & Quiller.	£1,104	0	0
Bassett Bros.	1,036	10	0
Runnalls & Son	995	0	0
Brown & Son	957	0	0
BENNETT, Bodmin (accepted).	856	0	0

MORLEY.

For works required in erection of weaving shed at Crank Mills. Messrs. T. A. BUTTERY & S. B. BIRDS, architects, Morley.

Accepted tenders.

Spensley, mason	£653	5	0
Furness, joiner	398	0	0
Asquith & Son, ironfounder	237	0	0
Wilson, plasterer and concrete	150	0	0
Atkinson & Son, slater	113	0	0
Clegg & Son, plumber	64	9	7

NEW BARNET.

For the erection of residence in Lyonsdown Road. Messrs. BENNETT & RICHARDSON, architects and surveyors, Finchley, N.

Godson & Sons	£1,793	0	0
Dickens	1,770	0	0
Wisdom Bros.	1,732	0	0
Tout	1,705	0	0
Mattock Bros.	1,700	0	0
Gough & Co.	1,654	0	0
Patman & Fotheringham	1,653	0	0
Sheffield Bros.	1,650	0	0
Lawrence & Son	1,620	0	0
Mattock & Parsons	1,587	0	0
GIBSON & Co. (accepted)	1,574	0	0

NEWPORT (MON).

For improvements in Station Road, Wellington Road and Chetwynd Road.

HARRIS, Shrewsbury (accepted)	£309	15	6
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REIGATE.

For supply and erection of fire-escape staircases at the workhouse. Mr. E. PENFOLD, architect, Reigate.

Anderson & Duffield	£589	3	4
Mullins	565	10	0
Goad & Co.	537	12	0
Moorwood, Sons & Co.	532	0	0
Richmond & Co.	520	0	0
Clarke	512	0	0
Ellis	501	8	0
Wright & Co.	495	0	0
King & Sons	495	0	0
Weeks & Son	475	0	0
Haywood Bros. & Eckstein	469	0	0
Fireproof Co.	468	0	0
Hall & Son	460	0	0
Jukes, Coulson, Stokes & Co.	448	0	0
Jones & Co.	436	0	0
Stone	427	0	0
Lockerbie & Wilkinson	425	0	0
Yates, Haywood & Co.	425	0	0
Clydesdale Ironfoundry Co.	419	10	0
St. Pancras Ironwork Co.	417	0	0
Bird & Co.	410	0	0
Ritchie & Co.	405	0	0
Jordan	405	0	0
Sands & Son	402	15	0
Pierson & Co.	398	10	0
Edwards & Co.	398	0	0
Herring & Son	397	0	0
Harrison & Colmer	386	5	0
Bridgwater & Co.	375	0	0
Cadogan Ironworks	362	0	0
General Ironfoundry Co.	355	0	0
Fox	354	0	0
Mason	342	15	0
Wilmer & Sons	340	0	0
Page & Son	312	0	0
Norton Bros. & Co.	298	6	0
Universal Engineering Co.	277	0	0
Mullinger & Co.	275	0	0
Gratrix & Sons	270	0	0
H. & G. MEASURES (accepted)	240	0	0

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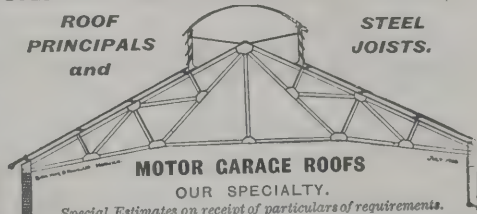
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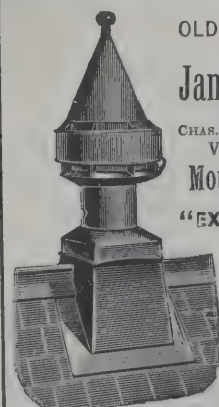
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TRADE NOTES.

MESSRS. JONES & LEACH, of Newtown, North Wales, have opened London offices and show-rooms at 20 Victoria Street, S.W.

THE Hunslet Engine Company, Ltd., of Leeds, have appointed Messrs. J. E. Lawler & Muirhead, of 39 Lime Street, as their London agents.

WE understand that the contract for the fireproof floors, &c., for the new Manchester Infirmary has been entrusted to the National Fireproof Company, and that they are carrying out the work.

At the new Tollard Royal Hotel, Kingsway, W.C., "The Only" closet was fitted throughout and supplied by the Sanitary Appliances Syndicate, Ltd., of 68 Victoria Street, S.W. This firm has recently fitted a range of five, with 3 feet head of water, at the Princeton Street infants' schools, Bedford Row, W.C.

MESSRS. J. B. JOYCE & Co., Whitchurch, Salop, have just erected a large Cambridge quarter-clock at Allendale Church, Northumberland. It shows time upon three dials and contains all the best improvements. The same firm are fixing a clock for Sir Spencer Wilson, Bart., Fitzjohns, Rugby, and are sending one to New York in the course of a week or so.

THE old-established firm of Parnall & Sons, Ltd., of Bristol, have lately made considerable extensions to their works, whereby the floor-space for the wood-working department has been greatly increased, the foundry accommodation has been doubled, and the whole works have been remodelled and arranged to be driven throughout by electric motors. The firm's productions consist of shop fronts and interior fittings for all trades, weighing machines from a jeweller's balance to the heaviest weighbridge, coffee mills, fruit cleaners and, in fact, every requisite required by that great and ever-growing community known as shopkeepers. The works are situated in Narrow Wine Street, Fairfax Street, Rosemary Street, and Fishponds, Bristol, with show-rooms in Narrow Wine Street, Bristol, 10 Rood Lane, London, and Alexandra Road, Swansea.

TENDERS FOR THE YEAR 1906.

THE following are a few of the more important works that were estimated for during 1906, the tenders for which appeared in our columns in the course of the year :—

CARDIFF.

For the erection of the first portion of the University College buildings in Cathays Park.

	Library.	Main Building.	Total.
David & Sons	£24,034	£85,563	£109,597
Hayward & Wooster	22,412	85,175	107,587
McCormick & Sons	22,920	82,758	105,678
Stephens, Bastow & Co., Ltd.	22,236	82,279	104,515
Leslie & Co., Ltd.	22,604	81,434	104,038
Davies	22,800	81,200	104,000
Williams	23,102	79,983	103,085
Allan & Sons	21,706	80,218	101,924
Higgs & Hill, Ltd.	21,000	79,990	100,990
Holloway Bros., Ltd.	19,680	70,154	99,834
Willcock & Co.	21,814	77,931	99,745
Barnsley & Sons	21,218	74,780	95,998
Dolman	21,800	74,000	95,800
Hopkins	20,000	73,000	93,000
Parnell & Son	20,480	72,160	92,640
Rowbotham	20,161	71,985	92,146
TURNER & SONS, Cardiff (accepted)	18,862	68,985	87,847
King & Son	18,444	67,083	85,527

CUSTON.

For the erection of the Duke of York's royal military school at Custon, near Dover, for the Commissioners of H.M. Works and Public Buildings.

Fearon	£154,395	0	0
R. & G. Bresley	134,500	0	0
Perry & Co.	134,500	0	0
Blay	133,500	0	0
Gough & Co.	132,000	0	0
F. & H. F. Higgs	130,900	0	0

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CUSTON—continued.

Browning	£129,800	0	0
Mowlem & Co.	129,590	0	0
J. & M. Patrick	129,000	0	0
Davies & Sons	128,910	0	0
Higgs & Hill	128,400	0	0
Kingerlee & Sons	127,593	0	0
King & Son	127,474	0	0
Pattinson & Sons	126,558	0	0
Holloway Bros.	126,300	0	0
Shelbourne & Co.	124,200	0	0
Miskin, Ltd.	119,884	0	0
Hawkins & Co.	118,350	0	0
Wallis & Sons	118,240	0	0
Moss & Sons	117,300	0	0
Johnson & Son.	117,250	0	0
Denne & Son	116,400	0	0
Willett	115,500	0	0
Wise	115,000	0	0
Hill	114,990	0	0
Martin, Wells & Co.	114,000	0	0
Denne	112,900	0	0
Wall, Ltd.	111,515	0	0
Hudson & Co.	107,789	0	0

HULL.

For the erection of post office, for H.M. Office of Works, &c.

Scott	£52,997	0	0
Panton	49,900	0	0
Quibell, Son & Greenwood	41,804	0	0
Levitt	41,654	0	0
Houlton	39,200	0	0
Padgett	38,720	0	0
Goates	38,315	0	0
Wright & Sons	38,150	0	0
Scorrier	37,954	0	0
Marsden & Sons	37,750	0	0
Dawber, Townsley & Co.	37,750	0	0
Bowman & Sons	36,595	0	0
ARNOLD & SON (accepted)	30,275	0	0

KING'S HEATH.

For supplying and laying of permanent way and overhead electrical equipment for 1½ miles. Mr. A. W. Cross, engineer and surveyor.

MacCormick	£40,031	13	10
White, jun.	34,281	5	1
Dick, Kerr & Co.	33,089	4	2
British Electrical Equipment Co.	32,383	16	11
Aird & Sons	32,265	7	4
Brush Electrical Engineering Co.	31,978	7	2
Griffiths & Co	31,299	0	9
Freeman & Sons	30,936	1	1
Law	30,667	0	0
Trentham	30,428	7	9
Dobson	30,281	13	8
Holloway	29,539	18	4
UNDERWOOD & BROS., Dukinfield (accepted)	29,462	0	10

KING'S NORTON.

For extension of the union infirmary and nurses' home at Selly Oak. Messrs. C. WHITWELL & SON, architects, Birmingham.

Bishop	£36,777	0	0
Barnsley & Sons	36,626	0	0
Loud & Sons	36,000	0	0
Cole & Son	36,000	0	0
Sapcote & Sons	35,877	0	0
Bowen & Son	35,690	0	0
Jackson	35,230	0	0
Dallow	33,658	0	0
Whitehouse & Sons	33,363	0	0
Gibbs	33,150	0	0
Moss & Sons	32,325	0	0
JOHNSON, Birmingham (accepted)	31,937	0	0

LEYTON.

For the construction and laying of nine miles of tramway. Mr. WILLIAM DAWSON, M.I.C.E., surveyor.

Hay & Co.	£179,837	11	10
Brebner & Co.	172,531	14	0
Smith & Co.	168,794	10	10
Playfair & Toole	167,976	0	0
Trentham	166,657	13	10

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For Index of Advertisers, see page xxiv

LEYTON—continued.

Osman	£165,947	17	4
Smith & Co.	159,186	6	0
Ewart	158,658	4	0
Wise & Co.	157,553	11	5
Adams	155,050	18	3
Fasey & Co.	154,823	4	1
Briscoe	152,245	1	7
Pethick Bros.	151,170	5	9
Jackson	150,734	15	2
Law	148,676	14	6
Krauss & Son	146,704	0	0
Wimpey & Co.	146,173	11	1
White & Co.	143,672	15	7
Dick Kerr & Co.	140,540	16	3
Blackwell & Co.	138,862	3	0
Anderson	138,144	9	9
British Electric Equipment Co.	137,612	16	7
Underwood & Bro.	135,163	9	5
W. Griffiths & Co.	130,724	19	11
Starkey	128,445	13	9
MANDERS, Leyton (accepted)	127,485	10	5

LONDON.

For the construction of the Bermondsey and Southwark storm-relief sewer.

Best	£209,343	4	5
Neal	145,548	6	9
Price & Reeves	144,461	6	0
Muirhead, Greig & Matthews	135,833	3	7
Paterson	134,997	5	5
Strachan	134,900	0	0
Walter, Scott & Middleton	131,241	6	9
Pedrette & Co.	129,244	13	11
Cochrane & Sons	128,482	1	2
Mowlem & Co.	126,216	0	0
Kennedy	126,047	19	5
McAlpine & Son	107,024	7	8
Moran & Son	106,665	15	11
Smith & Co.	102,094	1	9
The Tilbury Contracting and Dredging Co., Ltd. (recommended)	100,493	5	4
Engineer's estimate	107,500	0	0

LONDON—continued.

For carrying-out first contract of extension, British Museum.

Mr. J. J. BURNET, architect.			
Appleby & Sons	£58,289	0	0
Holliday & Greenwood, Ltd.	53,777	0	0
Thomson & Co.	52,964	0	0
Nightingale	49,029	0	0
Lawrence & Son	48,589	0	0
Martin, Wells & Co., Ltd.	47,500	0	0
Holloway	47,474	0	0
J. & M. Patrick	47,227	0	0
Sabey & Son, Ltd.	46,840	0	0
Downs	46,800	0	0
Lawrance & Sons	46,650	0	0
Parnell & Son	46,447	0	0
Muirhead, Greig & Matthews	46,370	0	0
Spencer, Santo & Co., Ltd.	45,987	0	0
Foster & Dicksee	45,945	0	0
McCormick & Sons	45,885	0	0
Allen & Sons, Ltd.	45,850	0	0
Patman & Fotheringham, Ltd.	45,823	0	0
Hudson & Co.	45,410	0	0
Shepherd & Co.	45,184	0	0
Dove Bros., Ltd.	44,895	0	0
Gough & Co.	44,800	0	0
Willett	44,700	0	0
Paterson	44,413	0	0
Johnson & Son	44,226	0	6
Leslie & Co., Ltd.	43,988	0	0
Godson & Sons	43,914	0	0
Killby & Gayford	43,836	0	0
Higgs & Hill, Ltd.	43,644	0	0
Rowbotham	43,580	0	0
Johnson & Co., Ltd.	43,560	0	0
Kingerlee & Sons	43,411	0	0
Holland & Hannen	42,698	0	0
Wallis & Sons, Ltd.	42,340	0	0
F. & H. F. Higgs	41,600	0	0
Mowlem & Co., Ltd.	40,450	0	0
Smith & Sons, Ltd.	40,150	0	0
Chessum & Sons	39,700	0	0
Holloway Bros., Ltd.	39,480	0	0
WALL, LTD. (accepted)	37,500	0	0

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With Russia Wallet, 5/-**

LONDON—continued.

For the erection of quarters for married police at Huntley Street, W.C. Mr. J. DIXON BUTLER, architect. Quantities by Messrs. THURGOOD, SON & CHIDGEY.

Lascelles & Co.	£26,223	0	0
Lathey Bros.	25,402	0	0
Ashby & Horner	25,277	0	0
Minter	24,904	0	0
Foster & Dicksee	24,684	0	0
Willmott Bros.	24,290	0	0
Lovatt, Ltd.	24,000	0	0
Appleby & Son	23,750	0	0
Ansell	23,546	0	0
Higgs & Hill	23,543	0	0
Lorden	23,537	0	0
Carmichael	23,457	0	0
Clarke & Bracey	23,253	0	0
Prestige & Co.	23,207	0	0
Mowlem & Co.	23,155	0	0
Jarvis & Sons	22,868	0	0
Grover & Son	22,711	0	0
F. & H. F. Higgs	22,760	0	0
Holloway Bros.	22,570	0	0
Lawrance & Sons	22,227	0	0

For work and materials required in the construction of the permanent way along Green Lanes. Mr. H. T. WAKELAM, county engineer.

Brush Electrical Engineering Co.	£134,892	15	0
Blackwell & Co.	84,078	17	1
Muirhead & Co.	77,434	2	10
Turner	76,731	11	6
Law	74,645	5	10
Ewart	72,123	2	0
Underwood & Co.	70,470	9	5
Griffiths & Co.	69,810	10	10
British Electric Equipment Co.	69,155	2	0
Wimpey & Co.	68,458	0	0
Mowlem & Co.	68,300	0	0
Zadig & Co.	67,889	18	2
Adams	67,094	7	10
Ford	65,910	2	2
DICK, KERR & Co.(accepted)	65,910	2	2

LONDON—continued.

For the erection of two patients' blocks, recreation hall and accommodation for supplementary staff at Tooting Bec asylum.

Barker & Co.	£39,766	0	0
Foster & Dicksee	39,639	0	0
Wilkins & Sons	38,844	0	0
Leslie & Co.	37,873	0	0
Cropley Bros.	37,837	0	0
Stephens & Son	37,796	0	0
Smith & Son	37,548	0	0
Edwards & Medway	36,855	0	0
Perry Bros.	35,977	0	0
Perry & Co.	35,550	0	0
Martin, Wells & Co.	35,190	0	0
McCormick & Sons	35,158	0	0
Rowe & Co.	34,900	0	0
Patman & Fotheringham	34,678	0	0
Galbraith Bros.	34,675	0	0
Turtle & Appleton	34,633	0	0
Thomas & Edge.	34,590	0	0
Allen & Sons	34,500	0	0
Moss & Sons	34,364	0	0
Wisdom Bros.	34,050	0	0
Lovatt, Ltd.	34,030	0	0
J. & C. Bowyer	33,920	0	0
J. & M. Patrick	33,669	0	0
Johnson & Co.	33,660	0	0
Lawrence & Son	33,484	0	0
Kirk & Randall	33,398	0	0
Nightingale	33,230	0	0
F. & H. F. Higgs	33,180	0	0
Rowbotham	32,727	0	0
E. Wall	32,700	0	0
Wallis & Sons	32,230	0	0
Rowley Bros.	32,000	0	0
C. Wall, Ltd.	31,800	0	0
Hawkins & Co.	31,312	0	0
Garrett & Sons, 83 Balham Hill, S.W. (recommended)	31,295	0	0
Engineer's estimate	33,000	0	0

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TRAFFORD PARK

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LONDON—continued.

For erection of secondary school, Dawes Road, Fulham.

Lathey Bros.	£32,142	0	0
Waring-White Building Co.	30,304	0	0
McCormick & Sons	30,270	0	0
Downs	29,983	0	0
Holloway Bros.	29,978	0	0
Godson & Sons	29,600	0	0
Spencer, Santo & Co.	29,507	0	0
Leslie & Co.	29,008	0	0
Lovatt, Ltd.	28,793	0	0
Patman & Fotheringham	28,683	0	0
King & Son	28,524	0	0
Kearley	28,315	0	0
Wall, Ltd.	28,021	0	0
Grover & Son	27,933	0	0
Whitehead & Co.	27,865	0	0
Lawrance & Sons	27,741	0	0
Treasure & Son	27,312	0	0
Johnson & Co.	27,260	0	0
Garrett & Son	26,554	0	0
J. & M. PATRICK, Wandsworth (recom- mended)	26,139	0	0

For reconstruction of tramways of about 22½ miles single track.

Shoreditch to Stamford Hill route.

Blackwell & Co., Ltd.	£147,887	5	5
Mowlem & Co., Ltd.	147,717	0	0
Griffiths & Co., Ltd.	145,501	9	2
Dick, Kerr & Co., Ltd.	143,105	6	0
WHITE & Co., LTD. (accepted)	141,399	6	9
Estimate (comparable with tenders)	135,980	9	9

Bloomsbury and Poplar route.

Mowlem & Co., Ltd.	243,190	10	0
Griffiths & Co., Ltd.	242,425	12	8
White & Co., Ltd.	239,995	5	6
DICK, KERR & Co., LTD. (accepted)	238,045	12	8
Estimate (comparable with tenders)	226,831	18	8

LONDON—continued.

For supply of (a) high-tension cables, cable troughs, &c., and (b) low-tension cables, feeder pillars, &c., required in connection with the reconstruction of the first section of the northern tramways, for the London County Council.

High-tension cables, &c.

Kabelfabrik Actien-Gesellschaft	£43,439	10	0
Lahmeyer Electrical Co.	40,095	10	0
Glover & Co.	37,330	18	9
Callender's Cable and Construction Co.	37,239	12	6
St. Helens Cable and Rubber Co.	36,660	10	0
British Insulated and Helsby Cables	36,222	6	7
Johnson & Phillips	36,102	16	2
Siemens Bros & Co.	36,078	2	10
Henley's Telegraph Works Co.	36,050	0	0
Western Electric Co., London (recom- mended)	35,726	19	6

Low-tension cables, feeder pillars, &c.

Lahmeyer Electrical Co.	26,022	12	6
Glover & Co.	24,879	9	5
Callender's Cable and Construction Co.	24,715	17	3
St. Helens Cable and Rubber Co.	24,622	2	6
Siemens Bros. & Co.	24,139	19	6
Western Electric Co.	24,003	11	0
Johnson & Phillips	23,913	12	1
British Insulated and Helsby Cables	23,748	7	11
Henley's Telegraph Works Co., Ltd., London (recommended)	23,628	16	3

For the erection of car-shed at Stamford Hill to accommo-
date 126 cars, for northern tramways.

Kirk & Randall	£34,493	0	0
F. & G. Foster	34,152	0	0
Munday & Sons	32,598	0	0
F. & T. Thorne	32,390	0	0
F. & H. F. Higgs	31,980	0	0
Wall	31,919	17	0
Lovatt	30,939	0	0
Hudson & Co.	30,554	0	0
Holloway Bros.	30,120	0	0
Holliday & Greenwood, London (recom- mended)	27,999	0	0



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LONDON—continued.

For the enlargement of Paddington District Post Office, for H.M. Office of Works, &c.

Clayton	£56,760	0	0
Simpson & Son	38,985	0	0
Foster & Dicksee	38,909	0	0
Ansell	38,906	0	0
J. & W. Drake	37,107	0	0
Aldin Bros. & Devies	37,000	0	0
Speechley & Smith	36,900	0	0
Edwards & Medway	36,800	0	0
Barker & Co.	36,052	0	0
Nightingale	35,770	0	0
Smith & Sons	35,983	0	0
Spencer, Santo & Co.	35,466	0	0
Lawrence & Son	35,274	0	0
Taylor & Co.	35,147	0	0
Lorden & Son	35,000	0	0
Vigor & Co.	34,970	0	0
Johnson & Co.	34,783	0	0
Perry Bros.	34,777	0	0
Wall, Ltd.	34,697	0	0
Patrick	34,439	0	0
Garrett & Son	34,183	0	0
King & Son	34,248	0	0
Martin, Wells & Co.	34,069	0	0
Killby & Gayford	34,050	0	0
Mowlem & Co.	33,970	0	0
Williams, Ltd.	32,520	0	0
Chessum & Sons	32,439	0	0
Galbraith Bros.	31,947	0	0
Wisdom Bros.	31,485	0	0
Fairhead & Son	31,000	0	0
ALLEN & SONS (accepted)	29,990	0	0

For roadwork, paving works, &c., in connection with tramways from Camberwell Green to Lordship Lane.

Griffiths & Co.	£92,894	14	5
White & Co.	92,460	2	4
Muirhead, Greig & Matthews	89,992	10	10
Dick Kerr & Co.	89,663	3	3
Mowlem & Co.	86,548	0	0
Blackwell & Co. (recommended)	82,620	11	11

LONDON—continued.

For the erection of municipal buildings, Brixton Hill, S.E., for the Lambeth Borough Council. Messrs. S. WARWICK and H. A. HALL, architects, 13 South Square, Gray's Inn, W.C. Quantities by Mr. CHARLES W. BOWLES, 9 Staple Inn, Holborn Bars, W.C.

	A.	B.	
Holland & Hannen	£42,980	£2,250	£295
Dove Bros., Ltd.	42,825	2,000	300
Leslie & Co., Ltd.	42,472	1,877	284
Ashby & Horner	42,187	2,000	260
Rider & Son	41,698	1,326	447
Trollope & Sons and Colls & Sons, Ltd.	41,540	1,282	462
Higgs & Hill, Ltd.	41,484	1,780	295
Holliday & Greenwood, Ltd.	41,377	2,072	278
Prestige & Co.	41,310	1,883	450
Patman & Fotheringham, Ltd.	41,223	2,100	160
Simpson & Son	40,797	1,784	440
Nightingale	40,678	1,402	337
H. L. Holloway	40,621	1,972	300
F. & H. F. Higgs	40,400	1,260	430
Carmichael	40,063	1,873	259
Holloway Bros., Ltd.	39,930	1,860	450
Mowlem & Co., Ltd.	39,890	1,478	424
Wall, Ltd.	39,550	1,420	420
Whitehead & Co.	39,525	1,838	211
Killby & Gayford	39,433	1,829	292
Wallis	39,393	1,960	217
GREENWOOD, LTD., 10 Arthur Street West, London, E.C. (accepted)	38,274	1,570	288
Architect's approximate estimate	37,802		
A.—Extra for stone fronts and tower.			
B.—Extra for Norwegian granite plinth and entrance steps.			

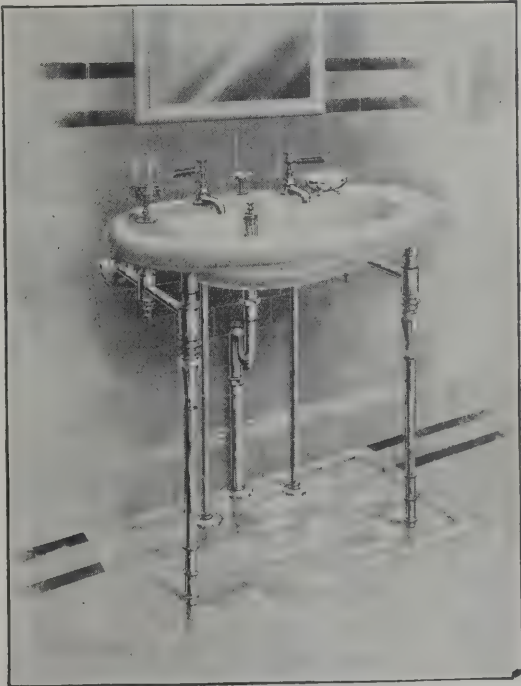
For construction of reservoirs, &c., at Fortis Green, for the Metropolitan Water Board.

Kennedy, Ltd.	£130,167	3	0
Wilkinson Bros.	105,941	0	0
Griffiths & Co.	101,939	4	4
Trimmm	100,937	0	0

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Fig. 941.—THE "MALCOLM."

LONDON—continued.

Adams & Sons.	£98,585	8	1
Pearson & Son	91,827	8	6
Mowlem & Co.	87,783	0	0
Docwra & Son	85,340	12	5
Zadig & Co.	84,756	19	0
Trentham.	82,703	5	11
Aird & Sons	82,464	1	1
Paterson	80,936	5	10
Hay & Co.	80,721	12	11
Muirhead & Co.	77,318	13	3
Neal, Ltd.	76,544	19	11
Boulding & Yerburch	76,529	0	0
Ewart	75,990	5	11
Kellett, Ltd.	75,073	9	5
Moran & Son	75,631	16	5
Smith & Co.	75,911	0	0
Davies, Ball & Co.	74,197	11	10
Lawrence & Son	74,000	0	0
Braithwaite & Co.	73,737	10	4
E. & E. Iles	73,447	0	0
Nunn	72,072	9	4
Kirk & Randall	71,774	0	0
Pattinson & Sons	71,665	9	2
Wall, Ltd.	70,283	12	11
Pethick Bros.	69,999	0	0
Moss & Son	68,800	18	1
Byrom, Ltd., Bury, Lancs (recommended)	60,278	17	9

For erection of Belmont Road school, Tottenham, for education committee. Mr. G. E. T. LAURENCE, architect, 22 Buckingham Street, Adelphi, W.C.

Jackson & Son.	£32,485	0	0	Deduction for Plaster Dadoes.	£1,416	0	0
Hooper, Nussy & Co.	29,201	0	0		1,997	0	0
Clark & Sons	29,189	0	0		3,075	0	0
Pethick Bros.	28,883	0	0		3,700	0	0
Oak Building Co.	28,768	0	0		3,099	0	0
Leslie & Co.	27,526	0	0		2,308	0	0
Roper	26,900	0	0		3,122	0	0
Bateman	26,717	0	0		2,905	0	0
McCormick & Sons	26,430	0	0		1,428	0	0

LONDON—continued.

Goddard & Son	£26,199	0	0	£2,560	0	0
Symes	26,119	0	0	2,054	0	0
Nightingale	25,896	0	0	1,536	0	0
Treasure & Son	25,702	0	0	2,167	0	0
Chessum & Sons	25,597	0	0	2,240	0	0
Westgate	25,444	0	0	1,714	0	0
Pollard & Brand	25,229	0	0	2,064	0	0
Carter	25,149	0	0	2,007	0	0
Kerridge & Shaw	24,640	0	0	1,847	0	0
J. & W. Maddison	24,516	0	0	2,231	0	0
Porter	24,500	0	0	1,930	0	0
Shepherd & Co.	24,445	0	0	2,073	0	0
Youngs & Son	24,433	0	0	1,850	0	0
Lawrence & Son	24,384	0	0	1,785	0	0
Davey, Ltd.	24,367	0	0	2,465	0	0
Wallis & Sons	24,266	0	0	2,000	0	0
Moss & Sons	24,042	0	0	1,817	0	0
Coxhead	23,692	0	0	1,945	0	0
Fairhead & Son	23,590	0	0	1,979	0	0
Guttridge	22,966	0	0	1,766	0	0
ROWLEY BROS., Tottenham (accepted)	22,856	0	0	2,027	0	0
Wall, Ltd.	22,778	0	0	1,673	0	0
F. & A. Willmot	22,616	0	0	2,340	0	0

For laying pipes from Child's Hill to Cranley Gardens, for the Metropolitan Board.

Docwra & Sons	£42,267	18	3
Mowlem & Co.	42,115	0	0
Aird & Sons	38,548	15	11
Kellett, Ltd.	38,024	4	7
Nunn	37,851	13	10
Bell & Sons	35,216	17	8
Dobson	34,617	3	8
Crawford	34,064	5	2
McAlpine & Sons	33,336	18	2
Muirhead & Co.	32,464	9	6
Moran & Son	29,786	8	9
Egan & Sons	28,697	2	4
Zadig & Co.	26,612	8	2
Davies, Ball & Co.	24,954	1	0
WRIGHT & Co., Leicester (accepted)	22,666	2	10

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£11,000,000.

LONG DITTON.

For construction of filter-beds, &c., for the Metropolitan Water Board.

Mowlem & Co.	£101,625	0	0
Manders	97,182	7	5
Perry & Co.	92,232	0	0
Lovatt, Ltd.	89,345	18	8
Pearson & Son	83,618	1	2
Kennedy, Ltd	83,531	10	7
Nunn	72,627	1	10
Osman	71,856	0	0
Docwra & Son	69,998	14	6
Kirk & Randall	67,824	0	0
Pedrette & Co.	61,893	19	3
Aird & Sons	61,876	15	10
Hay & Co.	61,696	4	8
Wall, Ltd.	61,309	0	0
Neal, Ltd.	57,443	14	5
Moran & Son	56,996	0	0
Muirhead & Co.	55,604	13	0
Pethick Bros. (recommended)	54,783	0	0

MAIDSTONE.

For sewage disposal works, for the Corporation. Mr. G. R. STRACHAN, engineer, 9 Victoria Street, Westminster. Contract No. 1.

Mowlem & Co., Ltd.	£74,220	0	0
Dickson	61,699	3	0
Tilbury Contracting and Dredging Co., Ltd.	58,193	16	3
Riley	57,947	8	1
Moss & Sons, Ltd.	57,260	3	5
Nunn	57,031	3	9
Trimm	56,192	0	0
Kemp Bros.	55,751	8	9
Lock, Andrews & Price	55,578	10	2
Harrison & Co.	69,998	0	0
Harrison & Co.	53,593	0	0
Crawford	53,008	6	7
Johnson & Langley	52,092	1	8
Binns	50,950	1	6
Buckley	50,744	10	10
Muirhead, Greig & Matthews	49,829	9	6

MAIDSTONE—continued.

E. & E. Iles	49,713	0	0
Neal, Ltd.	49,537	0	0
Smith & Co.	48,860	14	1
Kellets, Ltd.	48,609	0	0
Wallis & Sons, Ltd.	48,400	0	0
D. Jackson	47,471	19	7
Davies, Ball & Co.	47,363	0	0
J. Jackson	47,213	15	3
Braithwaite & Co.	46,577	18	8
Moran & Sons, Ltd.	45,709	17	0
Dean, Ltd.	45,212	14	2
Underwood Bros.	44,310	18	9
Osenton	42,063	0	0
Wright & Co., South Wigton, Leicester (accepted)	41,482	5	6

MANCHESTER.

For the erection of Section A of the Royal Infirmary, including four large blocks, and the general, medical and surgical department; works to be completed by July 30, 1908. Messrs. E. T. HALL & J. BROOKE, architects.

Holliday & Greenwood	£258,277	0	0
Rowbotham	256,752	0	0
Foster & Dicksee	253,620	0	0
Morrison & Son	251,300	0	0
Neill & Son	245,000	0	0
Brown & Son	244,480	0	0
ARNOLD & SON, Doncaster (accepted)	239,546	0	0
Architects' estimate	240,000	0	0

SHEFFIELD.

For the erection of home in Heeley Bank Road for Little Sisters of the Poor. Mr. EDMUND WINDER, architect, Corn Exchange Chambers, Sheffield.

Wade & Co.	£28,000	0	0
Pinder Bros. & Boul	27,098	0	0
Vickers & Son	26,650	0	0
E. & W. Oxley	25,730	0	0
J. & H. Wheen	24,536	0	0
Willerman Bros.	24,315	0	0
W. & A. Forsdyke	24,300	0	0

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SHEFFIELD—continued.

Boot & Son	£24,200	0	0
Lee & Kirk	24,000	0	0
Freckingham	23,990	0	0
Hollingworth & Bedford	23,856	0	0
Eshelbey & Son	23,825	0	0
Thornton & Son	23,804	0	0
O'Neil & Son	23,650	0	0
Wilkinson & Sons	22,800	0	0
Longden & Son	22,720	0	0
ROPER & SONS, Mowbray Street, Sheffield (accepted)	22,505	10	0

SURBITON.

For construction of main drainage works. Mr. NICHOLSON
LAILEY, engineer, 53 Victoria Street, Westminster.

Jones & Sons	£70,400	0	0
Pethick Bros.	68,575	0	0
Pedrette Bros.	62,479	13	7
Yewen	61,822	16	6
Hay & Co.	60,570	10	0
Iles	59,528	0	0
Dickson	57,527	18	11
Neal & Co.	57,076	6	3
Riley	56,373	19	9
Manders	55,892	10	9
Moran & Co.	55,555	0	0
Jackson	55,146	16	3
Stephens & Sons	55,146	0	0
Cooke & Co.	55,129	0	0
Wheeler	55,085	9	6
Osenton	55,078	0	0
Wright & Co.	54,683	3	11
Osman	54,462	16	0
Macalpine & Co.	54,253	17	5
Trimm	52,628	0	0
Johnson & Langley	52,063	0	0
Cunliffe	51,295	0	0
Johnson Bros.	50,750	0	0
Braithwaite & Co.	49,913	11	6
KAVANAGH, Tolworth (accepted)	48,810	16	0
Jackson	47,399	4	6
Smith & Co.	44,714	5	3

WIGAN.

For erection of infirmary and imbecile portions of the new
workhouse at Billinge. Messrs. HEATON, RALPH &
HEATON, architects, Wigan.

J. & W. Stewart	£39,900	0	0
Webster	36,973	0	0
Thornton & Sons	35,975	0	0
Byrom, Ltd.	34,606	0	0
Hughes & Stirling	34,260	0	0
Pennington	34,000	0	0
Pilkington	33,400	0	0
Pattinson & Sons	33,999	19	9
Webster & Winstanley	33,000	0	0
Townson & Sons, Ltd.	32,955	0	0
Spencer	32,901	0	0
Davenport	32,698	0	0
Hodkinson	32,424	0	0
T. & H. Houghton	32,423	10	0
H. & F. Lomax	32,423	0	0
Neill & Sons	32,309	0	0
Gabbott	32,303	0	0
Bywater & Sons	32,300	0	0
Wigan	32,250	0	0
Young, Tinker & Young	32,249	0	0
Ellison	32,200	0	0
Wilson & Co.	32,195	0	0
Moss & Sons, Ltd.	32,100	0	0
Gerrard & Sons, Ltd.	32,023	0	0
Johnson & Son	31,970	0	0
Rothwell & Sons	31,850	0	0
Costain & Sons	31,665	0	0
ABLET, Wigan (accepted)	31,566	0	0

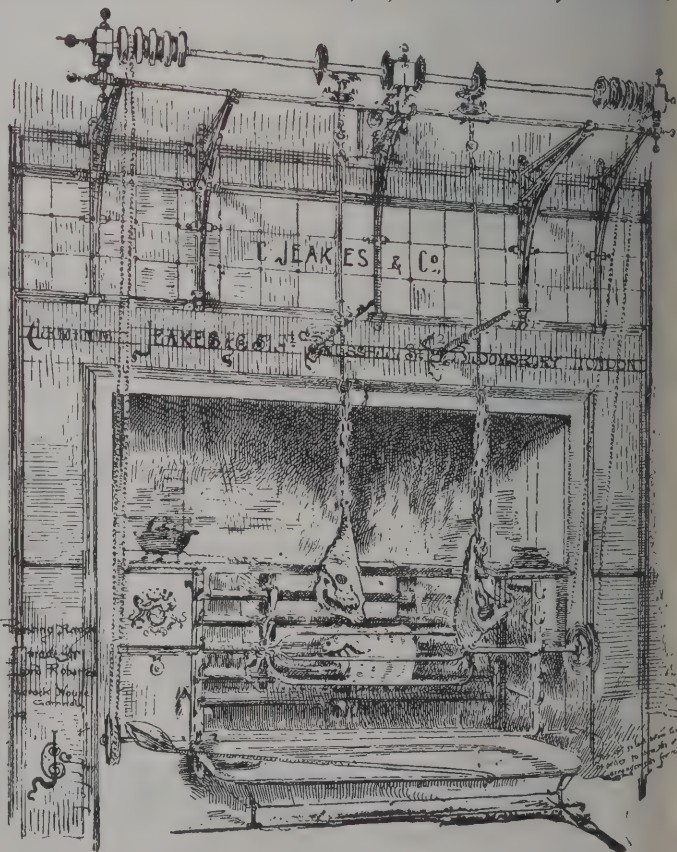
A COMMISSION was some time ago appointed by the
Bishop of Gloucester to inquire into the question of church
accommodation in the city and the rearrangement of parishes.
Their report recommends the reconstruction of the parish
of St. Catherine and the erection of a new church at Wotton,
on the north side of the city; the creation of a new parish
on the south side connected with St. Luke's parish, the re-
arrangement of the boundaries of other parishes and the
erection of two new mission churches.

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ILLUSTRATIONS.

A ROOM IN A WEST-END HOUSE.

THE HORNBY LIBRARY, LIVERPOOL.

THE NEW WAR OFFICE, WHITEHALL.

MANCHESTER ROYAL INFIRMARY.

BUILDING AND BUILDERS.

MESSRS. SPALDING & SPALDING have removed to new offices at 36 and 37 Cheapside, London, E.C.

THE contract for the nave of Hexham Abbey has been secured by Messrs. Holloway Bros., of London.

It is proposed to build a new isolation hospital for the Woodford (Essex) Urban District Council.

MESSRS. ISAAC JENKINS & JOHN JONES, builders and contractors, of Johnstown, near Ruabon, have dissolved partnership.

MESSRS. GEORGE EDWARD BOLSHAW & HENRY JOHN STEVENS, architects and surveyors, of Princes Street, Harrogate, have dissolved partnership.

FOR the new fish market at Lerwick, N.B., which is being erected at a cost of 3,104*l.*, Mr. George Lyall, jun., builder, of Aberdeen, has secured the contract.

SEVERAL thousands of pounds damage was done by an outbreak of fire on Wednesday at the residence of Colonel Ricardo, at Maidenhead.

As we go to press a very serious outbreak of fire is reported at Portsmouth Dockyard. The damage up to the present is very severe, and amounts to many thousands of pounds.

MR. G. WRIGHT, of Southend-on-Sea, has been appointed to take out the quantities for the extensions at the workhouse, for the Rochford Guardians.

VARIETIES.

A new theatre of varieties is about to be erected at Barking, Essex.

THE Haslingden Board of Guardians are considering a scheme for building a new infirmary at the workhouse at an estimated cost of 27,415*l.*

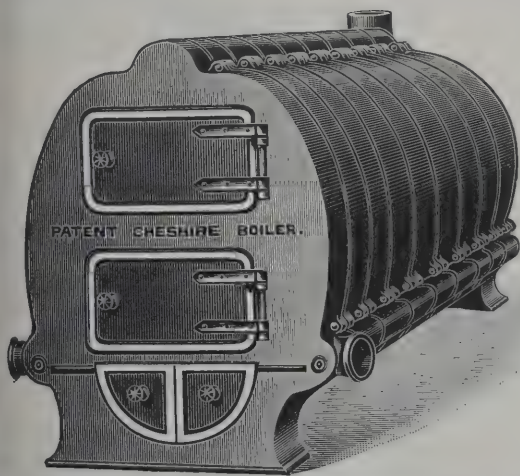
THE London County Council have ordered that their new cottages at Norbury are not to be photographed without the Council's sanction. The cottages consist of four rooms each, and are constructed with bricks made in the Council's brickfields in the vicinity.

THE general purposes committee of the Dudley Town Council recommend that an assistant be engaged by the sanitary and water-supply committee for the borough surveyor's department, to undertake the duties of drainage and building inspector, and that the general purposes committee pay one-third of his salary.

THE select committee of the House of Lords appointed to inquire and report in respect to the unfinished condition of the rooms in the Palace of Westminster appropriated to the service of the House and their approaches have been unable, owing to the short time at their disposal, to bring their inquiry to a conclusion during the past session. They therefore recommend that they should be reappointed next session.

A BLOCK of offices seven storeys high is to be erected on the site of Nos. 252, 254 and 256 Vauxhall Bridge Road—Victoria Street end—for the Central London Estates, Ltd. The contract has been signed with Mr. Charles Gray, of Shepherd's Bush, and the work is to be pushed forward with all speed. The elevation will be carried out in red bricks with grey terra-cotta dressings. An electric lift will give access to the various floors. The architects are Messrs. Palgrave & Co.

THE American Consul at Kehl, in a report to the Washington Bureau of Manufactures, says that the long-talked-of regulation of the river Rhine between Mannheim and Strasburg will soon be an accomplished fact, as the three Governments, namely, Alsace-Lorraine, Baden and Bavaria, have come to an understanding, and voted the money necessary for deepening the channel sufficiently to



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NO BRICKWORK REQUIRED.

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Heating Power 300 to 5,000 feet of 4-inch Pipes.

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WALNUT, CANARY PINE, TEAK, &c.
ALL AMERICAN HARDWOODS IN BOARD AND LOG.

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Deal, Batten and Board Stocks—SOUTH DOCK.

Hardwood Yard—LAWRENCE STREET.
Timber Ponds—CLAXHEUGH.

enable boats to reach Strasburg during all seasons. Some years ago extensive stone docks were built at Kehl and Strasburg for the accommodation of vessels coming up the Rhine, but these docks are practically useless during the stage of low water, which usually exists for a period of from 100 to 200 days each year.

REPRESENTATIVES of the ironmongery and allied trades of Glasgow met in the Building Trades Exchange last week to protest against the gas department of the Glasgow Corporation trading with public bodies, private firms and householders in competition with the trade. After a discussion the following resolution was unanimously passed:—"That this meeting of representatives of the ironmongery and allied trades protests against the action of the gas department of the Corporation of Glasgow in trading with public bodies and private firms and householders, and supplying to them lamps, stoves, fires and other gas supplies in competition with the trade." A committee was appointed to conserve the interests of the ironmongers.

THE members of Epsom parish church have adopted the following resolution with regard to the erection of a new church on a system of enlargement of the present structure:—"That the chancel and two bays be built now and an additional third bay be proceeded with if the building and finance committees, after considering tenders and cost, decide that the funds then promised or received justify its being taken in hand. To this end it is proposed that tenders be invited for the building of the chancel and two eastern bays of the new church, and further tenders for an additional third bay; also an estimate for necessary temporary work if the third bay was postponed, the remaining portion of the present church to form a temporary west end." The plans have been prepared by Sir Charles Nicholson.

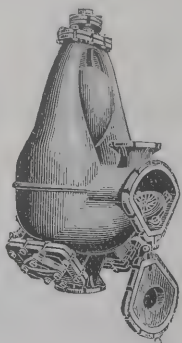
In a recent report issued by the United States Department of Commerce and Labour it is stated that a bulletin of the Geographical Survey calls attention to the fact that there is a noticeable concentration of interests in the cement industry, and that this will probably become more accentuated year by year. The eighty-eight plants in existence in 1905 were owned by seventy-eight companies, and several of these nominally independent companies are

closely connected by ownership. It is stated, however, that good raw materials are so widely distributed in the United States that there is hardly a county which could not produce Portland cement if prices were forced high enough. The only limitation now on the erection of cement plants is in the fact that the great cost makes the venture prohibitive for the individual or the small firm. The cement industry is at present in a more concentrated condition than was the iron and steel industry at the date of the formation of the United States Steel Corporation. The total authorised capital of all the American Portland cement companies now in operation will fall between the limits of 22,000,000*l.* and 25,000,000*l.* The bulletin states that this capitalisation cannot be considered excessive in view of the fact that it would cost probably from 15,000,000*l.* to 17,000,000*l.* to replace the plants now in existence.

THE present demand for materials employed in engineering work is so exceptional for this season of the year, says the New York *Engineering Record*, that it deserves special mention. It is customary in the cement industry, for example, to find a reduction in the manufacturing rate by the first of November, for from this time until spring the demand for cement ordinarily shows a marked falling off, and few mills have sufficient stockhouse capacity to enable them to accumulate and carry large quantities of finished cement, while only a very few make any attempt at all to keep on hand a large amount of clinker, which is more easily stored. To-day such additional storage would be of little value, for, contrary to all precedent, the mills are still running about as many kilns as in July without being able to accumulate any stocks, so great is the present demand. In the iron and steel industry the situation is the same. The demand for pig-iron, particularly foundry iron, is so large that a considerable increase in importations seems likely. The blast-furnace record of the Steel Corporation was broken last month and its steel plants also broke the record. Steel castings cannot be procured under a month, unless they are small and are furnished more promptly as a favour to some particular purchaser. The cast-iron pipe foundries are in an unusually busy condition, and it seems hardly necessary to say that structural steel is very hard to get with anything approaching promptness.

Pulsometer Eng^o C^o L^d

THE
Pulsometer
Steam Pump.



Will pump dirty and gritty water.
Has no moving parts except the valves.

Needs no skilled attention.
Will work suspended by a chain.

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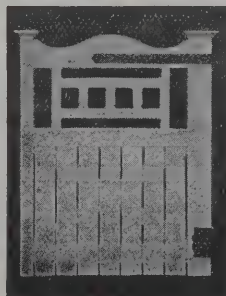
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A LIST of ART PLATES published in "THE ARCHITECT" will be forwarded on application to GILBERT WOOD & CO. Ltd., Publishers, Imperial Buildings, Ludgate Circus, E.C.

PARQUET FLOORS. H. BASSANT & CO.

Late of 87 Charlotte St., W.
Linholpe Street Works,
Dorset Square, N.W.

THE HAND LIFTS

(Quality at reasonable cost).

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DIESPEKER, Ltd.

MOSAIC ARTISTS,

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THE WOOD CARVING CO.

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BALUSTERS, NEWELS,
OVERDOORS, and CARVING
of every description.



WRITE FOR ILLUSTRATED LIST.

"KORKSTEIN."

KORKSTEIN, or corkstone, is not known to geologists, for it is the appropriate appellation adopted for a material which has been found peculiarly suited for insulating freezing chambers, refrigerating plant, boilers, steam-pipes, &c. It is equally adapted for the insulation of walls, floors, ceilings, &c. Korkstein has been introduced in this country by Messrs. Chittenden & Co. There are two varieties, viz. "Reform" and "Emulgit." The former serves when the temperature of the object to be insulated lies between zero and 20 degrees below zero (centigrade), while emulgit serves for temperatures between zero and plus 150 degrees. At the present season emulgit would save annoyance in many houses in protecting pipes from freezing. It is characteristic of the manufacturers' system of avoiding all exaggeration in describing their product when we find them saying that there is a limit to what emulgit can do in that way. Reform corkstone slabs can be employed as an interior or exterior lining for walls. It is manufactured in Austria, and has been largely used throughout Eastern Europe. The material was subjected to severe tests in the Royal Technological Museum of Vienna, to define its strength, conductivity and fireproof qualities. The results were most satisfactory. There is a wide field for corkstone in this country.

ALMANACS FOR 1907.

WE have received a calendar issued by Messrs. Diespeker & Co., Ltd., of Holborn Viaduct. It is very tastefully produced; the figure is excellent, but the subject is somewhat cool for the weather we have lately had. The Sun Fire Company, with its blazing sun, is warm and comfortable after a view of Messrs. Diespeker's cool and artistic production. Messrs. G. M. Hare & Co. are sending out a peacock with a yellow moon. Mr. Harris, of the Chemical Cleaning and Dyeing Company, has adopted a theatre curtain for his calendar. The effect is given of the curtain being down with an advertisement of the Cleaning Company appearing on it. Messrs. Ashwell & Nesbit, Ltd., have an

illustration on their calendar of the Belfast City Hall. The figures on the calendar are very bold, and contain at foot Shakespearean quotations. The Edinburgh Life Assurance Company are issuing a calendar with a portrait of Sir Walter Scott, the founder of that office. With numerous others we have calendars from Messrs. Watts, Finch & Co., galvanisers and constructional engineers, of Billiter Buildings, London, E.C., and a no doubt useful, but far from ornamental, calendar from Messrs. W. T. Glover & Co., of Trafford Park, Manchester.

MANUFACTURE OF PAINTS AND COLOURS.

THE Home Secretary has issued amended regulations under section 79 of the Factory and Workshop Act, 1901, for the manufacture of paints and colours. The regulations will apply to all factories and workshops in which dry carbonate of lead or red lead is used in the manufacture of paints and colours or chromate of lead is produced by boiling, but they are not to apply to factories and workshops in which paints and colours are manufactured not for sale but solely for use in the business of the occupier, or to factories or workshops in which only the manufacture of artists' colours is carried on, or to the manufacture of varnish paints. Regulation 2 and so much of Regulation 3 as prevents the employment of a woman in manufacturing lead colour are not to apply to the packing in parcels or kegs not exceeding 14 lbs. in weight, unless and until so required by notice in writing from the Chief Inspector of Factories. It is provided in the regulations, among other things, that no lead colour shall be placed in any hopper or shoot without an efficient exhaust draught and air guide so arranged as to draw the dust away from the worker as near as possible to the point of origin; that no lead process shall be carried on save either—(a) with an efficient exhaust draught and air guide so arranged as to carry away the dust or steam as near as possible to the point of origin; or (b) in the case of processes giving rise to dust, in an apparatus so closed as to prevent the escape of dust (provided that this regulation shall not apply to the immersion and manipulation of lead colour in water); and that no woman, young person or child shall be employed in manipulating lead colour.

OUTSIDE FIRE ESCAPE STAIRCASE



The above illustration shows Fire Escape Staircase recently erected at the Goyt Mill, Stockport.

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TO CHECK PICKETING AND INTIMIDATION.

The Labour Protection Association, 25 Victoria Street, London, S.W., whose object is to watch all trade disputes and defend the interests and rights of masters and free workmen during strikes, has issued the following circular to its members and to employers' associations throughout the country:—

The Trades Disputes Act and the Protection of Free Labour against Picketing and Intimidation.

Parliament having relieved labour unions of all responsibility for the acts of their agents during trade disputes and strikes, and conferred upon these organisations the right to picket in unlimited numbers (for the purpose of "persuading" a person to do that which he is unwilling to do) any place where such person (workman or master) may work, reside, or happen to be, the necessity has arisen for such steps to be taken as will protect free workmen and their masters against intimidation, molestation, annoyance, or the other evil features of labour-union warfare. The Labour Protection Association is prepared, at short notice, to provide its members with an adequate number of experienced men, who have served in the military, naval, or police forces, to undertake the watching and counter-picketing of factories, workshops, mines, railways, and of all places where work or business is carried on which may be picketed by the agents and emissaries of the labour unions. The Association would thus safeguard the property and person of all who may be in fear of the ruffianism, brutality and terrorism (humorously and now by statute called "peaceful persuasion") which so often characterise the methods of labour unionism in enforcing its demands and furthering its ends.

PADDINGTON Borough Council has instructed its representative at the Metropolitan Water Board to request the Board to discontinue the practice of cutting off the water-supply from premises in respect of which the water-rate has not been paid, and to substitute legal proceedings for the recovery of such rate where necessary.

LIGHTNING CONDUCTORS.

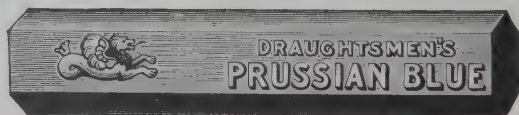
A LECTURE was delivered by Mr. Alfred Hands before the Royal Engineers at Chatham on "The Protection of Buildings from Lightning." He showed the extent of damage done by lightning by means of a chart of England and Wales on which the positions and nature of objects damaged during a period of about nine years were indicated by coloured spots. This included 2,485 buildings, of which 148 were churches. He criticised the report of the lightning research committee, which, he said, by its contradictory recommendations and incorrect statistics, had caused a great deal of scepticism as to the utility of lightning conductors. He explained, by diagrams and reproductions on models of buildings of cases that had occurred, some of the more complex lightning effects that had to be guarded against and the methods of protection that had to be employed. These included fires caused by the surging effect of a discharge, and cases in which damage is caused to a building by lightning striking an object half a mile away.

The lecturer showed the impossibility of protecting buildings efficiently by means of set rules; each case had to be studied separately, and the system of protection applied which the complications of metal in and about the structure showed to be necessary. Hitherto too much importance had been attached to the form and composition of the conductor, and too little to the fact that its efficiency depended almost entirely on the way in which it was applied and very little on what it was. He regarded the subject as somewhat analogous to the work of a medical practitioner. The conductors in the hands of an expert were comparable to the drugs a physician might find it necessary to prescribe according to his diagnosis of the case. No one could claim infallibility, and anyone might overlook some factor that might have an important bearing on the case; but the fact remained that the possession of knowledge, experience, and an ability to discriminate as to the importance of details should enable a man to protect a building effectively, while absence of these would very probably result in failure. At all events, it was in this direction he thought we should strive to improve our methods, and not in trying to devise

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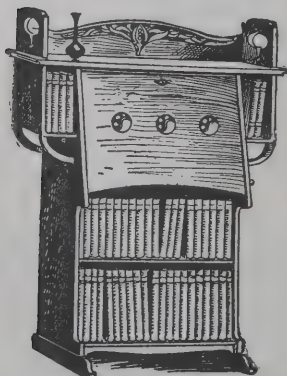


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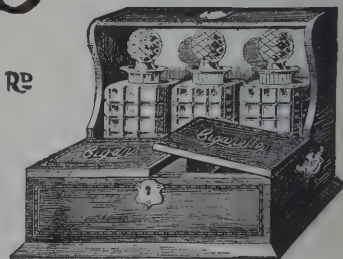
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Ditto, with fine cut-glass bottles, **35/6.**
Ordinary price, 63/-.

theoretically perfect, but practically impossible, mechanical ones.

As regards the relative value of iron and copper for conductors, Mr. Hands considered the matter, so far as concerned conductivity and the dissipation of energy, to be of such trifling importance that it sank into insignificance in comparison with considerations of durability. A lightning conductor was expected to last for a long time, and iron was unfortunately too perishable for the purpose. As regards cost, an iron system, if of sufficient size to be fairly lasting, would be more costly than an ordinary copper tape one.

Mr. Hands said that vagaries or freaks of lightning were an impossibility, and the belief in such was due only to the cases being wrongly reported. There were laws governing all natural phenomena, and lightning, like every other force in nature, must be amenable to law. Where they appeared at first sight inexplicable, we should try to clear up the mystery and not dismiss the matter by saying that in one respect nature was erratic.

BUILDING TRADE IN GLASGOW.

REPORTS regarding the building trades of the city at the close of 1905, says the *Glasgow Daily Herald*, gave little hope of much improvement during the year just closing, but notwithstanding that the outlook then was anything but cheerful, the actual money value of the work done is more than might have been expected. This has been due principally to certain improvements in the western and southern districts of the city. At York Hill several new streets have been formed, and twenty-six tenements are in course of erection there. The new Mitchell Library in North Street is also being erected, and among other important work of which notice must be taken is that in Hope Street and the block of buildings on the north side of Sauchiehall Street. The linings passed by the Dean of Guild Court represented a total value of 1,188,488*l.* in comparison with 1,439,434*l.* in 1905. This is the lowest amount recorded within the past fifteen years. The extensions of the Corporation Tramways have to a large extent

caused speculative builders to direct their attention to suburban districts, and considerable activity has been in evidence in Newlands, Giffnock, Craigton and Scotstoun, both in the matter of tenement and villa building. The number of houses included in the linings passed by the Court is similar to that of last year, though the linings granted were twelve fewer. The value of the tenements was 567,580*l.*, representing eighty linings and 2,389 apartments; in 1905 the value of the 2,350 apartments for which ninety-two linings were passed amounted to 582,853*l.* This shows that the houses erected during the past year are of a better class than those built in 1905. In the western district two linings were granted for 201 houses of two apartments and fifty-five houses of three apartments, the valuation being 4,955*l.*, whereas in 1905 one lining was granted for twenty-six houses of four apartments with a valuation of 8,500*l.* A distinct decrease is shown in the eastern district, for in 1906 sixteen linings were granted for tenements of one apartment and upwards—in all 510 apartments—with a valuation of 79,120*l.*; whereas in the preceding year the linings numbered thirty for 290 houses of one apartment, 1,035 houses of two apartments, and seventy-nine houses of three apartments—altogether 1,404 apartments—with a valuation of 235,028*l.* No linings for tenements were granted for the northern and southern districts in 1905, but during the past year three linings were passed for 195 apartments, with a valuation of 79,360*l.* The Queen's Park and Maryhill districts show only a slight falling-off in comparison with the previous year. In regard to other classes of buildings it will be found that in 1906 100 linings were granted for warehouses, works and stores, valued at 289,373*l.*, compared with 125 linings and a value of 376,715*l.* in 1905. For churches, halls and schools twenty-six linings were passed, with a value of 90,425*l.*, as against ten linings and a value of 72,400*l.* in the previous year; while for public buildings nine linings, with a value of 65,230*l.* were granted, against twenty linings and a value of 103,515*l.* in 1905. In regard to alterations and additions to buildings there were 221 applications, and the valuation of these was 175,810*l.*, whereas in 1905 the applications numbered 221 and the valuation was 303,951*l.* During the year 9,784 lineal yards of streets have been added to the city.

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FROM SARACEN FOUNDRY, GLASGOW.

NEW DIARIES.

MESSRS. HUDSON & KEARNS's diaries, to which we have quite recently referred in noticing their blotter, are as usual to hand, and no architect or builder can well afford to be without one; they have been produced in Messrs. Hudson & Kearns's best style, and this should be sufficient indication that both printing and paper cannot easily be excelled.

A particularly useful diary published at 1s. 6d. is that issued by our contemporary *The Master Builders' Association Journal*, and entitled "The National Master Builders' Year Book and Diary." The mass of information contained is such that the diary should be found of value in every builder and contractor's office.

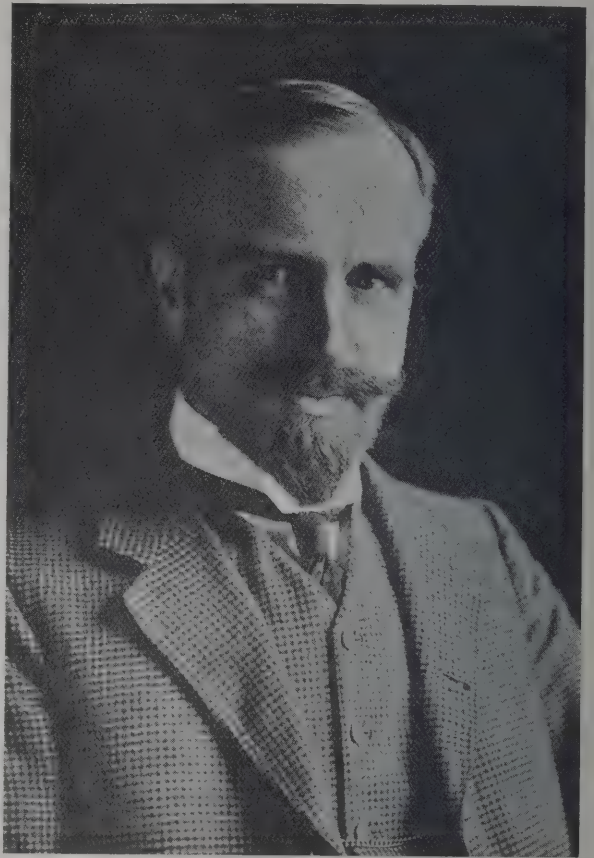
We have received a copy of the diary issued by Messrs. Benn Bros., the proprietors of *The Cabinet Maker*. It is printed on good paper, leaving plenty of room for each day's notes, and is bound in a strong and artistic gray cover.

We have received an ivory pocket calendar from Messrs. Robert Boyle & Son, the well-known ventilating engineers. On one side is a small scale giving inches and metrical measurements of value to architects and builders, and on the other the usual calendar.

BUILDING TRADES EXHIBITION, OLYMPIA.

THE forthcoming Building Trades Exhibition, which takes place at Olympia next April, will entirely surpass all the successful exhibitions held biennially since 1895 at the Royal Agricultural Hall. We have had an opportunity of seeing the plans, and find that the whole of the main hall and galleries are definitely allotted and the greater portion of the annexe as well. The list of firms who have taken space is evidence that the exhibition will be thoroughly representative of the building trades, the exhibitors already totalling some 300, which includes many of the leading firms throughout the country. It is gratifying to note that almost without exception the same firms exhibiting at the last show have taken three or four times as much space at Olympia, and everything points to a gigantic success.

Mr. H. Greville Montgomery, M.P., is solely responsible for the organisation of this venture. Finding that the



Agricultural Hall was quite inadequate to accommodate all the applicants for space he arranged to lease London's

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largest hall, and even now judging from the applications pouring in for space many firms will be disappointed.

The Lord Mayor will formally open the exhibition on April 6.

WARMING BEDROOMS WITH WASTE HEAT FROM THE SITTING-ROOM FIRE.

A CHEAP and effective hot-water heating apparatus for domestic dwellings has long been needed, and on this account a heat distributor which has been put on the market by Mr. J. D. Prior, of the Empire Works, Holliday Street, Birmingham, appears to have a strong claim to notice. The distributor in question is fixed in the ordinary fire-grate which is in general use and connected with hot-water pipes or radiators fixed in the rooms to be warmed, the apparatus extracting sufficient waste heat from the back of the fire to cause the water contained in the distributor to circulate rapidly through the pipes or radiators and thus warm the rooms.

The distributor is constructed of very strong oblong copper tubes of such a shape that they do not interfere with the radiation of the heat from the fire, and corrugated in a special manner which increases the heating power and forms expansion loops. These corrugated tubes passing through the back of the fire absorb heat very quickly, and the water contained in them rapidly circulates through the pipes leading to the radiators. The tubes are seamless, drawn from best copper and of such a shape and thickness as not to be injured by the poker. Taps are fixed to control the temperature or turn off the heat from any room in which it is not required.

The advantages of such an apparatus are obvious, for it uses the waste heat which would otherwise be lost up the chimney. One fire is sufficient to heat three rooms, and the trouble of lighting extra fires is consequently obviated. The apparatus is easily fixed, and being automatic in action can be put in operation by anyone; in fact, all that is needed is to light the fire in the ordinary way, and the distributor does the rest.

At the Royal Sanitary Congress in July last year this heating appliance was shown in operation, and the judges

awarded a prize medal to both the "Venetian" fire grate and the heat distributor.

Mr. Prior has prepared a descriptive pamphlet dealing specially with this useful invention, and will only be too pleased to forward a copy to any architect or builder on application.

OFFICIAL INFORMATION.

THE Commercial Intelligence Branch of the Board of Trade has been in the habit of forwarding to chambers of commerce, for the confidential use of their members, but not for publication, information to which it has appeared desirable in the interests of British trade to draw attention confidentially. The plan has met with general approval, and the *Board of Trade Journal* announces that it is intended to continue and extend it. In order to attain more fully the purpose of the Board, namely, to reach all British manufacturers or traders interested, it has been decided, on the recommendation of the commercial intelligence committee, to supplement the existing system by opening on January 1 a register at the Commercial Intelligence Branch, 73 Basinghall Street, E.C., of British firms who may desire to receive confidential information relative to their respective trades. British firms desiring to have their names entered on this list should apply to the Commercial Intelligence Branch on the form which has been prepared for the purpose, copies of which may be obtained on application at the offices of the branch.

The admission to the register, as well as the retention upon it, of any firm will be at the discretion of the Board of Trade. It is not proposed to make any charge for information supplied, but every firm admitted to the register will be required to become a subscriber to the *Board of Trade Journal* (and register as such with Messrs. Wyman & Sons, Ltd., Fetter Lane, London, E.C.), in order to insure that those who wish to receive confidential information should first be in possession of all the official information relating to their particular trade which is published in that Journal. The present scheme is provisional and experimental, and its continuance and future development will depend on the results of experience.

THE "DRAWWELL" GRATE

WAS PLACED

First in the Final Tests

at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

N.B.—All Grates bear the Trade Mark and Name of "Drawwell" on firebrick to insure against imitation.

This Grate can only be supplied through Builders' Merchants, Ironmongers, &c., but Drawings and Particulars can be obtained from



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where the "Drawwell" can be seen in action.

MANCHESTER CITY COURTS.

THE report for 1906 of the offices committee of the Manchester City Justices contains several suggestions as to the improvement of the arrangements of the city courts. The committee think that the room used formerly as the coroner's court could be used as a separate court for children and as a bail or summons court during the sitting of Quarter Sessions. The clerks' offices, it is stated, are exceedingly cramped. They were built thirty-six years ago, when the area of the city was about 6,000 acres, and they are now too small for a city three and a half times that size, with a present population of 637,000. There is every probability, too, that in the near future it will be necessary to appoint an additional clerk. The committee recommend alterations to meet these additional requirements. As to the Licensing Sessions they say:—Great inconvenience is experienced at these times owing to the lack of one large court specially suited for civil business, as the dock takes up the whole of the centre of the court and is not available for either sitting or standing room. The position of the building is such that there can be no expansion laterally, and it is worthy of serious consideration as to how additional accommodation shall be provided.

The committee sent to the City Council a copy of a resolution which stated that it is desirable that the streets surrounding the courts should be paved with such pavement as would lessen the noise, which at present is detrimental to the interests of justice. This was referred to the street paving committee of the Corporation, who replied that they regretted they were unable to entertain the suggested alteration, but they would again consider the matter when next the streets required extensive repair.

NOTICE OF ACCIDENTS ACT.

THE Home Secretary has given notice that he has appointed January 1, 1908, as the date on which Section 1 of the Act (relating to the annual return of accidents to be made by owners of mines and quarries) shall come into operation.

He also gives notice that he has made orders, dated December 22, extending the provisions of the Act requiring

notice of accidents to be given to an inspector to the following classes of occurrences, whether personal injury or disablement is caused or not:—

(a) In Mines and Quarries.—All cases of gas or dust below ground other than ignitions of gas in a safety lamp; of fire below ground; of breakage of ropes, chains or other gear by which men are lowered or raised; of overwinding cages while men are being lowered or raised; of inrush of water from old workings.

(b) In Factories, Workshops, &c.—All cases of bursting of a revolving vessel, wheel, emery wheel, or grindstone moved by mechanical power; of breaking of a rope, chain, or other appliance used in raising or lowering persons or goods by aid of mechanical power; of fire affecting any room in which persons are employed and causing complete suspension of ordinary work therein for not less than twenty-four hours.

AUSTRALIAN TIMBER.

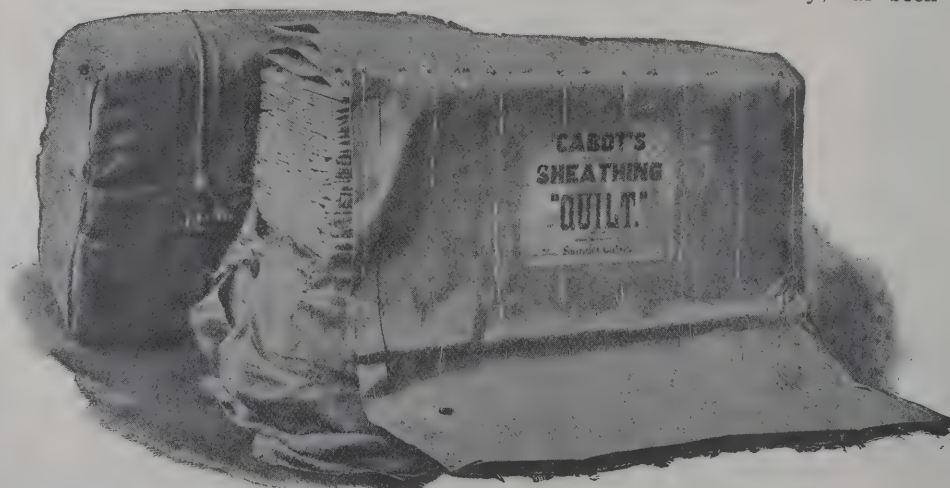
THE special agent of the United States, Mr. H. R. Burrill, in a report to the Bureau of Manufactures, Washington, on the commerce of Western Australia, says that the timber industry is still in its infancy; but from the latest and most accurate figures obtainable showing its production enough can be learned to gauge its importance and value as a national asset and the steady rate of its development. The demand for Western Australian hard woods for railway sleepers, street-paving blocks, piles for wharfs and piers, jetties, bridges, &c., is increasing both in the Commonwealth and for export. The United Kingdom is the chief buyer of these woods outside of the Australian States, but a fairly large quantity finds its way into foreign countries. A recent Government estimate gives 8,000,000 acres of jarrah forest and 1,200,000 acres of kauri forest, and the latest published records of the Western Australian Land Department indicate an acreage of only 904,260 of forest land under timber leases and licenses. These figures show the great expansion possible for this industry under intelligently directed effort, and its increasing importance as a source of State wealth. No foreign hard wood can hope to compete with the Australian kinds.

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PORTLAND STONE.

THERE is fitness in the Bath Stone Firms, Ltd., becoming the possessors of extensive quarries at Portland, because Bath stone and Portland stone are allied in being oolitic limestones. Oolite as a title is not to be displaced. But if the beds were described as producing roe-stones everyone would understand what the title conveys. The Portland beds belong to the upper oolite. Prior to the science of geology being known the name Portland stone was applied, and it is likely to be retained until the beds are exhausted. Inigo Jones would appear to be the first architect who realised the unique value of Portland stone, especially for work in the City of London. Before his time it was used in Dorsetshire. But when Inigo Jones employed it in the Banqueting-house at Whitehall a new era was opened for the material. Afterwards, when ordered to restore Old St. Paul's, he used Portland stone for his noble Corinthian

is evidence of the care taken by Wren in the selection of the stone. There is a tradition that all the stone he used for St. Paul's was tested by being left on the beach of the island for three years, and blocks which showed signs of deterioration through wind or water were rejected. At a subsequent time less care was taken in the selection of the stone, and in consequence a prejudice was excited against Portland, which however has long since passed away.

Anyone who has examined the quarries on this island must have perceived the unusual quantity of ridding and broken stone, which of necessity has to be removed before the true Portland Whitbed is reached. The Whitbed varies in thicknesses from 3 to 9½ to 10 feet, and this famous building stone is obtained in blocks sometimes up to 10 tons in weight. In a few quarries the lower beds yield stone which is termed Basebed; this is much softer than the Whitbed, and should only be used for interior work. The careful and skilful way in which this prime Portland stone



THE BATH STONE FIRMS' COMBEFIELD QUARRIES, PORTLAND.

From which the stone was taken for some of the large Government buildings in London.

portico as well as for other parts. The stone found no less favour in the eyes of Wren. He said that an inquiry was made after all the good stone which England afforded to be used in the rebuilding of St. Paul's, and that all the most eminent masons of England were of opinion that stone of the largest scantlings was to be found in Portland or nowhere. Wren, indeed, if he had his way would not have allowed a quarry to be opened in the island without the authority of the Crown officials until he had secured all the stone required for the cathedral, the Royal Hospital at Chelsea and his City churches. He would not recognise private rights, and this led to some dispute with quarry-owners and the inhabitants of the island. The way in which Portland stone has resisted the London atmosphere

is extracted by the quarrymen employed by The Bath Stone Firms, Ltd., who are all both experienced and qualified men, and assisted by the natural fissures, shows the advantage in having an established and reputable company quarrying and supplying this fine building stone in unlimited quantities.

From their great experience in the demand for the Government buildings, they adopt the best way for obtaining large and sound blocks, and there is, moreover, security for watchfulness for any defects in their Portland stone, which would be prejudicial to their interests in the immense undertakings at Bath, Corsham, Monk's Park and Box in the counties of Wilts and Somerset, with which the name of the company is associated.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tender and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50l. and 25l. to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

GORTON.—Jan. 19.—Architects who wish to submit designs in limited competition for the Thornwood Avenue Council school should apply before the above date to Mr. W. A. Clegg, Education Office, Town Hall, Gorton.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25l. will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

NEWCASTLE-ON-TYNE.—Jan. 15.—For the North of England Model Cottage Exhibition. Site planning for this exhibition, which is 16½ acres in extent, twelve houses to the acre. Further particulars from Mr. R. Aldridge, c/o Burt Hall, Newcastle-on-Tyne.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

WALES.—Jan. 12.—The committee of the George Edwards Memorial hall, Cefn, Ruabon, offer a prize of 10l. for the best design (including plans and elevations) of the hall. Full particulars may be obtained from Mr. W. Ryland Jones, secretary, High Street, Cefn, Ruabon.



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AUSTWICK.—Jan. 28.—For the mason, slater, plasterer, joiner, plumber and glazier's work required in the erection of various buildings, comprising administration, isolation, laundry, discharge and mortuary blocks, scarlet-fever pavilion, stable and cart-shed, for their new isolation hospital at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, surveyor, Town Hall, Settle.

BAGSHOT.—Jan. 28.—For the erection of schoolrooms, vestries, &c., for the Wesleyan church. Mr. W. J. Hodson, architect, The Avenue, Camberley.

BANBURY.—Jan. 12.—For alterations and repairs at 1-4 Cherwell Terrace. Messrs. Fortescue & Sons, clerks to the Trustees, 45 High Street, Banbury.

BARNSELY.—Jan. 17.—For the excavator, bricklayer, carpenter and joiner, plumber and glazier, plasterer, slater and painter's work in one whole tender for additions and alterations to properties at Barugh Green. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

BOOTLE.—Jan. 18.—For supplying and fixing thirty-one sliding and folding partitions in the schoolrooms at the various Council schools in the borough, for the education committee. The Borough Surveyor, Town Hall, Bootle, Lancs.

BOVEY TRACEY.—Jan. 15.—For the erection of a store and stable building at Bovey Tracey, Devon. Messrs. J. W. Rowell, Sons & Locke, architects, 2 St. Paul's Road, Newton Abbot.

BRADFORD.—Jan. 16.—For the erection of discharge block and laundry at the city hospital, Bierley Hall. The City Architect, Whitaker Buildings, Brewery Street, Bradford.

BRIGHTON.—Jan. 21.—For alterations and additions to the Hanover Terrace Council schools. Deposit 3/. Messrs. T. Simpson & Son, surveyors, 17 Ship Street, Brighton.

BURNLEY.—Jan. 17.—For the construction of settling-tank, storm-water filter, screening chamber, storm overflows and other contingent works connected therewith, for the Burnley Rural District Council. Mr. S. Edmondson, engineer to the Council, 18 Nicholas Street, Burnley.

BURY.—Jan. 22.—For brickwork for the walls, arches, chimneys and foundations for six through beds of retorts at the gasworks, for the Corporation. Mr. H. Simmonds, engineer and general manager, Gasworks, Bury, Lancs.

CLANDON.—Feb. 4.—For the erection of a smallpox hospital about two miles from Clandon station, Surrey, on the London and South-Western Railway. Deposit 5/. 5s. Send names to Mr. T. W. Weeding, clerk to the Surrey Smallpox hospital committee, County Hall, Kingston-upon-Thames.

ELGIN.—Jan. 25.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier's work, and laying-out and enclosing grounds of joint smallpox, &c., hospital, near Elgin. Mr. Charles C. Doig, architect, Elgin.

ELTHAM.—Jan. 22.—For the erection of a refreshment house at Avery Hill, for the London County Council. Mr. G. L. Gomme, clerk, Spring Gardens, S.W.

ENFIELD.—Jan. 15.—For erection of a junior mixed school at Bush Hill Park. Deposit 1/. 1s. Send names by Dec. 29 to Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

EXMOUTH.—Jan. 14.—For the erection of a pair of semi-detached houses in Albion Hill. Mr. Ernest E. Ellis, architect, Exmouth.

FERRYHILL AND WITTON PARK.—Jan. 19.—For the erection of new lock-ups at Ferryhill and Witton Park, Durham. Mr. William Crozier, A.M.I.C.E., County Surveyor's Office, Shire Hall, Durham.

GATESHEAD.—Jan. 12.—For the erection of additional classrooms, laboratory, &c., at the Secondary schools Durham Road. Deposit 1/. 1s. Mr. N. Percy Pattison, borough engineer, Town Hall, Gateshead.

GOSPORT.—Jan. 19.—For the work of alterations at the Gosport police station. Deposit 1/. 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

IPSWICH.—Jan. 28.—For the execution of alterations at the (a) Foundation Street school premises and the (b) Turret Lane school premises. Mr. E. T. Johns, architect, Tower Chambers, Tower Street, Ipswich.

IRELAND.—Jan. 12.—For making alterations and addi-

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IRELAND.—Jan. 21.—For works to be done to the parish church, Cashel. Mr. Samuel F. Hynes, architect, 21 South Mall, Cork.

IRELAND.—Jan. 22.—For the erection and completion of a war signal station at Whitestown, co. Louth. Office of Public Works, Dublin.

KEIGHLEY.—For new foundry platform and roof to yard, erecting shop and foundry at Worth Valley tool works. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

KEIGHLEY.—Jan. 17.—For the erection of retaining and fence walls in Bar House Lane. Mr. Walter Fowlds, borough engineer.

KEIGHLEY.—Jan. 31.—For the erection of the first section of All Saints Church, Highfield. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

KENDAL.—Jan. 14.—For taking-down and rebuilding wall, &c., in connection with the improvement of Singleton Park Road, near Birklands. Mr. F. W. Oxberry, borough surveyor, Town Hall, Kendal.

KINGSWEAR.—Jan. 15.—For the erection of two semi-detached villas at Kingswear, Devon. Mr. T. O. Veale, surveyor, Castle View, Dartmouth.

KIPPAX.—Jan. 19.—For additions and alterations to be carried out at Kippax provided school. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

LEEDS.—Jan. 16.—For the erection of a chapel and other buildings at Harehills cemetery site. Messrs. Cannon & Chorley, architects, 16 Park Place, Leeds.

LONDON.—Jan. 15.—For the erection of an underground convenience at High Cross, Tottenham. Deposit 10s. 6d. Mr. W. H. Prescott, engineer to the Council, Council Buildings, The Green, Tottenham.

LONDON.—Jan. 17.—For certain alterations and additions at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 50l. Names and addresses before December 8 to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

LONDON.—Jan. 22.—For the execution of certain works to bridges at Highbury station and Holloway Road, in con-

nection with the reconstruction of further portions of the London County Council tramways. Full particulars, Chief Engineer, County Hall, Spring Gardens, S.W.

LONDON.—Jan. 18.—For the erection of conveniences at Mountsfield Park, Hither Green, S.E., for the London County Council. Mr. G. L. Gomme, clerk.

LONDON.—Jan. 22.—For the erection of a Secondary school on a site in Hortensia Road, King's Road, Chelsea, S.W., for the London County Council. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

NAFFERTON.—Jan. 14.—For the rebuilding of the Wesleyan chapel and schools, Nafferton, near Driffield, Yorks. Deposit 1l. Messrs. Gelder & Kitchen, architects, Hull.

NEW BRIGHTON.—Jan. 28.—For the erection of the new school, New Brighton, for the Wallasey Urban District Council. Deposit 1l. 1s. Mr. Edmund Kirby, architect, 5 Cook Street, Liverpool.

OLD TRAFFORD.—Jan. 14.—For alterations and additions at the Council offices, Old Trafford, Manchester. Mr. Ernest Worrall, surveyor, Stretford Urban District Council.

RET福德.—Jan. 16.—For the erection of shedding, grand stand, offices, &c., for the agricultural show to be held at Retford on May 21 and 22. Mr. W. H. Bradwell, secretary Thurland Street, Nottingham.

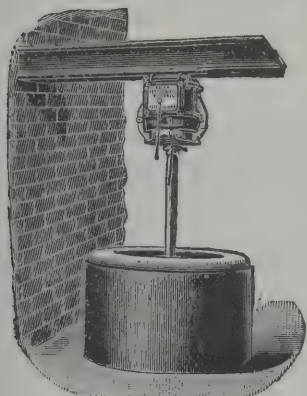
ROMFORD.—Jan. 14.—For the erection of four sanitary annexes at the workhouse, for the Guardians of Romford Union. Deposit 3l. Application by December 29 to Mr. James Kennedy, architect, 25 Bedford Row, London, W.C.

SCOTLAND.—Jan. 19.—For mason, joiner, plumber, plasterer and slater's work of alterations on Craigrothie school, for the Ceres School Board. Mr. C. F. Anderson, architect, St. Andrews.

SCOTLAND.—Jan. 21.—For the alteration of the slaughterhouse in Queen Street, Port Glasgow. Deposit 5s. Messrs. A. F. Duncan & G. D. Copland, architects, 146 West Regent Street, Glasgow.

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SEAHAM HARBOUR.—Jan. 18.—For alterations and additions to the premises of the Seaham Harbour Co-operative Society. Deposit 1*l.* 1*s.* Messrs. Wm. & T. R. Milburn, architects, 20 Fawcett Street, Sunderland.

SEATON CAREW.—Jan. 17.—For the erection of about 104 lineal yards of 9-inch brick boundary wall, with piers, at Holy Trinity churchyard, Seaton Carew, West Hartlepool. Mr. Nelson F. Dennis, A.M.I.C.E., borough engineer, Municipal Buildings.

SELHURST.—Jan. 23.—For the construction of an engine and producer house, tower, &c., at Selhurst, county borough of Croydon, for the Metropolitan Water Board. Deposit 5*l.* The Engineer, Southwark Bridge Road, S.E.

STIFFORD.—Jan. 12.—For disinfectant block and sundry work at the hospital, Long Lane, Stifford, two miles from Grays, Essex, for the Orsett Joint Hospital Board. Mr. C. M. Shiner, architect, The Gate House, Grays.

TIBSHELF.—Jan. 14.—For the erection of Council school, Tibshelf, to accommodate about 320 children. Deposit 1*l.* 1*s.* Mr. G. H. Widdows, architect to the committee, St. Mary's Gate, Derby.

TOTTEN.—Jan. 14.—For (1) Erection of a school at Totton, Hants; (2) installation of low-pressure hot-water apparatus therein. Deposit 2*l.* 2*s.* for each specification. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

WAKEFIELD.—Jan. 19.—The West Riding education committee invite whole or separate tenders in connection with the following works, viz. new school at Otley and alterations to existing school; Kippax provided school, additions and alterations; West Tadcaster provided school, additions and alterations (builder, joiner, slater, plumber, plasterer and painter's work); new school at Thorne, near Doncaster (builder, joiner, slater, plumber, plasterer, painter and ironfounder's work). Deposit 1*l.* in each case. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—Jan. 14.—For building additions to Darranlas infants' school, Mountain Ash, to accommodate 150 children. Deposit 2*l.* 2*s.* Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALES.—Jan. 14.—For the rebuilding of the People's Hall at Porth, Rhondda. Deposit 2*l.* 2*s.* Mr. Arthur Marks, M.S.A., architect and surveyor, Merthyr.

WALES.—Jan. 15.—For erecting a dwelling-house, &c., near Pantygrwny farm, Cardigan. Mr. Jacob Morris, Pantygrwny, Cardigan.

WALES.—Jan. 16.—For the erection of cloak-room, shelter, &c., at the Castle Street Council school, Abergavenny, Monmouthshire. Mr. C. Dauncey, solicitor, secretary to the Monmouthshire education committee, County Council Offices, Newport.

WALES.—Jan. 19.—For erecting new schoolroom at St. Peter's Church, Brynteg. Mr. T. Moss, architect, 2 Temple Row, Wrexham.

WALES.—Jan. 25.—For the erection of a gymnasium, library and other additions to Howell's Glamorgan County school for girls, Llandaff. Mr. G. E. Halliday, architect, Castle Street, Cardiff.

WALES.—Jan. 30.—For supplying and erecting the steel and ironwork of the proposed Rhiwarthen bridge, Penllwyn. Mr. Hugh Hughes, clerk to the District Council, Aberystwith.

WALLSEND.—Jan. 18.—For the erection of police buildings, Wallsend, Northumberland. Mr. J. A. Bean, county architect, the Moot Hall, Newcastle-on-Tyne.

WESTERHAM.—Jan. 23.—For the erection of an engine and boiler-house and chimney-shaft at the Hill Park Estate, Westerham, Kent, for the Metropolitan Water Board. The Engineer, Brookmill Road, Deptford.

WEST HAM.—Jan. 22.—For the following works for the West Ham Town Council:—(1) Construction of retaining walls, &c., at Prince Regent's Lane, Plaistow; (2) additional lavatory accommodation, cloak-rooms and other sundry alterations, town hall, Stratford. Deposit 1*l.* in each case. The Borough Engineer, Town Hall, Stratford.

WITHERNSEA.—Jan. 14.—For the erection and completion of three dwelling-houses, South Cliff, Withernsea, Hull. Deposit 10*s.* Messrs. Clough & Wrigglesworth, estate agents, Hull.

WITHINGTON.—Jan. 22.—For the erection of latrines, bath-houses, lavatories, &c., at the Withington workhouse. Deposit 1*l.* 1*s.* Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

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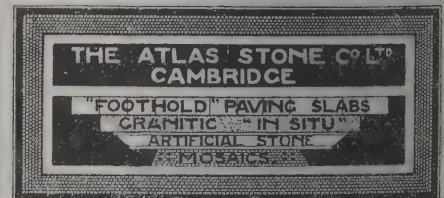
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Claydon	237	16	0
Treeby & Co.	231	0	0
McENTEE, Hornchurch (<i>accepted</i>)	225	0	0

COLNE.

For the erection of schools. Messrs. HOLGATE & SPIVEY, architects, Colne.

Accepted tenders.

Atkinson, mason	£3,459	17	6
Riddiough & Co., joiner	1,700	0	0
Guest, plasterer	717	12	0
Varley & Sons, plumber	602	0	0
Varley & Sons, heating	392	0	0
Smithies, slater	314	10	0
Park & Co., ironfounder	172	15	0
Fort, electrician	138	18	10
Waddington & Co., ventilation	105	10	0
J. & J. Hey, painter	82	15	0
Croasdale & Sons, iron railing	75	5	6

DEVONPORT.

For alterations and additions to premises No. 9 Bedford Street Ford, Devonport, for Mr. H. E. Ritchie. Messrs. JAMES HARVEY & SON, architects, Plymouth. Quantities by the architect.

TAYLOR, Plymouth (*accepted*) £166 0 0

CAVERSHAM.

For the erection of public library.

Fisher Bros.	£2,800	11	9
Stephens, Bastow & Co.	2,562	0	0
Fitt	2,539	16	6
Holden & Co.	2,442	0	0
Harris & Son	2,439	0	0
Chick, Carden & Co.	2,438	0	0
Roberts	2,398	0	0
Newberry	2,290	0	0
Pilgrim	2,385	0	0
Lewis & Bro.	2,370	0	0
Batten Bros.	2,365	0	0
Norman	2,350	0	0
Colborne	2,329	0	0
Gibson	2,326	0	0
Faulks	2,323	0	0
Harris	2,299	0	0
Robinson	2,292	15	0
Godwin	2,279	0	0
BELL & SONS, Caversham (<i>accepted</i>)	2,200	0	0

EAST PRESTON.

For the following works at the Union workhouse. Mr. HAROLD M. POTTER, architect, Worthing.

Screening chamber.

East	£60	0	0
Smith	55	0	0
Bennett	52	0	0
CLARK, Worthing (<i>accepted</i>)	52	0	0
Clifton	49	5	0

Covered way.

Bennett	325	0	0
CLARK (<i>accepted</i>)	290	0	0
East	287	10	0
Smith	275	0	0

Boundary walls and fences.

Smith	280	0	0
Bennett	270	0	0
East	265	0	0
CLARK (<i>accepted</i>)	260	0	0

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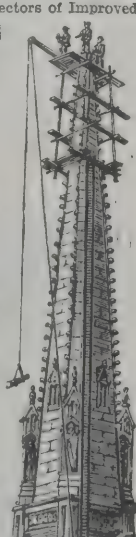
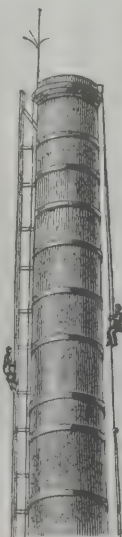
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DOVER.

For alterations and extension of the Granville Arms Hotel, St. Margaret's Bay. Messrs. THOMAS DINWIDDY & SONS, architects, 54 Parliament Street, S.W., and Greenwich. Quantities by Messrs. R. L. CURTIS & SONS.

Cotten	£4,994	0	0
Adcock	4,779	0	0
Wallis & Son	4,660	0	0
Wise	4,618	0	0
Browning	4,595	0	0
Paramor	4,549	0	0
Denne	4,473	0	0
DENNE & SON, Deal (accepted)	4,280	0	0
Turner & Watts	4,232	0	0

GOLCAR.

For the erection of three houses at Crimble. Mr. J. AINLEY, architect and surveyor, Slaithwaite.

Accepted tenders.

Shaw & Cook, mason	£286	0	0
Eagland & Sons, joiner	111	10	0
Firth, plumber and glazier	30	10	0
Walker, plasterer and painter	23	9	9

HARROW.

For the erection of Council schools. Mr. H. G. CROTHALL, architect.

Dymock	£7,017	8	6
Fassnidge & Son	5,720	0	0
Haynes	5,499	0	0
Mattock & Parsons	5,389	0	0
Johnson & Co.	5,343	0	0
Knight & Son	5,320	0	0
Batchelor	5,200	0	0
Mattock Bros.	5,137	0	0
Dickens	5,130	0	0
Dorey & Co.	5,127	0	0
Treasure & Son	5,124	0	0
Lawrence & Son	5,047	0	0
Fairhead & Co.	5,038	0	0
Renshaw	4,893	0	0
TRIBE & Co., Alperton (accepted)	4,663	5	6

HENLEY-ON-THAMES.

For alterations and additions and converting into shop No. 52 Bell Street, Henley-on-Thames, for the Reading Industrial Co-operative Society, Ltd. Mr. W. G. A. HAMBLING, architect, Reading.

Greenaway & Son	£695	0	0
Lewis & Bro.	679	0	0
WALDEN & COX (accepted)	512	6	0

HEXHAM.

For building new nave, Hexham Abbey church. Mr. TEMPLE MOORE, architect, Westminster. Quantities by Mr. J. B. LOFTING.

HOLLOWAY BROS., London (accepted)	£17,465	0	0
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LANDPORT.

For the erection of a laboratory, &c., in Chandos Street. Messrs. COOK & TUTTE, architects, 894 Commercial Road, Portsmouth.

Munday	£1,335	14	10
Forster	1,327	8	3
Durant	1,215	0	0
C. & A. Sprigings	1,149	0	0
Brittain	1,097	0	0
Learmouth	1,083	0	0
Dugan	1,077	6	0
McCarthy Bros.	1,076	0	0
Clark & Son	1,074	0	0
Dowdell	1,051	10	0
CROCKERELL, Southsea (accepted)	992	0	0

LEYTON.

For making-up, kerbing and paving private streets. Mr. WILLIAM DAWSON, surveyor.

Fry Bros.	£4,092	4	7
Hewett & Sons	3,917	8	3
Adams	3,907	9	2
Free & Sons	3,821	3	9
Griffiths & Co.	3,732	9	2
Jackson	3,641	13	8
Iles	3,548	0	0
Anderson	3,502	1	5
Gibbons	3,371	0	0
MANDERS, Leyton (accepted)	3,172	17	2

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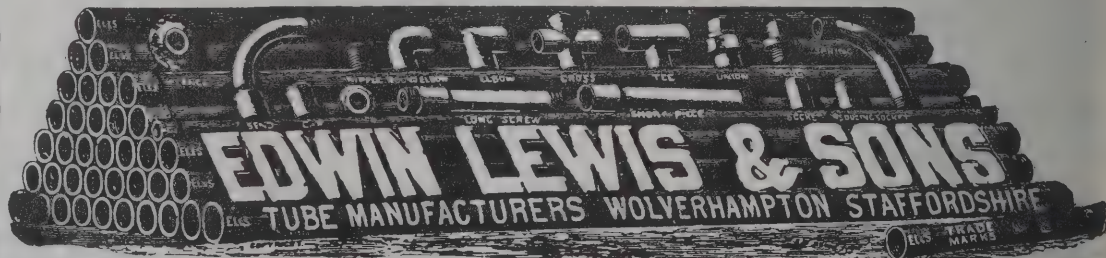
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For Index of Advertisers, see page x.

LONDON.

For roads and sewers on the Golder's Green (Finchley Road) estate. Mr. H. J. S. ABRAMS, surveyor, 8A Canfield Gardens, South Hampstead, N.W.

Kavanagh & Co.	£3,664	10	0
Catley	3,596	0	0
Rogers & Son	3,577	0	0
Neave & Co.	3,562	0	0
Ballard	3,477	0	0
Adams	2,955	0	0
GIBBONS (accepted)	2,855	0	0

LOWESTOFT.

For two additional cells and structural alterations to destructor. Mr. G. H. HAMBY, borough surveyor.

Meldrum Bros.	£1,415	0	0
Manlove, Alliott & Co.	1,151	6	0
Goddard, Massey & Warner	1,145	6	0
HORSFALL DESTRUCTOR Co., Leeds (accepted)	1,036	0	0

MARLBOROUGH.

For erection of detached house. Messrs. DREW & SONS, architects, Swindon.

Rogers	£603	12	8
Tydemans Bros.	598	0	0
Piper	594	12	0
Hillier	568	0	0
H. & C. Spackman	540	0	0
DOWNING & RUDMAN, Chippenham (accepted)	517	0	0

NEW MALDEN.

For reconstruction of sewer. Mr. T. B. SIMMONDS, engineer.

Atkins & Co.	£300	10	0
Thomas & Son	249	10	0
Mann	235	0	0
Free & Son	227	15	4
Soan	227	10	0
Kavanagh & Co.	207	0	0
May	207	0	0
Lans	207	0	0
NAPIER & SON, Southampton (accepted)	194	10	0

NETTLEBED (OXON).

For pair of cottages and alterations to house. Mr. W. G. A. HAMBLING, architect, Reading.

BROWN & SONS, Nettlebed, cottages (accepted)	£525	0	0
BROWN & SONS, Nettlebed, house (accepted)	200	0	0

NOTTINGHAM.

For taking-down and rebuilding shop in Bridlesmithgate. Messrs. A. R. CALVERT & W. R. GLEAVE, architects, Nottingham.

CRANE & Co. (accepted)	£792	2	0
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For erecting house in Harlaxton Drive. Messrs. A. R. CALVERT & W. R. GLEAVE, architects.

CRANE & Co. (accepted)	£1,697	0	0
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READING.

For alterations and additions to the Reading Union work-house. Mr. W. G. A. HAMBLING, architect, Reading.

Whiting	£553	0	0
Stokes & Sons	518	5	0
Lewis & Bro.	512	0	0
Faulks	498	0	0
Bourton	497	0	0
Godwin	494	0	0
Pilgrim	487	0	0
Newberry	448	0	0
WEBBER & SONS, Orts Road, Reading (accepted)	436	9	0
Architect's estimate	430	0	0

SCOTLAND.

For the erection of refuse-destructor and electric-power station for Greenock.

Accepted tenders.

Aitkenhead & Sons, masonwork.

Miller & Co., carpenterwork and roof glazing.

M'Ewan, steelwork.

All of Greenock.

SUTTON-ON-SEA.

For the erection of bungalow. Messrs. A. R. CALVERT & W. R. GLEAVE, architects, Nottingham.

HOPEWELL & SONS (accepted)	£970	0	0
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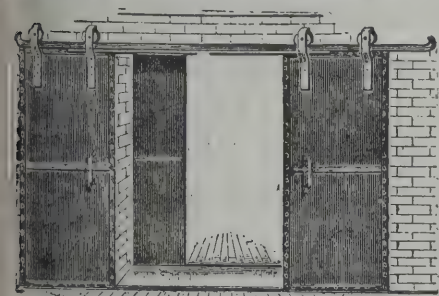
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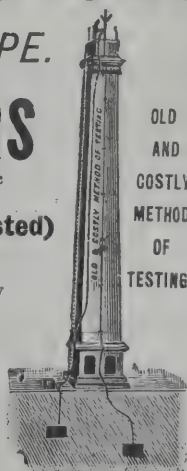
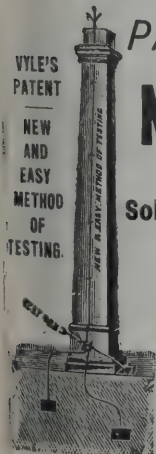
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TOLLESBURY.

For the erection of parish room. Mr. W. DE C. HUDSON,
architect, Tolleshunt d'Arcy.
GURTON, Tiptree (*accepted*) £537 15 0

TWICKENHAM.

For erection of post office, for H.M. Office of Works, &c.
Kenworthy Bros. £7,391 0 0
Hidden 6,780 0 0
Potterton 6,700 0 0
Messum & Sons 6,479 0 0
Shelbourne & Co. 6,404 0 0
Mowlam & Co. 6,403 0 0
Co-operative Builders 6,297 0 0
Parsons 6,290 0 0
Dorey & Co. 6,277 0 0
Fitt 6,267 0 0
Barker & Co. 6,093 0 0
Leslie & Co. 6,091 0 0
Brooking 6,072 0 0
Christie 5,983 0 0
Patman & Fotheringham 5,963 0 0
Colley & Sons 5,923 0 0
Clayton 5,920 0 0
Nightingale 5,782 0 0
F. & G. Foster 5,776 0 0
Jones & Son 5,729 0 0
Whitehead & Co. 5,650 0 0
WISDOM BROS. (*accepted*) 5,648 0 0

YSTRAD.

For the erection of Halfway House hotel, Ystrad Mynach,
South Wales, for Messrs. D. Williams & Co., Taff Vale
Brewery, Merthyr Tydfil. Mr. RICHARD EDWARDS,
architect, Brynhealog, Treharris. Quantities by Messrs.
ROBEY, E. CARPENTER & SON, quantity surveyors,
112 St. Peter's Road, Leicester.
Hatherley & Co. £3,655 0 0
Richards 3,600 6 0
Yeo 3,350 0 0
Jenkins 3,344 0 0

YSTRAD—continued.

Cox & Bardo	£3,316 13 0
Gibbon & Son	3,290 0 0
Davies & Sons	3,290 0 0
Jones Bros.	3,275 0 0
Jones & Coslett	3,251 0 0
Knox & Wills	3,157 0 0
R. J. Evans	3,100 0 0
Lewes	3,100 0 0
Gough Bros.	3,075 0 0
E. R. Evans	3,045 0 0
N. Williams	2,993 8 4
J. Williams	2,980 4 4
Voddeur & Lee	2,970 13 6
Rees	2,930 0 0
W. WILLIAMS (<i>accepted</i>)	2,900 0 0

MR. P. M. CROSTHWAITE held an inquiry at the Wolverhampton town hall on Tuesday, on behalf of the Local Government Board, with regard to an application by the Corporation for borrowing powers to the extent of 90,000*l.* to extend the water undertaking. With regard to the cost of the new works, 5,000*l.* had to be paid to the Staffordshire and Worcestershire Canal Company as compensation for tapping their water, the preliminary expenses were put down at 2,205*l.*, and the trial borings at Tettenhall had involved a cost of 2,200*l.* The permanent boreholes, which would be sunk to a depth of 1,000 feet, together with their lining tubes, would cost 6,000*l.*, the triple-expansion engine would mean an outlay of 6,545*l.*, the engine foundation and house 2,000*l.*, and the reservoir, which would hold 6,000,000 gallons, would cost 14,500*l.* It was proposed to lay down a 24-inch pumping main from Tettenhall to Goldthorn Hill, at a cost of 21,000*l.*, and trunk mains to other places; erect cottages at Cosford, and a siding and ropeway at the same place. It was also proposed to provide a water tank at Essington. In addition to the proposed expenditure, it was decided to ask for a loan of 15,000*l.* to cover any capital cost which might be incurred in extending the ordinary service during the next ten years.

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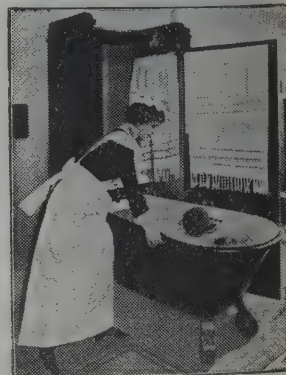
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ELECTRIC NOTES.

MR. J. DENNIS COALES (from University College, Nottingham) has been appointed Senior Lecturer in Electrical Engineering, Birmingham University, in the place of Dr. D. K. Morris, who has resigned.

MR. RALPH LOMAX has been appointed electrical engineer for the borough of Stockport at a commencing salary of 250*l*. He was the assistant electrical engineer, and he takes the place of Mr. A. Carter, resigned.

THE Parliamentary Bill promoted by the Rawtenstall Corporation for powers to borrow 223,200*l*. for tramway purposes contains 290 clauses and covers 140 pages. It is not much smaller than the Leeds Corporation's Bill of a year or two back, which constituted a record for bulk, and which cost 10*s*. a copy to print.

THE tramways committee of the York City Council reported on Monday that after protracted negotiations they had, subject to the approval of the City Council, agreed to purchase the existing undertaking of the City of York Tramways Company, Ltd., at a price of 11,000*l*., upon certain conditions. The report was approved.

THE Blackpool Town Council are going to make reductions in the charges for electricity used for industrial power purposes and in the day tariff charges per unit for lighting, heating or cooking purposes. The committee hope to give greater encouragement to consumers and to induce them to use electric radiators and heaters in bedrooms, &c. The suspense account of 13,500*l*. has been cleared by the profits from the department, and their engineer advised that they had sufficient plant to produce electricity at great profit for day use. The profit from the department towards the rates last year was 6,000*l*.

THE City of London Electric Lighting Company have now offered to prove the superiority of up-to-date electrical illumination by lighting Holborn Viaduct and a portion of Farringdon Street at a considerable reduction on the present cost of 26*l*. per lamp per annum. In the area of the City lighted by the improved gas system a saving of 500*l*. a year has already been effected. The Electric Lighting Company has also offered to light the streets outside the Central Markets by the new arc lamp system at 18*l*. per

lamp instead of 24*l*. per lamp, which is now being paid by the Central Markets committee.

A DEPUTATION on Monday waited on the Manchester tramways committee to obtain particulars of the Tramways Bill which it is proposed to lay before Parliament and to suggest certain alterations in it. The chairman of the committee explained the proposals of the committee, and said they considered the extensions necessary in the interests of the whole public of the city. The whole of the work would be completed for the amount specified (50,000*l*.), and he expressed his willingness to eliminate from the Bill the clause which would provide for further borrowing powers.

THE retirement of Mr. John Gavey, C.B., the engineer-in-chief to the Post Office, will deprive the public service of a most distinguished electrical engineer. He began his career with the Electric and International Telegraph Company in 1860, and in 1905-6 he was President of the Institution of Electrical Engineers. The work by which he will be remembered at the Post Office is (1) as the father of the Post Office telephone system in London; (2) as the man under whose direction the great underground telegraph system between London and Glasgow, which has proved such a benefit during the past week, was carried out; and (3) for his work in connection with wireless telegraphy. Outside St. Martin's-le-Grand Mr. Gavey's ability is well known.

At the meeting of the Metropolitan Asylums Board on Saturday Mr. R. Strong presented a report from the asylums committee with reference to the electric lighting of the asylum at Tooting Bec. The asylum is lighted by electricity generated on the premises by gas engines. Additional buildings at the asylum are now approaching completion, and if the whole of the institution is to be lighted by electricity generated at the asylum extra electrical plant will be required, which is estimated by the engineer-in-chief to cost, in round figures, 1,000*l*., in addition to an increased charge of about 24*l*. per annum and an increased annual expenditure on staff, &c. In moving the adoption of the report, recommending the acceptance of an offer by a company to supply the asylum with light and power, Mr. Strong contended that the course proposed was the wisest and most economical that could be adopted. The Board agreed.

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SUMMER DRIED SEASONED BATH STONE FOR WINTER USE.

THE Salford Borough Council have adopted the recommendations of the electricity committee in regard to the appointment of a successor to Mr. C. D. Taite, who has resigned his position as electrical engineer on receiving a new appointment. Mr. Taite had asked to be relieved from his duties on December 31. The committee recommended that the request be acceded to on condition that Mr. Taite undertook to attend their meetings when his report as to the proposed extensions of the generating plant was under consideration, and also to supervise the installation and testing of the turbo-generator. They proposed to pay him a fee of 100 guineas for these services. The committee had also approved a draft advertisement inviting applications for the position of electrical engineer at a salary of 800*l.* per annum, rising by annual increments to 1,000*l.*

THE Dundee Corporation have received a report from Mr. H. Richardson, electricity engineer, Dundee, on the subject of the proposed new generating station. The probable first required cost would be considerably under 50,000*l.*, not 100,000*l.*, as had been reported, and the entire amount would not have to be spent as a lump sum. It was, moreover, not intended that the new station should be for the supply of power to mills specially, the prosperity of electrical matters being absolutely independent of any loads which might be got from the mills. Further, the new station would have that desirable elasticity which would enable the department to cope with any large and profitable loads. The present system of distribution did not allow this except where such a load was close to the station. The proposed system would also enable them to supply many an odd 50, 100 or even 200 horse-power which could not possibly be done at present, to say nothing of the opportunity it would give the department of supplying areas which were not served economically and properly now.

A PROPOSAL to take a supply of water from Lochend Loch for condensation purposes in connection with the electric lighting of Edinburgh was discussed on the 4th inst. by representatives of Edinburgh and Leith Town Councils. The Leith representatives put forward the objections that the loch was insufficient for the purpose; that Leith Town Council, who claimed to have a servitude over it; already used water from the loch; that the proposed arrangement for returning the water after use in the electric-

lighting works would raise the temperature of the loch and spoil it for other purposes; and that it would prejudice Leith should they wish to use the water for a similar purpose at any time. In reply to these objections, it was pointed out that as the water would only be used in winter, the amount taken would not materially affect the temperature, and that this amount was greatly over-estimated in being put at 2,500,000 gallons per day.

VARIETIES.

THE master builders of Melbourne reopened their works last week on the old conditions, with forty-eight hours' work weekly. Only a few non-unionists resumed work.

A LOCAL GOVERNMENT BOARD inquiry has been held at Newcastle into the Corporation's application for power to borrow 8,433*l.* for the erection of a police-station at Walker.

THE War Office has received the sanction of the Treasury for the spending of the money necessary to enlarge the Royal College at Sandhurst, with a view to the more thorough training of cadets.

A NEW publication has appeared entitled *Installation News*, which frankly acknowledges that its sole object is to make clear the many advantages of the Simplex conduit system. It is rare to find electricity made so entertaining.

A LOCAL GOVERNMENT BOARD inquiry was recently held at North Shields into an application by the Tynemouth Corporation for sanction to borrow 6,000*l.* for the construction of a new road from Hawkey's Lane to Billy Mill Lane, at the west end of the borough. There was no opposition.

THE Cheshire education committee are about to erect new schools at Wilmslow which will include a classroom for the instruction of 100 children in supplementary courses in housecraft, metalwork, applied drawing and practical elementary science.

IN connection with the Cannon Street improvement, Manchester, the finance committee and the improvements committee have decided to purchase property for 7,000*l.* in order to prevent the letting on lease of a part of the property for a term of years and the consequent postponement of the completion of the improvement.

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NEW WAR OFFICE, WHITEHALL.—PRINCIPAL STAIRCASE, TOP
FLOOR.

MANCHESTER ROYAL INFIRMARY.

THE Haslingden Board of Guardians, in view of possible variations in the treatment of vagrancy and of some announcement, when the Budget is brought in, on old-age pensions, have postponed for four months further consideration of a proposal to build a new infirmary at a cost over 27,000*l.* The present infirmary is overcrowded.

THE work of constructing the experimental portion of undercliff drive from the east side of the Bournemouth to the Meyrick Road steps was begun last week. The accepted tender for this portion of the work is 16,900*l.* The larger scheme contemplated is estimated to cost about 200*l.*

A LIST has been prepared by the district surveyors in Manchester of new or extended roads of a minimum width 16 yards, and suitable for the planting of trees, and in view of the resolution of the City Council in June last the works committee have been requested by the improvements committee to consider the desirability or otherwise of planting trees in these roads.

A SETTLEMENT has been arrived at in respect to the claim made by Sir William Hulton against the Bolton Corporation for land required in connection with the waterworks scheme at Longworth. Sir William claimed 140,000*l.*, and the matter was to go to arbitration in London. The Corporation have now decided to purchase the whole of his estate, which is over 1,600 acres.

THE Birmingham Corporation have received a return of the work done by the housing committee from January 1902 to the end of December, 1906:—Represented by medical officer of health, 3,195; closing orders obtained, 13; houses rendered habitable, 1,157; undergoing repair,

338; notices unexpired, 1,153; converted to workshops, 31; repaired without notices, 267; demolished, 519.

A MOVEMENT has been started for erecting in "every town in the kingdom" a mural drinking fountain as a memorial of the late Sir Wilfrid Lawson. It is proposed that the fountains should be constructed of Cornish granite in England, Aberdeen granite in Scotland, and Castlewellan granite in Ireland, but that the stone for the medallions and entablatures should come from Cumberland.

A COMMUNICATION has been received at Swansea from the Postmaster-General offering 22,000*l.* for the purchase of the Swansea municipal telephone system. Recently a deputation of the Town Council waited upon the Postmaster-General regarding the matter, and urged that the town should be repaid the whole of the capital expended, which up to March last amounted to 27,172*l.*

THE Alton (Hants) Rural District Council have received a cheque for 3,867*l.* for extraordinary damage done to the roads in the vicinity of Borden Camp. This brings the total claims paid to the Council by the War Department since 1903 up to 8,285*l.* The Hampshire County Council and the Petersfield Rural District Council have also large claims for similar damage, the outstanding total being over 20,000*l.*

THE Coventry Corporation desire to acquire the old post office in Smithford Street for the purpose of providing a corn exchange. A provisional agreement has been entered into by the Corporation with the Postmaster-General whereby the former will acquire the freehold of the old post office for 3,500*l.* The proposed exchange will be on the first floor, and the ground floor will be adapted for shops.

THE Socialist members of the Accrington Town Council on Monday objected to a contract for tramcars and car equipment, involving an outlay of 19,450*l.*, being given to the Brush Engineering Company, Loughborough, because there was a wages dispute at the Brush Company's works between the firm and a certain section of the men who made the bodies of the cars. The majority carried the recommendations of the committee.

A CONTROVERSY has arisen in New York between the plumbers and steam-fitters as to whose class the installation of vacuum cleaning system piping in buildings

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belongs. The plumbers lay claim to this work for the reason that connection is made from these systems to the sewers, while the steam-fitters maintain that the system is analogous to compressed air piping systems and properly belongs to them.

THE contract for the cutting of the track and laying the cast-iron pipes to carry the underground telegraph cable between Edinburgh and Linlithgow has been obtained by Mr. Andrew Blair, contractor, Bath Street, Glasgow, who has all the necessary plant on the ground and only awaits the delivery of the pipes to make a start with the work, which has to be completed by April.

THE Office of Works, Whitehall, will, in the course of a week or more, commence operations in the building of the new Central Post Office, on the site of Christ's Hospital, Newgate Street. The site, which has already been cleared, comprises three and a half acres, but it is proposed to cover not more than two acres with buildings. It is estimated that at least three years must elapse before the new post office is completed.

THE works sub-committee of the highway and sewerage committee of the Sheffield City Council have had under consideration the question of the estimates for the next financial year. They again want 85,000*l.*, but point out that this sum includes many other works besides highways, viz. sewers, sewerage, scavenging and rebates on private street-works, which absorb more than half the total vote and leave only from 37,000*l.* to 39,000*l.* for the upkeep of 238 miles of streets.

THE Consul-General at Antwerp intimates that the municipal authorities of that city invite tenders for the construction of eight houses adjoining the new public hall at Antwerp and the completion of the latter building, at an estimated cost of 1,246,650 francs (about £49,862). A deposit of 60,000 francs (about £2,400) is required. The specification (cahier de charges No. 1183) may be obtained from the Hôtel de Ville, Antwerp, at a cost of 5 francs (4*s.*), and the plans at a cost of 200 francs (8*l.*).

DURING the twelve months ending October 31 there were thirty fires in Boston in warehouses and manufacturing risks that were equipped with automatic sprinklers. It is stated that in no one of these buildings was the property

valued at less than 50,000 dols., while in a number of instances the insurance upon building and contents amounted to hundreds of thousands of dollars, yet the aggregate loss in these thirty fires was only 5,722.74 dols., or an average loss of 190.75 dols. per fire.

THE indispensable "Whitaker's Almanack" for the current year is replete with information on multifarious subjects, and ample facilities are afforded for ready reference. Important new matter has been introduced, whilst some of the articles previously included have been enlarged to meet modern requirements. The book, it may be added, has been rigidly supervised, and the information contained therein has been brought down, as far as practicable, to the latest possible date.

THE North-Eastern Railway Company's new goods station in New Bridge Street, Newcastle, is now open for all classes of traffic. Part of it has been in use since October. It is built of ferro-concrete and is 430 feet long, 178 feet wide and 83 feet high. There is a basement warehouse with an area of 75,000 square feet. On the ground floor there are six lines of rails, providing accommodation for 120 waggons, and there is standing room in the yard for 280 waggons. The first and second floors have a total area of 140,000 square feet, of which 40,000 square feet will be utilised for the storage of grain and flour.

ON New Year's day the Great Central Railway Company added to its mileage by taking over the Lancashire, Derbyshire and East Coast Railway. It is well known what an important piece of line has been acquired, and it is considered that under its new management great development will take place with regard to the shipment of coal from Grimsby. The Great Central Co. will benefit in Sheffield, as the large goods depot at Attercliffe, formerly the property of the Derbyshire Co., will be at the disposal of the Great Central, and will increase its facilities for dealing with general merchandise. We understand Mr. Willmott, the late manager of the L. D. & E. C. Co., still remains manager of the Sheffield District Railway, with offices in Sheffield.

PLANS have been prepared for the erection in Birmingham of a Labour Institute, providing trade union offices and a social club. The scheme is being promoted by the B.

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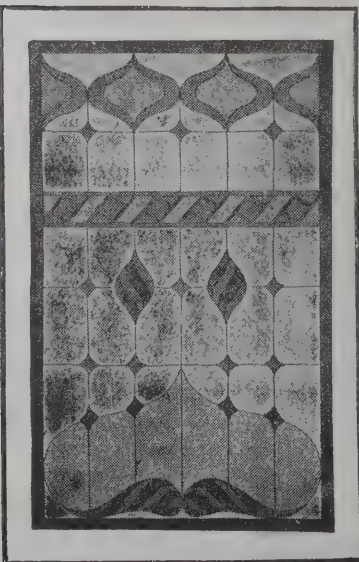
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ingham Trades Council, and a meeting of those interested will be held on February 9. The site of the proposed building is in Bristol Street, with a frontage to that thoroughfare of 82 feet and to Bellbarn Road of 68 feet. It is estimated that the cost of the building will not exceed 8,000*l.* It is expected that there will be annual income from the building of 520*l.*, and the expenditure, providing 70*l.* for ground rent, 320*l.* interest on capital at 4 per cent. and 50*l.* rates and taxes, will leave a surplus of 80*l.*

The attitude of the Southport Corporation towards the unions of the town has been strongly criticised at a meeting of the Trade and Labour Council. It was complained that the Corporation usually wanted a man to work 4*s.* or 5*s.* a week less than the standard rate, and obviously enough they succeeded in getting men. It was said the Corporation was closed to trade union joiners as to other unionists, and if a man wanted work under him he had to sever his connection with his union. The Corporation actually competed with the builders of the town and took work out of their hands. They dictated that all contractors should pay the standard rate, while they themselves declined to do so. A resolution calling upon the Town Council to pay the standard trade union rates to all their employes was passed unanimously.

The increase of wages recently granted to the Birmingham Corporation employes amounts to 5,800*l.* a year. The workmen asked for an advance of 2*s.* a week, and the matter was referred to a joint committee comprising representatives of the principal unskilled labour-employing committees of the City Council. This committee recommended that the wages of all Corporation workmen receiving 25*s.* a week or under should be increased 1*s.* a week, that those men receiving between 25*s.* and 26*s.* should be advanced to the latter sum, and that the minimum rate for adult unskilled labour should be raised to 24*s.* per week. The number of men affected in the employ of the public works department is 930, gas 575, health 385, water 152, baths and parks 70, electric supply 60, tramways 27; total, 2,199. The advances varied from 4*s.* a week to 2*d.* per week, and the official return shows that the additional cost in wages amounts to more than 100*l.* per week, or roughly 5,800*l.* per annum, a sum which is nearly equal to a halfpenny rate.

THE Hereford Town Council have decided that the following fair wages clause shall be inserted in all future contracts:—"The contractor shall pay the recognised trade union rate of wages to all fully qualified workmen, except to such as are partially incapacitated by age or injury, or in the case of an industry with which no trade union is connected he shall, with the above exception, pay the rate of wages current in the district where the work is executed, such rate being, in the case of local contracts, not lower than that paid by the Hereford Town Council for similar work. The contractor shall not sublet any part of the contract to any person not complying with the foregoing conditions; the contractor shall forfeit a sum of 1*l.* in respect of every breach of this covenant; the sum forfeited under this condition, if not previously paid by the contractor, shall be deducted out of the next payment due to him."

THE members of Edinburgh Dean of Guild Court had under consideration, at a private meeting recently, the first part of a series of clauses and regulations which they propose to transmit, when completed, to the Town Council, with a view to their being embodied in and promoted as a provisional order. The proposals of the Dean of Guild Court imply that the suggested provisional order would be of a comprehensive character—not only codifying existing regulations but also enlarging the powers of the court with respect to the formation, maintenance and regulation of roads and the erection of buildings. Several pages of the draft of the proposed clauses were gone over *seriatim* and tentatively approved. Among the principal clauses that have so far been considered are provisions for the prevention of *cul-de-sac* streets and for the preservation of the amenity of districts where new buildings are being erected.

THE Association of Master Painters in Scotland held their annual conference in Glasgow. The general committee for 1906 in their report as to the state of trade were of opinion that it had been, on the whole, fairly good, and had shown a slight improvement upon the previous year. In many industries prospects had been brightening during the past six months, although the recent strike in the Clyde shipbuilding yards, had it continued, would have blighted

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that. Fortunately for the West of Scotland, at any rate, that disturbing element had passed, and the committee trusted that with the advent of a new year there had come for both masters and men in the painting trade a period of increased and increasing prosperity. It was pleasing to state that, so far as the Association was concerned, there had been no serious conflicts between masters and men. The committee understood that throughout Scotland the arrangements as to wages and conditions of employment for journeymen during the year 1906 had been renewed for the current year.

MAJOR J. STEWART, R.A., held an inquiry at the Leyton town hall on Monday into an application by the District Council to borrow 1,320*l.* for the construction of a new road to the site of a proposed bridge over the waterworks river at Hackney. The clerk, Mr. R. Vincent, said the road was part of a scheme for increasing the highway communication between Leyton and the Metropolis, *via* Hackney, which was the most direct route. At present the only road available was the private toll at Temple Mills, and great inconvenience was experienced by the inhabitants of Leyton, who, to avoid payment, must travel by the very roundabout Stratford or Clapton roads. The Hackney and Leyton Councils had agreed to make roads to the river, across which it was hoped that the London County Council would build the bridge, of which the cost was estimated at about 5,600*l.*

THE Birmingham Trades Council at a meeting on Saturday adopted the following resolution, submitted by the special sub-committee appointed to consider the question of sub-contracting:—"That, with a view to a more stringent observance of the fair wages clause, and to avoid as far as possible the evils resulting from sub-contracting, this Trades Council respectfully urges upon the City Council the great need of insisting that in all contracts where sub-letting does occur such sub-contractor shall sign his contract at the same time and place as the original contractor. Further, that all sub-contracting shall be abolished excepting in those trades where the sub-contractor provides the material necessary for the carrying out of the sub-contract, and that the City Council be asked to amend the fair wages clause in accordance with the terms of the above resolution."

ELECTROLIERS.

FROM the Edison and Swan United Electric Company we expect novelties in fittings. They have lately placed on the market piano standards which are also adapted for use as reading desks or on tables. One of their great advantage is that by means of hinged joints they can be adjusted at any angle, while the natural shell shade secures the eye against the brilliant light which can be thrown on a book of music or paper. They are made of polished brass, and is needless to say the workmanship is of excellent quality. One new electrolier is well adapted for houses in the Adam style, and the flame globe is both suitable and novel. Another, which has a more free style of metalwork, the tulip has been used as a motif for the pendent lights. The fittings are deserving of praise.

NEW CATALOGUE.

THE "Mork" Patent Pulley Block Company have issued descriptions of their very ingenious inventions. There are several kinds. There is the worm-gear pulley-block, in which the worm-wheel cannot be thrown out of gear. The new "Mork," on the contrary, allows the worm-wheel to be lifted out of gear and to remain so until by a slight pull at the endless hand-chain it is again set into gear. When the worm-wheel is out of gear, the idle bottom block can be overhauled with the greatest speed, or the tackle may be used like an ordinary gin-block for lifting light loads. The block is also fitted with a patent friction-brake of a very simple and effective design for sustaining the load. The main feature in it is a leather washer, and by substituting a thicker or thinner washer, the sustaining power of the brake may be increased or decreased. This is extremely valuable where the blocks are only to be used for lowering. In the latter case a thin washer is substituted for the thick one, and the loads may then be lowered quickly and without even having to pull at the hand-chain. The company also produce electric travelling pulley-blocks which are adapted to motors of various horse-power. All the parts of the pulleys are admirably adapted to their purposes. The strength is in the right positions and the parts are accessible for oiling.

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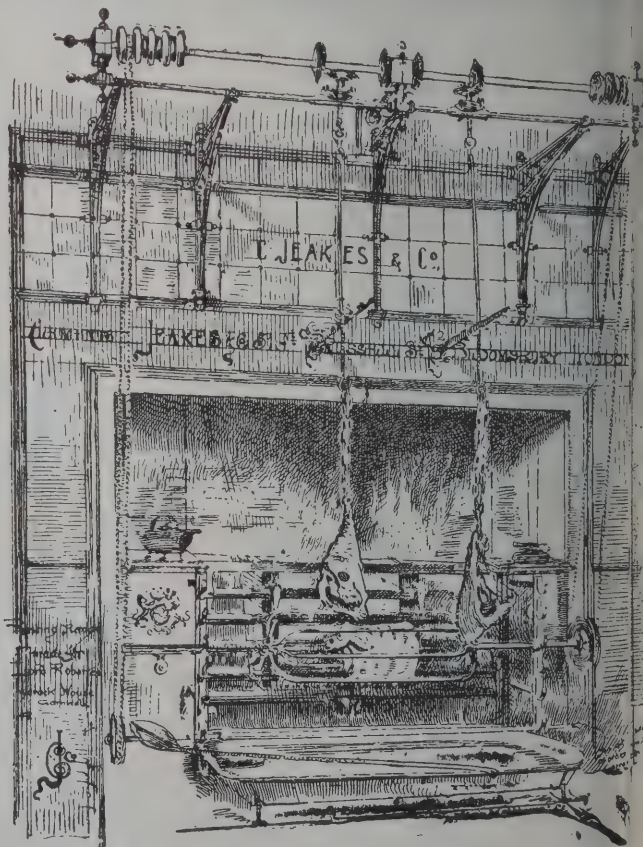
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THE volume which is filled with representations of some of the buildings decorated by Messrs. Waring must gratify every Englishman when he finds that the firm can count several Paris buildings among their successes. To be selected to execute a class of work in which Frenchmen are supposed to be supreme speaks well for the artistic power which Messrs. Waring can command. Some of their work is found in other cities abroad. The English buildings shown in the book, and for which the contracts were secured mostly in public competition, comprise palaces, hotels, clubs, theatres, restaurants, infirmaries, public buildings, steam vessels, yachts, &c. Their work is to be seen in the private apartments of Windsor Castle and Buckingham Palace, the King's yacht, the German Emperor's yacht, the Sultan of Turkey's yacht and State barge. They can claim that "no English decorative firm has ever gained such pronounced distinction at foreign exhibitions." The illustrations are all reproductions of photographs, and are therefore free from imaginative features. As examples of the latest styles of decorations adapted to varying circumstances they are of great value and a tribute to the good taste of the firm.

NEW PAINTS.

THERE is a prejudice among operative painters against all paints which do not combine. Whatever may be the advantages of that practice, it does not insure uniformity of colour, and time is lost in experiments. Messrs. Pinchin, Johnson & Co., Ltd., have taken some pains by numerous experiments to establish standard colours. They are adapted to the majority of purposes, but as the materials employed are pure in character they can be adapted with little trouble to all kinds of use. The Minerva paint herefore claims to be recognised on account of the economy in time and money which it insures.

PRESIDENT ROOSEVELT ON TECHNICAL TRAINING.

IN his annual message President Roosevelt said it would be impossible to overstate (though it is, of course, difficult quantitatively to measure) the effect upon a nation's growth to greatness of what may be called organised patriotism, which necessarily includes the substitution of a national

feeling for mere local pride, with as a resultant a high ambition for the whole country. No country can develop its full strength so long as the parts which make up the whole each put a feeling of loyalty to the part above the feeling of loyalty to the whole. This is true of sections, and it is just as true of classes. The industrial and agricultural classes must work together, capitalists and wage-workers must work together, if the best work of which the country is capable is to be done. It is probable that a thoroughly efficient system of education comes next to the influence of patriotism in bringing about national success of this kind. Our Federal form of Government, so fruitful of advantage to our people in certain ways, in other ways undoubtedly limits our national effectiveness. It is not possible, for instance, for the National Government to take the lead in technical industrial education, to see that the public school system of this country develops on all its technical, industrial, scientific and commercial sides. This must be left primarily to the several states. Nevertheless, the National Government has control of the schools of the district of Columbia, and it should see that these schools promote and encourage the fullest development of the scholars in both commercial and industrial training. The commercial training should in one of its branches deal with foreign trade. This industrial training is even more important.

It should be one of our prime objects as a nation, so far as feasible, constantly to work toward putting the mechanic, the wage-worker who works with his hands, on a higher plane of efficiency and reward so as to increase his effectiveness in the economic world and the dignity, the remuneration and the power of his position in the social world. Unfortunately, at present, the effect of the work in the public schools is in the exactly opposite direction. If boys and girls are trained merely in literary accomplishments, to the total exclusion of industrial, manual and technical training, the tendency is to unfit them for industrial work and to make them reluctant to go into it or unfitted to do well if they do go into it. This is a tendency which should be strenuously combated. Our industrial development depends largely upon technical education, including in this term all industrial education, from that which fits a man to be a

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good mechanic, a good carpenter or blacksmith, to that which fits a man to do the greatest engineering feat. The skilled mechanic, the skilled workman, can best become such by technical industrial education. The far-reaching usefulness of institutes of technology and schools of mines or of engineering is now universally acknowledged, and no less far reaching is the effect of a good building or mechanical trades school, a textile or watchmaking or engraving school. All such training must develop not only manual dexterity but industrial intelligence. In international rivalry this country does not have to fear the competition of pauper labour as much as it has to fear the educated labour of specially trained competitors, and we should have the education of the hand, eye and brain which will fit us to meet such competition.

In every possible way we should help the wageworker who toils with his hands, and who must (we hope in a constantly increasing measure) also toil with his brain. Under the Constitution the National Legislature can do but little of direct importance for his welfare save where he is engaged in work which permits it to act under the interstate commerce clause of the Constitution, and this is one reason why I so earnestly hope that both the legislative and judicial branches of the Government will construe this clause of the Constitution in the broadest possible manner. We can, however, in such a matter as industrial training, in such a matter as child labour and factory laws, set an example to the states by enacting the most advanced legislation that can wisely be enacted for the district of Columbia.

COLONIAL BUSINESS.

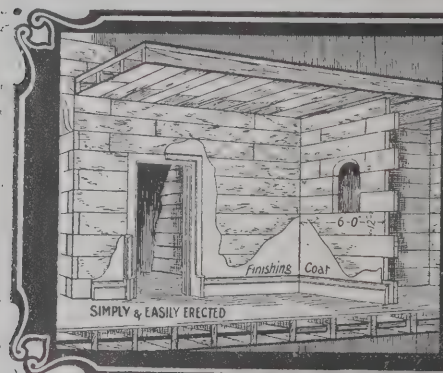
It is to be regretted that only a comparatively limited effort is made to obtain orders in the colonies. Germans and Americans secure in consequence a large amount of business to which Englishmen have prior claims. One of the causes for the apparent indifference is no doubt the belief that commercial travellers and other agents have not the freedom which is allowed to representatives of all countries in Great Britain. The Blue Book just issued, containing the regulations in force in British possessions and protectorates and foreign countries with regard to British commercial

travellers is therefore a boon to manufacturers. The following will suggest its character:—

In the Australian Commonwealth commercial travellers' samples are liable to the ordinary rates of import duty, but the amount may be deposited with the Customs for a period not exceeding six months, such amount being returned if the samples are exported within the prescribed time. A certificate to the effect that the duty has been paid, deposited will be recognised throughout the Commonwealth if the samples can be readily identified on transfer. It is not necessary that the samples should be exported from the port at which they were imported. Special conditions prevail with regard to railway facilities in the various States.

Commercial travellers, whether representing one or more firms, are required on arrival in New Zealand to pay a deposit—usually about 5%—as a guarantee that the income tax due on the business done in the colony will be paid. The deposit is held until the traveller is in a position to furnish a return of the total business resulting from the visit, when an adjustment is made by refund if the deposit exceeds the tax payable, or by a claim for the balance of tax if the deposit is less than the amount payable. On his arrival the traveller receives a warrant (free) permitting him to exercise his calling. Principals are subject to the same provisions as their agents. On New Zealand railway commercial travellers are allowed 112 lbs. of luggage and samples free of charge, any excess over that up to 10 cwt. being charged at 6d. for every 56 lbs. or fraction of 56 lbs. for every fifty miles or fraction of fifty miles, being half the rate charged to the ordinary public. Resident agents of British firms are not subject to any license fee for income tax purposes, and in their own private assessments are entitled to an exemption of 300%, the same as any other resident.

Duty is usually charged at the first port of entry into the South African Customs Union on all samples of commercial value brought into the country by commercial travellers. Sometimes a deposit is accepted in lieu of duty, such deposit being refunded on exportation of samples, but in this case the samples must be exported at the port of original entry where the deposit was taken. If the commercial traveller wishes to visit any colony in the Customs Union, other than that in which he has landed, he has to provide himself with



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schedule in due form, and also to make out Customs union forms. This done he can proceed to any part of the Customs Union without further payment, the only condition being that should he dispose of any of his samples the particulars of such sale must be endorsed by him on the schedule, so that the colony in which the sale took place may receive its share of the duty originally collected.

All commercial travellers visiting Cape Colony are required to take out licenses, but the particular license they may require depends upon the nature of their operations.

A license of 25*l.* per annum available from January 1 to December 31, or one of 12*l.* 10*s.* available from July 1 to December 31, is required by all persons other than importers who sell or offer for sale by sample or otherwise goods of a firm whose place of business is not in Cape Colony. An agent holding a single license may sell the goods of any number of firms; agents for local firms are allowed the usual small samples without holding a liquor license.

DUST-LAYING EXPERIMENTS.

A REPORT of dust-laying experiments made by the city surveyor of Chester has appeared on the minutes of the improvement committee. The surveyor stated that the committee received an offer from the Akonia Syndicate to supply four tons of akonia on approval. The experiment was made on Upper Northgate Street and Liverpool Road, and began on July 30 and continued until August 27. The total weight of akonia used was 4 tons 3 cwt. 3 qrs., and, inclusive of the first thorough dressing, it was applied four times with a total of 8,000 gallons of water. During the month when the experiment was being made, it was showery on eight days and heavy rain fell on nine days. The ordinary watering on these roads during the intervals of dry weather, between the rainy weather, would have consumed, approximately, 82,000 gallons of water, as against the 8,000 gallons actually used; but the cost of watering would have been about 3*l.* 10*s.*, as against 14*l.* 8*s.* 5*d.* for the akonia, made up as follows:—12*l.* 18*s.* 3*d.* for akonia; carter's time, 18*s.*; breaking drums and crushing material, 4*s.* 1*d.*, and extra cleansing, 2*l.* 18*s.* 1*d.* There were other expenses not taken in account, such as extra

man with meter stand pipe; but this item could be dispensed with, and other items of expense might be reduced in connection with the future crushing, dissolving and spreading of the akonia solution, should the committee decide to use it on a larger scale. During the season, on all the roadways in the city usually watered, 19,346 loads of water had been applied, at a cost for spreading of about 352*l.* There were about 10 miles of macadamised roadways (being part only of the city roads) that the akonia would be useful upon, but the cost for this material alone at 3*l.* 1*s.* 6*d.* per ton was estimated at 553*l.* 10*s.* The experiment proves, firstly, that the solution when applied to the road surfaces kept them damper and less dusty in dry weather, and less muddy in wet weather, and served for a longer period than ordinary watering; secondly, the water used was very much less than with the ordinary watering; and, thirdly, that the expense of the material was a large factor, considering the water is supplied to the Corporation free of charge. In conclusion, he would recommend the committee to continue this or similar dust preventive experiments next season.

STRENGTH OF SOLDERED JOINTS.

THE strength of soldered joints has been found in thesis tests recently made at the Iowa State College to be a very uncertain quantity, varying widely with the composition of the solder, with the method of making the joint and with the kind of metals joined. It was found, says the *Engineering Record*, that the process known as "sweating" results in a joint of the least strength of any of the methods of soldering; all joints made with pressure were invariably found to be more or less granular or spongy, while those made without pressure are usually smooth and firm. In comparing different compositions of solder, it was found that a solder of 60 per cent. of tin to 40 per cent. of lead was the most suitable for general work in which considerable mechanical strength is required, although the actual strength of the joint was found to depend upon the kinds of metals joined. In a series of joints made on brass and on copper with solders containing from 35 to 70 per cent. of tin, practically all of them broke at loads under 13,000 lbs. per square inch. The

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maximum strengths on copper were obtained with 60 per cent. solders, the strength declining rapidly with higher percentages; this peculiarity on copper was believed to be due to the difficulty of maintaining the proper temperature in soldering, as with a slight excess of heat the extreme fluidity of the high percentage compositions of solder cause it to run out of the joint. With brass, on the other hand, the strength increases as the proportion of tin in the solder is increased. In further tests to determine the life of soldered joints under light loads, it was found that joints on brass have a longer life under a given load than those on copper. An interesting feature of the observations made in the tests is that the time taken to break a soldered joint is an important factor in the results secured. All joints will after a short time fail under a stress much less than that required to produce failure at once; it was found in many instances that a decrease of 5 seconds in the total time of testing would increase the strength of the joint from 4,000 lbs. to 5,000 lbs. per square inch, the total time of testing being usually 20 to 25 seconds. The maximum strength obtained was 25,900 lbs. per square inch, in the case of a joint on copper with a 60 per cent. solder, the total time of testing having been shortened to 20 seconds.

A ROAD-TARRING MACHINE.

THE Roads Improvement Association, the Automobile Club of Great Britain and Ireland and the Motor Union of Great Britain and Ireland have arranged to promote a competition for a tar-spreading machine. The rules and conditions of the competition are as follows:—

This competition has been arranged to decide the best means of spreading tar by mechanical means upon existing road surfaces so as to bind the road materials and prevent surface dust.

The merits of the competing appliances will be judged entirely by the results of the operation, the chief consideration being the efficiency with which the tar penetrates the road and the cost of application.

Tarring has so far proved itself superior to any palliative for laying dust, but the method of application by hand is expensive. It involves the use of an excessive amount

of tar and the creation of mud and a small amount of dust of an objectionable character.

Hitherto the general practice has been to remove the loose dust from the surface of the road, apply hot tar and brush it into the interstices of the road surface by manual labour. The road is then covered with sand to prevent the tar picking up on the tyres of passing vehicles. A second coating is required after an interval of six weeks, but in subsequent years only one coating is usually necessary. This system has been applied to many miles of main roads in Kent, Surrey, Middlesex and Hampshire, and on a smaller scale in other districts.

The cost of thus treating a road of an average width of eight yards with two coats of refined tar is between 60% and 90% per mile, or about 60% per mile if a period of three years is taken. It has been pointed out by several county surveyors that it is imperative that the cost of materials and labour should be lessened considerably if there is to be a wider application of tar to roads. It is obvious that an unduly large proportion of the cost of the present method is expenditure on labour. If a mechanical apparatus can be constructed, either in the form of a horse-drawn cart or mechanically propelled vehicle, that would spray the tar upon the road, the labour factor can be reduced very considerably. Such an apparatus should apply the tar more uniformly and cause it to penetrate to a greater depth. The quantity of tar required would also be much less. It is necessary to so far reduce the cost and increase the efficiency that the treatment might be applied to all the principal main roads throughout the country. Efforts to induce manufacturers of municipal appliances to design and submit an apparatus for trial have not proved very successful, hence the suggestion by a leading county surveyor to the Motor Union that automobilists should organise a competition for such appliances. It is hoped that such competition will result in the production of an apparatus that will spray the tar under such pressure as will enable it to penetrate deeply into the road, so as to bind the materials of the road instead of forming a separate coating on the surface, and at the same time reducing the waste of tar and requiring the minimum of unskilled labour.

Such an apparatus would save the present expenditure on road watering, as it would lay the dust far more

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actually; at the same time it would increase the life of the road by preventing the removal of the loose particles between the stones in the form of mud or loose dust.

Specific rules are laid down for testing the merits of competing systems. Efficiency of the application of the distribution of the tar will be judged from the points of view of (a) the penetration of the road; (b) the equality of the distribution; and (c) the quantity of tar the road is forced to absorb. Other matters to be specially considered are—the cost of application per square yard; sound mechanical construction capable of resisting wear and tear; simplicity of operation, *i.e.* the machine should be capable of being worked by the ordinary road labourers without skilled attendance; ease and efficiency of operation; suitability to varying road surfaces; and immunity from fire risk.

The machine which is adjudged to be the best will be awarded a first prize of 100 guineas and a gold medal, and the next best machine will be awarded a second prize of 50 guineas and a silver medal. Entries are to be received to March 31, the entrance fee being 10*s.* 10*s.*, of which half will be returnable to those who actually compete. The trials will be carried out as far as possible upon ordinary roads of varying characteristics. Vehicles may be either horse-drawn or mechanically propelled, but other things being equal, preference will be given to mechanically-propelled vehicles.

The judges who represent the Council of the Roads Improvement Association are:—Mr. W. Worby Beaumont, consulting engineer to the Automobile Club; Colonel Compton, president of the Institution of Automobile Engineers; Mr. Howard Humphreys, consulting engineer; Mr. Rees Jeffreys, secretary of the Motor Union; Mr. Douglas Mackenzie, consulting engineer; Earl Russell, of the technical committee of the Automobile Club; and Mr. Albert Todd, chairman of the Roads Improvement Association. The following city and county engineers have been appointed after consultation with the Incorporated Association of Municipal and County Engineers:—Mr. John A. Lodge, city engineer, Liverpool; Mr. H. P. Maybury, county surveyor, Kent; Mr. H. E. Stilgoe, city engineer, Birmingham; Mr. W. J. Taylor, county surveyor, Hampshire, and president of the County Surveyors' Society; and

Mr. H. T. Wakelam, county engineer, Middlesex, and past president of the County Surveyors' Society.

BEARING CAPACITY OF EARTH FOUNDATIONS.

AN American investigator, Dr. E. L. Corthell, has been engaged in collecting and analysing the pressures on the foundation beds of certain stable structures. The pressures per square foot to which reference was made are those existing upon what may be called earth foundations, the term "earth" comprising a wide range of materials from that which is little better than stiff mud up to classes of hard clay and gravel nearly equivalent to rock. Although such data, however carefully compiled, include many determinations of questionable value in consequence of uncertain methods of computation, on the whole the results are probably as reliable as could be expected. Computations of actual loads upon foundation beds are never better than closely approximate, says the *Engineering Record*, and that approximation in many cases shades out into degrees of much uncertainty. Fairly good authority can be found for supposing that pressures as high as 22,000 to 28,000 lbs. per square foot are supported on a bed of fine sand under the Washington Monument, but it would probably be a matter of some difficulty to establish either one of those values with any high degree of accuracy, even under the wind pressures in consequence of which the higher of those pressures is supposed to be produced.

Dr. Corthell has rendered the profession a real service in correlating these foundation data, but it is necessary to observe that any such collection of values must, like many other engineering data, be used under the guidance of a well-trained judgment. Foundation pressures are to some extent rather erratic in their manifestations, even if it were possible to determine their exact amounts. It is assumed, for instance, in probably all computations usually made to determine pressures that they are either uniform over the entire foundation bed or parts of the bed, or that if they vary the law of uniform variation of intensity controls them. Any experienced engineer is perfectly well aware that neither of these laws necessarily holds, but that they must be assumed as the only workable hypotheses available. In other words, if such laws are not assumed no

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others can be found to take their places. It is altogether probable that no serious errors are committed in employing such procedures, but it is absolutely necessary for a safe and reasonable treatment of foundation problems that their real nature be recognised. Again, great care should be taken in the interpretation of results. The mere fact that 12,000 or 15,000 lbs. per square foot are safely carried by a bed of sand in one location does not justify any such loading as a general rule. There are many places where such loading should be restricted to an amount not greater than 5,000 or 6,000 lbs. per square foot. These observations hold especially with regard to conditions which may be introduced by deeper excavations in the immediate vicinity of an already completed foundation.

The depth of excavation at which a building is founded upon sand, gravel, clay or other similar material is a most important element, and the results of a recorded safe loading per square foot on such material has little meaning unless accompanied by a full statement of the depth below the surface as well as the nature of the loading applied, also whether the foundation excavation has not created a new surface at a still deeper level, in fact nearly down to the foundation bed itself. Almost any material when not too wet will carry a high foundation load if it is prevented from moving laterally, and a recorded foundation load loses its substantial significance in the absence of information regarding all these collateral conditions. Again, many engineers properly make the rational distinction between total load upon a foundation bed and the abnormal load, *i.e.* the load per square foot in excess of that which the same foundation bed carried prior to any disturbance of the material above it. As a matter of fact, the abnormal load is really the significant load. Clearly any square foot of area, unless surrounding conditions are radically changed, will safely carry a load equal to that imposed on it by the mass of natural material resting upon it before being disturbed. The real essential question is, then, how much in addition to that natural load may safely be imposed? If the material is not too moist to permit a reasonable application of the theory of earth pressure to the case, the computed supporting power corresponding to the abutting force of the adjacent material will convey some idea of the abnormal load to which it may properly be submitted.

The results of such computations, however, must be qualified, like all others of the same class, by good engineering judgment. If the material is wet or otherwise questionable, recourse must be had to the safe loads imposed by other structures under similar conditions or to the best engineering guess that can be made under the circumstances.

It is seen, therefore, that much more information is really needed in analysing and digesting precedents of safe foundation loads than their amounts only. The latter must be most carefully regarded in connection with the surrounding conditions and what is meant by the loads themselves. The effect of water in the supporting material, the depth below the "surface" of the deepest excavation, the character of underlying strata, the conditions under which structures similarly circumstanced have settled, and other influences which would easily swell into a long list, are as important elements of the general problem as the amounts of loading themselves.

According to Dr. Corthell, the pressure of stable structures on fine sand ranges between 4,500 and 11,600 lbs. per square foot, averaging 9,000 lbs. in ten examples; on coarse sand and gravel between 4,800 and 15,500 lbs., averaging 10,200 lbs. in thirty-three examples; on sand and clay between 5,000 and 17,000 lbs., averaging 9,800 lbs. per square foot in ten examples; on alluvium and silt between 3,000 and 12,400 lbs., averaging 5,800 lbs. in seven examples; on hard clay between 4,000 and 16,000 lbs., averaging 10,160 lbs. in sixteen examples; on hard pan between 6,000 and 24,000 lbs., averaging 17,400 lbs. in five examples. These cases show no settlement. Besides the foregoing cases three instances were found in which notable settlement took place in fine sand with a minimum load of 3,600 lbs., a maximum load of 14,000 lbs. and an average load of 10,400 lbs. In clay, principally London clay, in five examples the pressure ranged between 9,000 and 11,200 lbs., averaging 10,400 lbs. In silt and alluvium two cases of settlement were reported with loads of 3,200 lbs. and 15,200 lbs., a wide variation. Three cases of failure on a mixture of sand and clay are given, the pressures ranging between 3,200 and 14,800 lbs., averaging 6,600 lbs. This should be compared with the average of 9,800 lbs., an range of 5,000 to 17,000 lbs. in ten examples, already referred to, in which no settlement occurred.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tender and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50*l.* and 25*l.* to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10*s.* 6*d.* Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20*l.* and 10*l.* will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25*l.* will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100*l.*, 50*l.* and 25*l.* are offered. Deposit 1*l.* 1*s.* Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

CONTRACTS OPEN.

AUSTWICK.—Jan. 28.—For the mason, slater, plasterer, joiner, plumber and glazier's work required in the erection of various buildings, comprising administration, isolation, laundry, discharge and mortuary blocks, scarlet-fever pavilion, stable and cart-shed, for their new isolation hospital at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, surveyor, Town Hall, Settle.

BAGSHOT.—Jan. 28.—For the erection of schoolrooms, vestries, &c., for the Wesleyan church. Mr. W. J. Hodson, architect, The Avenue, Camberley.

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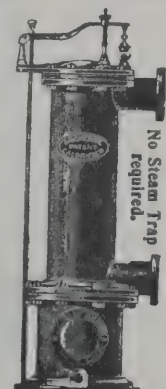
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BEXLEY.—Jan. 22.—For the construction of a retaining wall 60 feet in length, average height 5 feet. Dr. Searle, Bexley.

BOOTLE.—Jan. 28.—For the construction of public convenience on the south-east side of the canal, Stanley Road. The Borough Engineer, Town Hall, Bootle, Lancs.

BRIGHTON.—Jan. 21.—For alterations and additions to the Hanover Terrace Council schools. Deposit 3/4. Messrs. T. Simpson & Son, surveyors, 17 Ship Street, Brighton.

BRISTOL.—Jan. 24.—For alterations and additions to the workshop at the day industrial school, Temple Backs. Deposit 1/4 1s. Mr. Peter Addie, Council House, Bristol.

BURNLEY.—Jan. 22.—For the construction of a goods shed and extension of offices at Burnley (Bank Top), for the Lancashire and Yorkshire Railway Co. The Engineer's Office, Hunt's Bank, Manchester.

BURY.—Jan. 22.—For brickwork for the walls, arches, chimneys and foundations for six through beds of retorts at the gasworks, for the Corporation. Mr. H. Simmonds, engineer and general manager, Gasworks, Bury, Lancs.

BURY.—Feb. 2.—For the joiners' work and painting required in connection with the museum at the art gallery. The Borough Engineer, Bury, Lancs.

BURY.—Feb. 2.—For the erection of the extension to the central tramway depot in Rochdale Road. Deposit 2/4. Mr. Arthur W. Bradley, A.M.I.C.E., borough engineer and surveyor, Bury, Lancs.

CARLTON.—Jan. 31.—For the erection of a temporary timber bridge over the river Aire at Carlton, within the rural district of Skipton. Deposit 1/4. Mr. F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

CLANDON.—Feb. 4.—For the erection of a smallpox hospital about two miles from Clendon station, Surrey, on the London and South-Western Railway. Deposit 5/4 5s. Send names to Mr. T. W. Weeding, clerk to the Surrey Smallpox hospital committee, County Hall, Kingston-upon-Thames.

CONSETT.—Jan. 23.—For the erection and completion of two houses at Castleside. Mr. Thos. H. Murray, architect and surveyor, Consett, Durham.

CUTSYKE.—Feb. 1.—For the erection of a signal cabin at Cutsyke, near Castleford, for the North-Eastern Railway Company. Mr. W. J. Cudworth, company's engineer, York.

CUTSYKE.—Feb. 1.—For the erection and construction of a new bridge over the Leeds and Pontefract Road at Cutsyke, near Castleford. The work comprises a steel bridge, with abutments of concrete, brick and stone, the abutments being for double line and the superstructure for single line of railway. Mr. W. J. Cudworth, the North-Eastern Railway Company's engineer at York.

EDINBURGH.—Jan. 19.—For the mason and bricklayer, carpenter and joiner, plumber, slater and plasterer and cement works in connection with the double cottage, &c., at Alnwick Hill. Mr. Edward C. Carse, architect, 37 Frederick Street, Edinburgh.

ELGIN.—Jan. 25.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier's work, and laying-out and enclosing grounds of joint smallpox, &c., hospital, near Elgin. Mr. Charles C. Doig, architect, Elgin.

ELTHAM.—Jan. 22.—For the erection of a refreshment house at Avery Hill, for the London County Council. Mr. G. L. Gomme, clerk, Spring Gardens, S.W.

FERRYHILL AND WITTON PARK.—Jan. 19.—For the erection of new lock-ups at Ferryhill and Witton Park, Durham. Mr. William Crozier, A.M.I.C.E., County Surveyor's Office, Shire Hall, Durham.

GOSPORT.—Jan. 19.—For the work of alterations at the Gosport police station. Deposit 1/4 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

GRIMSBY.—For the erection of a villa in Humberstone Avenue. Mr. J. J. Cresswell, architect, 77 Victoria Street, Grimsby.

GUILDFORD.—Feb. 2.—For carrying-out additions, alterations and reparations to the old school buildings at the workhouse. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

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HALIFAX.—Jan. 28.—For building a mission-room at Pye Nest. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

HEREFORD.—Feb. 11.—For extensions to the buildings at the electricity station in Widemarsh Street. Mr. John Parker, city engineer, Hereford.

ILFORD.—Jan. 22.—For pulling-down 52 and 54 High Road, Broadway. Deposit 2*l.* 2*s.* Mr. H. Shaw, engineer and surveyor to the Council, Town Hall, Ilford.

IPSWICH.—Jan. 28.—For the execution of alterations at the (a) Foundation Street school premises and the (b) Turret Lane school premises. Mr. E. T. Johns, architect, Tower Chambers, Tower Street, Ipswich.

IRELAND.—Jan. 19.—For repairing a wall at Newcastle Harbour, Downpatrick. The County Surveyor's office, Downpatrick.

IRELAND.—Jan. 21.—For works to be done to the parish church, Cashed. Mr. Samuel F. Hynes, architect, 21 South Mall, Cork.

IRELAND.—Jan. 22.—For the erection and completion of a war signal station at Whitestown, co. Louth. Office of Public Works, Dublin.

KEIGHLEY.—Jan. 31.—For the erection of the first section of All Saints Church, Highfield. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

KIPPAX.—Jan. 19.—For additions and alterations to be carried out at Kippax provided school. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

LANGWITH.—Feb. 4.—For the erection of an isolation hospital at Langwith, Derby. Messrs. Rollinson & Son, architects, Corporation Street, Chesterfield.

LONDON.—Jan. 22.—For the execution of certain works to bridges at Highbury station and Holloway Road, in connection with the reconstruction of further portions of the London County Council tramways. Full particulars, Chief Engineer, County Hall, Spring Gardens, S.W.

LONDON.—Jan. 22.—For the erection of a Secondary school on a site in Hortensia Road, King's Road, Chelsea, S.W., for the London County Council. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

LUDWORTH.—Jan. 24.—For the erection of Council school, Ludworth (Marple Bridge), Derbyshire, to accommodate about 250 children. Deposit 1*l.* 1*s.* Mr. George H. Widdows, architect to the committee, County Education Offices, St. Mary's Gate, Derby.

NEW BRIGHTON.—Jan. 28.—For the erection of the new school, New Brighton, for the Wallasey Urban District Council. Deposit 1*l.* 1*s.* Mr. Edmund Kirby, architect, 5 Cook Street, Liverpool.

NORTHFIELD.—Jan. 21.—For taking-down and re-erecting in brick the wall in front of the West Heath Hospital, near Northfield. Deposit 1*l.* 1*s.* Mr. Ambrose W. Cross, A.M.I.C.E., 23 Valentine Road, King's Heath.

OSSETT.—Jan. 19.—For any of the following trades—viz. mason and bricklayer, carpenter and joiner, plumber, plasterer, painter and slater's work—in connection with the erection of Southdale Council school. Deposit 1*l.* Names to Mr. E. Lucas, secretary, Education Offices, 2 New Street, Ossett, Yorks.

OVER ALDERLEY.—Feb. 1.—For alterations and additions to the school buildings, Over Alderley, Cheshire. Mr. H. Beswick, county architect, Newgate Street, Chester.

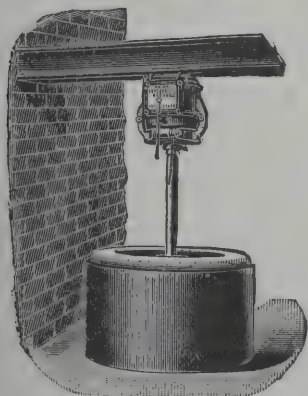
PENKETH.—Feb. 7.—For the erection of a public elementary school for 350 scholars at Penketh, near Warrington, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

SCARBOROUGH.—Feb. 1.—For the construction of an arch bridge over Westbourne Grove Road, also for coal depôts and platform walls at or near the company's Washbeck goods yard, Scarborough, for the North-Eastern Railway Company. Mr. W. J. Cudworth, the company's engineer at York.

SCOTLAND.—Jan. 19.—For mason, joiner, plumber, plasterer and slater's work of alterations on Craigrothie school, for the Ceres School Board. Mr. C. F. Anderson, architect, St. Andrews.

SCOTLAND.—Jan. 21.—For the alteration of the slaughterhouse in Queen Street, Port Glasgow. Deposit 5*s.* Messrs. A. F. Duncan & G. D. Copland, architects, 146 West Regent Street, Glasgow.

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SCOTLAND.—Jan. 22.—For the erection of the super-structure of the post office at Kilmarnock. Deposit 1*l.* 1*s.* Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

SCOTLAND.—Feb. 5.—For post office at Stornoway. Deposit 1*l.* 1*s.* Mr. W. T. Oldrieve, H.M. Office of Works, Parliament Square, Edinburgh.

SELHURST.—Jan. 23.—For the construction of an engine and producer house, tower, &c., at Selhurst, county borough of Croydon, for the Metropolitan Water Board. Deposit 5*l.* The Engineer, Southwark Bridge Road, S.E.

SHIPLAKE.—For the erection of a house for a police constable at Shiplake, near Henley-on-Thames, Oxfordshire. Deposit 10*s.* 6*d.* Mr. Sidney Stallard, county surveyor, 8 New Road, Oxford.

STAPLEHURST.—Jan. 19.—For the erection of three cottages on the Spillsill estate, Staplehurst, Kent. Mr. W. Brooks, architect, Oakfield, Staplehurst.

SUNDERLAND.—Jan. 30.—For the erection of cottage homes at the north-east corner of the workhouse grounds, Hylton Road. Deposit 2*l.* 2*s.* Messrs. T. & T. R. Milburn, architects, 20 Fawcett Street, Sunderland.

THATCHAM.—Jan. 25.—For pulling-down old buildings and erecting new premises at Thatcham, Berks. Mr. Walter H. Bell, architect, The Market Place, Newbury.

VENTNOR.—Feb. 7.—For the completion of a pavilion at the pierhead. The Surveyor, Town Hall, Ventnor, I.W.

WAKEFIELD.—Jan. 19.—The West Riding education committee invite whole or separate tenders in connection with the following works, viz. new school at Otley and alterations to existing school; Kippax provided school, additions and alterations; West Tadcaster provided school, additions and alterations (builder, joiner, slater, plumber, plasterer and painter's work); new school at Thorne, near Doncaster (builder, joiner, slater, plumber, plasterer, painter and ironfounder's work). Deposit 1*l.* in each case. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—Jan. 19.—For erecting new schoolroom at St. Peter's Church, Brynteg. Mr. T. Moss, architect, 2 Temple Row, Wrexham.

WALES.—Jan. 23.—For the erection of Council school at Machen, Monmouthshire, to accommodate 550 children. Deposit 3*l.* 3*s.* Names to Mr. C. Dauncey, secretary, County Council Offices, Newport, Mon.

WALES.—Jan. 24.—For the rebuilding of the Hotel Cameron, High Street, Swansea. Deposit 2*l.* 2*s.* Names to Mr. Charles T. Ruthen, architect, Swansea.

WALES.—Jan. 25.—For the erection of a gymnasium, library and other additions to Howell's Glamorgan County school for girls, Llandaff. Mr. G. E. Halliday, architect, Castle Street, Cardiff.

WALES.—Jan. 26.—For the erection of 15 houses at Abercrave, Swansea Valley, for the Abercrave Colliery Co. Mr. J. Cook Rees, architect, Neath.

WALES.—Jan. 30.—For supplying and erecting the steel and ironwork of the proposed Rhiwarthen bridge, Penllwyn. Mr. Hugh Hughes, clerk to the District Council, Aberystwith.

WALES.—Feb. 1.—For the erection of ninety-four houses and seven shops, near the New Welsh Navigation Steam Coal colliery, in the Ely Valley, near Tonyrefail. Deposit 2*l.* 2*s.* Mr. Philip John Jones, architect, Cilfynydd, Pontypridd.

WEST BRIDGFORD.—Jan. 19.—For the erection, upon land fronting Bridgford Road, of a building for use as Council offices. Deposit 1*l.* 1*s.* Mr. Wm. Pare, engineer and surveyor, George Road, West Bridgford.

WESTERHAM.—Jan. 23.—For the erection of an engine and boiler-house and chimney-shaft at the Hill Park Estate, Westerham, Kent, for the Metropolitan Water Board. The Engineer, Brookmill Road, Deptford.

WEST HAM.—Jan. 22.—For the following works for the West Ham Town Council:—(1) Construction of retaining walls, &c., at Prince Regent's Lane, Plaistow; (2) additional lavatory accommodation, cloak-rooms and other sundry alterations, town hall, Stratford. Deposit 1*l.* in each case. The Borough Engineer, Town Hall, Stratford.

WITHINGTON.—Jan. 22.—For the erection of latrines, bath-houses, lavatories, &c., at the Withington workhouse. Deposit 1*l.* 1*s.* Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

WORCESTER.—Jan. 31.—For an extension to the Victoria Institute. Deposit 2*l.* 2*s.* Names by Jan. 15 to Mr. A. G. Parker, quantity surveyor, 5 Foregate Street, Worcester.

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WORKINGTON.—Jan. 19.—For the alterations to the Furnace Arms beerhouse, Low William Street. Names to Mr. Wm. Carmichael, architect, 107 Duke Street, Whitehaven.

WORKINGTON.—Jan. 19.—For the painting and decorating, plumbing and ventilating and joinerwork required in the renovation of the Congregational church. Messrs. Stoker & Nicholson, architects and surveyors, 62 Pow Street, Workington.

WORTHING.—Jan. 23.—For erection of free library and museum. Deposit 2*l.* 2*s.* Send names to Mr. W. Verrall, town clerk, Worthing.

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Winch	4,282	0	0
Iles	4,050	0	0
Jackson	3,953	0	0
Macdonald	3,704	0	0
Napier & Sons	3,513	0	0
W. & C. FRENCH, Buckhurst Hill (accepted)	3,416	0	0

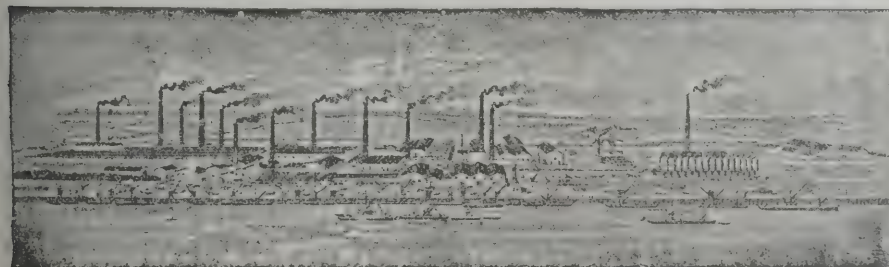
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Tilt Bros.	2,944	0	0
Jones	2,920	0	0
Thompson	2,897	10	0
Marshall	2,875	0	0
Elvins	2,870	0	0
Dallow & Sons	2,868	0	0
Wood & Sons	2,847	0	0
Spicer	2,817	15	0
Cole & Son	2,763	14	7
Sapcote & Sons	2,747	0	0
Bo wen & Sons	2,728	0	0
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Brummell	3,788	15	2
Moran & Sons	3,630	0	0
Powdrill	3,625	16	8
Pedrette & Co.	3,598	19	3
Iles	3,570	0	0
Mowlem & Co.	3,538	0	0
Macdonald	3,519	10	0
Watson, jun.	3,471	6	0
Dickson	3,339	2	8
Haycock & Sons, Great Glen, near Leicester (recommended)	3,018	1	5
Osenton	2,671	0	0

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HENDON—continued.

Paving works.

Pedrette & Co.	£1,587	12	0
Dickson	1,287	1	1
Pedrette	1,266	15	0
Haycock & Sons	1,221	6	3
Muirhead & Co.	1,186	1	6
Mowlem & Co.	1,147	0	0
Adams.	1,125	10	6
Powdrill	1,114	7	9
Osenton	1,113	15	0
Jackson	1,071	9	0
Rutter	1,062	13	9
Brummell	1,056	13	9
Moran & Sons	1,050	0	0
Iles	1,050	0	0
Bower Bros.	1,026	7	9
Watson, jun. (recommended)	1,021	6	9
Macdonald	985	9	6

IRELAND.

For the erection of manse at Milford, co. Donegal. Mr. J. M. ROBINSON, architect, Londonderry.

McBride	£793	0	0
Mandtrand	746	10	0
Colhoun	730	0	0
Smith Bros.	650	0	0
Wilson	640	0	0
Mooney	590	0	0
D. Montgomery	580	0	0
J. Montgomery	570	0	0
JOHNSON, Letterkenny (accepted)	550	0	0

For construction of waterworks for Newtownards. Messrs. SWINEY & CROASDAILE, engineers, Belfast.

Stark & Sons	£22,814	0	0
Collen Bros.	20,000	0	0
Fisher & Le Fanu	19,747	0	0
Martin & Co.	17,750	0	0
H. & J. Martin	16,951	0	0
Ross & Sons	16,824	0	0
Courtney & Co.	16,280	0	0

IRELAND—continued.

Firth & Co.	£16,249	0	0
Caulfield & Pollok	16,234	0	0
Lawson	15,980	0	0
McKee & McNally	15,590	0	0
GRAHAM, Dromore, co. Down (accepted)	15,020	0	0

LONDON.

For the internal alterations to the Adelphi hotel, John Street, Adelphi, W.C., for Mrs. Burlet. Messrs. HAYWARD & MAYNARD, architects, 20 John Street, Adelphi.

Eyre	£1,998	0	0
Read	1,710	0	0
OLVER & Co., Haymarket	1,545	0	0

A contract has been entered into with Messrs. Olver & Co. on a modified tender.

For kerbing, channelling and making-up the roadway of Canonbie Road and part of Sunderland Road.

Canonbie Road.

Woodham & Sons	£2,090	0	0
Mowlem & Co.	2,084	0	0
Fry Bros.	2,046	0	0
Martin	2,000	0	0
Pearce (recommended)	1,670	0	0

Sunderland Road (part of).

Mowlem & Co.	866	0	0
Woodham & Sons	843	0	0
Martin	820	0	0
Fry Bros.	770	0	0
Gloag	731	19	0
Pearce (recommended)	730	0	0

For paving and roadmaking in passage off Beethoven Street. Mr. E. B. B. NEWTON, borough surveyor.

Rogers & Co.	£365	0	0
Sheehan	324	10	6
Boyer	310	4	6
Griffiths & Co.	303	9	2
Park & Atkinson	296	19	4
WEBB, Maidenhead (accepted)	281	11	11

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LONDON—continued.

For the erection of new offices on East Wharf, Adelphi, for Mr. G. J. Drummond. Messrs. HAYWARD & MAYNARD, architects, 20 John Street, Adelphi. Quantities by Mr. H. T. CRONK, 9 John Street, Adelphi.

Macey & Sons	£1,552	0	0
Waller & Co.	1,449	0	0
McCormick & Sons	1,445	0	0
Ford & Walton	1,435	0	0
Carmichael	1,434	0	0
F. & H. F. Higgs	1,326	0	0

A contract will be entered into with Messrs. F. & H. F. Higgs.

For erection of branch library at Hither Green.

Potter Bros.	£4,663	0	0
Knight	4,489	0	0
Blay	4,488	0	0
Kirk & Kirk.	4,450	0	0
Moss & Co.	4,389	0	0
Webster & Son	4,339	0	0
Kent	4,336	0	0
Lowe	4,315	0	0
Perry Bros.	4,297	0	0
Coles	4,276	18	0
Gorham	4,265	10	0
Hollingworth	4,260	0	0
Thomas & Edge	4,207	0	0
Watt	4,182	0	0
Claton	4,155	6	0
Gathercole Bros.	4,143	0	0
Akers & Co.	4,138	0	0
Holloway	4,137	0	0
Nightingale	4,063	0	0
McKay	4,038	0	0
Peyton	4,017	10	0
F. & G. Foster	3,984	0	0
Hyde & Co.	3,980	0	0
Patman & Fotheringham, Islington (recom- mended)	3,953	0	0
Loasby & Salmon	3,847	0	0

LUTON.

For paving and other works in Clarendon Road and Ridgeway Road.

Ridgeway Road.

Free & Sons	£429	2	6
Patent Victoria Stone Co.	416	19	7
POWDRILL, Luton (accepted)	373	4	4

Clarendon Road.

Free & Sons	814	13	0
Patent Victoria Stone Co.	791	4	10
POWDRILL, Luton (accepted)	711	17	1

MAESTEG.

For works and alterations to Carmel chapel. Mr. E. W. BURNETT, architect, Maesteg.

O'Brien	£1,569	12	7
Roberts	1,496	0	0
Jackson	1,483	0	0
Davies & Sons	1,410	0	0
W. T. Lewis	1,400	0	0
J. Lewis	1,244	0	0
Bevan	1,220	0	0
Gaylard	1,170	0	0
Williams	1,160	0	0
THOMAS BROS., Maesteg (accepted)	1,108	0	0

MALDON.

For deepening well at Wantz Road pumping station. Mr. T. R. SWALES, borough surveyor, Maldon.

Tilley & Sons	£900	0	0
Nunn	600	0	0
Dawson	375	0	0
FURLONG, Maldon (accepted)	305	0	0
Martin	285	0	0

NEWBURN.

For the erection of infant school. Mr. J. WHITEMAN DOUGLAS, architect, Newcastle.

Mauchlen	£2,160	0	0
Haswell & Waugh	2,130	0	0
McNeil & Son	2,101	14	0
George	2,100	0	0
Anderson	2,051	9	0

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For Index of Advertisers, see page 2

NEWBURN—continued.

Easton, Ltd.	£2,049	13	10
Thirlwell & Son	2,025	12	0
Hope	1,991	4	2
J. & W. Lowry	1,991	0	0
Wilson	1,986	16	9
Foster	1,979	10	0
Henderson & Son	1,937	7	7
Brown & Bell	1,900	9	9
Middlemiss Bros.	1,900	0	0
Charlton & Henderson	1,884	10	5
Hall	1,873	16	0
Craven	1,861	0	0
Veitch & Jordan	1,835	14	4
Davison	1,824	4	0
Jackson & Son	1,817	10	0
AYTON, Newcastle (accepted)	1,763	12	6

PONTYPOOL.

For additions to the Primitive Methodist church. Messrs. HABERSHON, FAWCKNER & Co., architects, Newport and Cardiff.

Moon	£780	0	0
Morgan & Evans	657	0	0
Davies & Sons	650	0	0
Campbell	589	10	0
Jenkyn	587	0	0
Smith	579	0	0
G. F. Leadbeter	575	0	0
Morgan & Co.	569	0	0
J. Morgan	558	0	0
Jordan & Son	540	0	0
J. H. Leadbeter	532	0	0
A. & J. Richards	530	0	0
Meara	520	0	0
Reed	520	0	0
Jewell & Sons	510	0	0
Williams	497	12	6
Shopland	497	0	0
POULTON & WHITING, Pontnewydd, Mon. (accepted)	490	12	0

ST. ALBANS.

For alteration of Sutton Road. Mr. H. F. MENCE, surveyor.			
Miskin & Sons	£219	0	0
Powdrill	149	18	3
WILLIAMS, St. Albans (accepted)	133	17	9
For paving and other works at Sandfield Road. Mr. H. F. MENCE, surveyor.			
Dickson	£873	19	0
Miskin & Sons	847	0	0
Wallace & Inns	839	0	0
Skelton	810	12	11
Powdrill	747	17	0
Deamer	659	18	3
WILLIAMS, St. Albans (accepted)	655	6	3

SEGHILL.

For the laying of about 1,000 yards of pipe sewers, with manholes, &c., construction of tanks, bacteria beds and other works. Mr. J. E. PARKER, engineer, Newcastle-on-Tyne.

E. & A. Storey	£1,540	14	5
Armstrong	1,300	0	0
Lant	1,298	3	6
Thompson	1,257	17	10
Johnson & Strong	1,204	7	0
Carr	1,166	0	0
Coxon & Son	1,156	2	3
McLaren & McNeil	1,090	0	0
ROBSON, Newcastle-on-Tyne (accepted)	1,010	3	9

SOUTH SHIELDS.

For rebuilding premises, 61 King Street, South Shields, for Messrs. Fowler & Brock. Mr. J. WALTER HANSON, architect, 79 King Street, South Shields.

Sheriff & Sons	£1,764	0	0
Young	1,744	7	0
Summerbell & Son	1,710	0	0
Allison	1,667	10	0
Robertson & Sons	1,635	0	0
CARRUTHERS (accepted)	1,522	16	7

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SELBY.

For the roofing and ceiling of the nave, north transept and Latham chapel, Selby Abbey, and for the outer roofing and oak groining of the choir of the abbey. Mr. J. OLDRID SCOTT, architect.

Willcock & Co.	£10,014	0	0
Quibell	9,929	11	4
Dove Bros.	8,875	0	0
Cornish & Gaymer	8,390	0	0
Thompson & Co.	8,334	0	0
Armitage & Hodgson	8,004	0	0
Martin	7,769	0	0
Bowman & Son	7,725	0	0
Collins & Godfrey	7,535	0	0
ULLATHORNE, Selby (accepted)	7,041	0	0

For rebuilding gable with east and west turrets of north transept, Selby Abbey.

ULLATHORNE, Selby (accepted)	£798	15	10
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SUTTON VENY.

For additions to Fosters. Messrs. LONG & GLASS, architects, Warminster.

Wort & Way	£1,525	0	0
Hodder & Son	1,380	0	0
Moore	1,350	0	0
Butcher & Son	1,219	15	0
Linzey.	1,190	0	0
Ponton	1,170	0	0
Moody	1,071	0	0
HIBBERD, Frome (accepted)	1,050	0	0

SWINDON.

For the erection of a mission-hall and ten classrooms at Clarence Street. Mr. W. F. BIRD, architect, Midsomer Norton.

Norman	£5,936	10	0
H. & C. Spackman	5,917	4	0
Leighfield	5,608	1	5
TYDEMAN BROS., Swindon (accepted)	5,481	2	0

WALES.

For the erection of workhouse. Mr. A. I. JONES, architect, Carmarthen.

Davies	£8,820	0	0
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TRADE NOTES.

A LARGE new clock is to be erected in Stowe Church, Staffordshire, from a legacy lately left for the purpose by a parishioner, and the executors have placed the order for the new clock with Messrs. John Smith & Sons, Midland Clock Works, Derby.

MESSRS. WM. POTTS & SONS, LTD., clock manufacturers, of Leeds and Newcastle-upon-Tyne, have received instructions to erect a new clock at the parish church, Middlesmoor, Pateley, Yorkshire, to the memory of the late Mr. Harker, J.P., Pateley, formerly M.P. for the Ripon Division, Yorks; also a new church clock for Carnaby, near Bridlington, East Yorks, and a large illuminated striking clock and bell for Liverpool, all from Lord Grimthorpe's designs and plans.

LITHONITE is the appropriate title for a covering which Messrs. Engert & Rolfe, Ltd., have introduced. It is a sheet asphalt, and the system consists of alternate layers of lithonite sheet asphalt and lithonite mastic, forming a homogeneous and durable mass, with a hard surface impervious to all weathers. From its hardness a flat roof covered with the material can be used as a garden or recreation ground. The use of it is not confined to flat surfaces, for it can be applied with advantage to Mansard and other roofs. It is light, indestructible, incombustible and cheap.

WE have again to acknowledge the receipt of a number of calendars. Many of them seem to be money wasted, owing to the fact of bad printing and bad design. Messrs. Duthie, of Glasgow, send us a calendar advertising Duresco, showing a somewhat striking design of the application of this material. We have also to acknowledge Messrs. Peckett & Sons' calendar, a useful, serviceable and unobtrusive calendar for the office. The Chloride Electrical Co. forwarded us a matchbox last week. No doubt many an architect and contractor will find this of service.

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- CATHEDRAL SERIES.—CARLISLE: REMAINS OF NORMAN NAVE.
- WREXHAM PUBLIC LIBRARY.
- SIGN FOR NEW NATIONAL GALLERY ON THE CALTON HILL, EDINBURGH.—VIEW FROM THE SOUTH-WEST.

BUILDING AND BUILDERS.

For the new schools at Bexhill, which are of an exceptional character, Mr. T. A. Harris, sanitary engineer, of the Penix Sanitary Works, S.E., has supplied his "Premier"atories, special children's closets (pedestal type), galvaised flushing cisterns, drinking fountains, slop sinks and urinal flushing apparatus.

It was originally intended to name the new concert hall now being built in Great Portland Street, London, W., as a successor to the demolished St. James's Hall—St. Paul's Hall, as the new building succeeds St. Paul's Church, an edifice built some centuries ago. It transpired, however, that this title was unpopular with the general public. The managers, in deference to a public wish, decided to adopt the name of St. James's Hall.

The Levenshulme Council have agreed to urge upon the Local Government Board the urgent necessity for increased power being given to smaller townships to make improved laws as to housing, especially in relation to compelling builders to make a provision of a minimum size in the superficial area of one living-room and one bedroom in cottages to be erected. The Stretford Urban District Council has approved of the action of the Levenshulme Council, and also has instructed the Stretford representatives on the executive committee of the Lancashire Urban District Councils Association to ask that Association to take action for the furtherance of legislation on the matter.

The Salford Royal Hospital is to be enlarged to the extent of sixty-five beds, bringing the total up to 200, and by

the addition of a nurses' home. The extension committee have before them eight competitive architects' designs, from which a final choice will probably be made. Mr. Keith D. Young was recommended to the board of management by the President of the Royal Institute of British Architects as assessor. The proposed enlargement of the hospital will involve a large expenditure of money, and the committee of management hope that the public will make a liberal response to the appeal for the necessary funds.

ARCHBISHOP BOURNE, in a letter on the needs of the Roman Catholic elementary schools of the diocese of Westminster, points out that a committee of the Diocesan Association of Voluntary Schools had reported that the sum of 100,000*l.* was required at once to prevent the closing of several of their schools, and to build new ones to replace those that have been or were about to be closed in accordance with the requirements of the local authorities. Dr. Bourne appeals to all interested in the maintenance of the schools to make a determined effort to meet the actual and pressing need.

"The Manchester Tenants, Ltd.," have issued a prospectus. The declared objects of the Society are "to promote the co-operative ownership and public-spirited administration of suitable building estates in the Manchester district. To harmonise the true interests of tenant and investor by an equitable allocation of the profit arising from the careful use of the property, and from the increase of values, while avoiding the dangers and objections that too frequently accompany the individual ownership of houses." The Society has secured the option of purchase of the estate, which is within easy distance of the trams in Stockport Road and Wilmslow Road, the two Levenshulme stations and the proposed Ladybarn station on the new Wilmslow line. It is proposed to raise the share capital of 20,000*l.* in shares of 10*l.* each, with 5 per cent. interest out of profits. It is intended to plan the estate upon the latest hygienic principles. Each road is to have its own characteristic, and with an open space for recreative purposes. A plot of about 400 square yards per house would be allowed, inclusive of streetage. After allowing this the Society expects to erect about 100 houses. Rents are to be based at about 6½ per cent. on cost, plus rates and inside repairs.

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VARIETIES.

THE directors of the National Provident Institution have elected the Right Hon. Ailwyn Edward Fellowes, P.C., a director of the Institution, to fill the vacancy caused by the resignation of the Right Hon. Augustine Birrell, K.C., M.P.

THE Dumbarton Town Council have passed a motion that three additional sand filters be provided at the water-works having a capacity of 638,600 gallons, and at a cost of 2,800*l*. It was also agreed that if the services of an engineer be required, Mr. John T. Baptie, C.E., Glasgow, be consulted.

MR. W. H. HUNTER, engineer to the Manchester Ship Canal Company, has deposited at the Private Bill Office of Parliament a statement of the expenses to be incurred under the new Bill of the Ship Canal Company, by which they seek powers to construct two piers or jetties. The estimate for one is 38,325*l*., and the other is expected to cost 69,035*l*., making the total 107,360*l*.

MR. F. H. TULLOCH held a public inquiry at the Benn Buildings, Rugby, last week respecting the application of the Rugby Urban District Council for powers to borrow 14,300*l*. for the construction of works for sewage disposal in the parishes of Bilton and Newbold-on-Avon. There was a large attendance, and strenuous opposition to the scheme was offered by Newbold Parish Council.

A PUBLIC meeting of Southend ratepayers formally approved the proposed Bill for the enlargement of the sewerage system. The Corporation proposes to provide a system for 100,000 inhabitants at a cost of nearly 150,000*l*. There were objections to the scheme on the ground that the sewage was discharged into the sea in almost its crude state.

THE Birmingham City Council on Tuesday adopted the scheme of the housing committee to lease land at Bordesley Green to a workmen's benefit society for the erection of workmen's cottages on the lines of a garden city. The Corporation is to undertake the cost of the road-making, the sewerage and the laying out of open spaces, the society allowing tenants to purchase houses on payments little higher than the ordinary rental. The proposal met with strong objection, on the ground that the Corporation was

giving up its interest in the improving value of the land and that it would be a financial loss to the city.

DUNBAR TOWN Council have received intimation that the termination of the sea erosion inquiry in England and Commission will hold an inquiry in Scotland, and will among other seaports, deal with the serious encroachment on the land in the vicinity of Dunbar. In response to invitation, the Town Council have consented to give evidence when the Commission sits. Notice has also been given that no grant is available towards assisting in the of a sea wall which the Town Council propose to erect on the shore at St. Anns, where the encroachment has been serious.

A MEETING of the joint board of the Parliamentary committee of the Trade Union Congress, General Federation of Trade Unions and the Labour Party was held last week in London, when the following resolution was passed:—"The meeting of the joint board, having heard the deputations representing a conference of labourers' unions, records its agreement with the expressed desire as to the necessity of limiting the number of unions having similar objects amongst general labourers; it agrees to recommend to the three national organisations not to affiliate any new societies until inquiries have been made from all these affiliated general labourers' unions as to the necessity for any such new union." The further consideration of the matter was adjourned till Parliament meets.

A CONFERENCE to consider a scheme for the development of the harbour at Arklow was held last week in that town. The Department of Agriculture, the Local Harbour Board and Messrs. Kynochs being represented. It was said that if the harbour were placed in such a position as would permit of the extension of their business, Messrs. Kynochs would lay out a considerable sum of money in extending their works in Arklow. They were also prepared to undertake works that would cost a sum of 20,000*l*. almost at once, and would furthermore undertake special harbour works for their own accommodation. It was decided to sign an agreement whereby the Department, if the Government gave them the grant of 10,000*l*. which has been allocated to Arklow, would carry out the scheme laid before the conference, provided also that the Government gave their sanction to the proposal.

BUILDING AND DECORATIVE MARBL

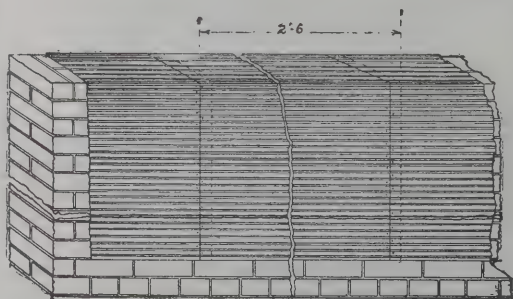
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CASES FOR BINDING THE ARCHITECT

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THE London Corporation have recently been considering question of the fire insurance of the public and other buildings under their control. In 1899 they rearranged and reduced their fire insurance risk, obtaining considerable concessions from the insurance companies with regard to rates of insurance. The whole insurance was then equally divided among twenty-four insurance offices, some of which have since been amalgamated. The proposal now is to distribute the insurances among the same companies, the being reduced as amalgamations take place from time to time until the total number of companies represented is not less than twelve. The City lands committee suggests that there should be given discretionary powers to allocate the risk among the participating companies as they may deem expedient, and the Sun Fire Office to be the leading office on the risk.

THE Darlington education committee, in their last report, recommended day classes for engineering apprentices. They have been taking place for some time negotiations have been taking place with various employers of labour in connection with day classes for apprentices. The various railway companies in the country have from time to time adopted schemes for encouraging the attendance of promising apprentices at technical institutions, chiefly in the evenings. More lately selected few of the most capable have been given exceptional advantages. In August 1906 the North-Eastern Railway Company decided to allow 5 per cent. of their wages to apprentices in Darlington to attend the technical college during the daytime for five months in the year, paying the college and making no deduction from their wages meanwhile. The advantage to the college is that its staff and equipment can be made use of during the day. In the company's shops well-equipped young men should soon be available for special work, and speaking generally, a quota is being added to the national asset of skilled men.

At Stoke-on-Trent the agent of a titled property owner was summoned last week by the Town Council for the sum of £38 1s. 3d. for work done under the Public Health Act. The town clerk stated that in consequence of the condition of the outbuildings attached to four houses at Trent Vale an outbreak of typhoid fever had occurred, and the defendant, as agent for the owner of the property, was served with notice to make certain alterations. He failed to comply with the notice, and the Council carried out the

work for which they now sought payment. Counsel for the defendant pointed out that although four houses were in question it merely said house. This was, he said, a trifling objection, but lower down the blank in front of the word "days," where the time for making the improvement had to be specified, had not been filled in. He contended that the notice was invalid. The plaintiffs admitted that the notice was bad and that the omission of the time, through an oversight on the part of the sanitary inspector, was a technicality fatal to the summons. The case was dismissed, but it was stated that the defendant having fought the case on principle was prepared to come to an arrangement with the Corporation.

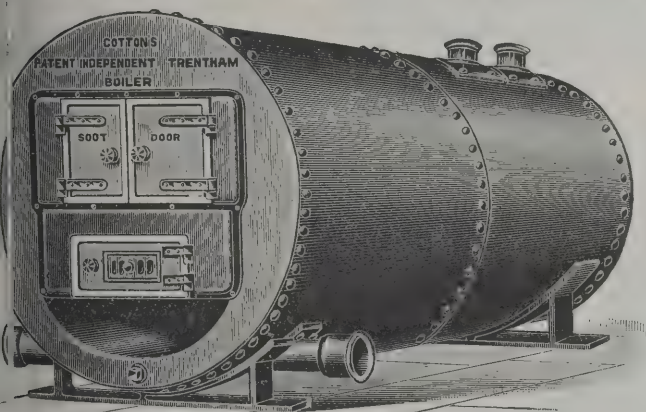
THE Metropolitan Water Board have approved of the Metropolitan Water Board (Various Powers) Bill, to be introduced next session. The Bill has been prepared to give effect to the following resolutions which have been passed by the Board:—That application should be made in the next session of Parliament for general powers—(1) All the powers given to local authorities under the Public Health Act, 1875, with respect to the laying of pipes; (2) power to call upon other bodies to alter the position of any pipes, wires, drains, &c., similar to the powers conferred under the General Electric Lighting Acts, 1882 and 1888, giving power to the electric-lighting authorities for the alteration of any pipes of the Water Board; (3) the adoption of a uniform form of notice of intention to open streets somewhat similar to that scheduled to the East London Act, 1886, for use throughout the whole area; (4) powers to prevent persons from tampering with sluice valves and other apparatus on service mains, and thus shutting off the water. That application should be made in the next Session of Parliament for powers for the following purposes:—(1) Construction of a main from the Rammey Marsh well; (2) construction of a tunnel under the Thames at Twickenham; (3) acquisition of certain land and easements along the line of the proposed 30-inch main from Hampton to Hanwell; (4) acquisition of certain land along the line of the proposed new main from Ditton to Norwood to be the subject of a further report to the Board; (5) extension of time for the construction of works authorised by the Southwark and Vauxhall Water Company's Act, 1898, and by the Lambeth Waterworks Act, 1900.

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ROMAN ROADS.

It is well known that the Romans constructed with great solidity, and maintained with constant care, roads diverging from the capital to the extremities of the empire. The good condition of these was thought to be of such importance that the charge was only entrusted to persons of the highest dignity, and Augustus himself assumed the care of those in the neighbourhood of Rome. The expense of their construction was enormous, but they were built to last for ever, and to this day remain entire and level in many parts of the world, where they have not been exposed to destructive violence. They usually were raised some height above the ground which they traversed, and proceeded in as straight a line as possible, running over hill and valley with a sovereign contempt for all the principles of engineering. They consisted of three distinct layers of materials: the lowest, stones, mixed with cement (*statumen*); the middle, gravel or small stones (*rudera*), to prepare a level and unyielding surface to receive the upper and most important structure, which consisted of large masses accurately fitted together. The Romans depended for the solidity of their construction on the size of their blocks, which were irregularly shaped, although carefully and firmly fitted. These roads, especially in the neighbourhood of cities, had on both sides raised footways (*margines*), protected by curb-stones, which defined the extent of the central part (*agger*) for carriages. The latter was barrelled that no water might lie upon it.

NEW CATALOGUES.

As many of our readers are aware, the firm of Fred Braby & Co., Ltd., have ingeniously combined their price list with a monthly diary. In a small space there are tables which are often required, and every copy possesses a coupon insurance guarantee for 100/. But from their very convenient size it might not be supposed without examination how various are the articles which the firm can supply. From air bricks to zinc ridging, to take the first and last items in the index, there is a wide field. But there is scarcely anything in metals connected with building or

contractors' work which is not comprised in Messrs. Braby's stock. From iron roofs to nails, from window sashes to fire-buckets, all will be found in their vast emporium. How so vast a business can be carried on may surprise us until we find that at the principal works there is a series of special departments which enable customers to attain their end without loss of time.

A GREEK and even a Gothic architect would be amazed at the variety of mouldings found in the catalogue of H. Morell. Judging by the numbers they can be counted not in hundreds, but in thousands, for one pattern is marked as No. 5,872. The old architect's mouldings were no doubt in stone, and their contours were worked out with difficulty, while the mouldings in the catalogue are in wood. They are adapted not only for the framing of drawings, but for engravings, but for other purposes, such as cornices, astrigals, rails, beads, &c. Some are produced in various colours, others are gilded, while there are also examples of elaborate compo-ornament. The sections are full size, with a few exceptions. It may also be mentioned that an engraving is given of a new mitre-cutting machine, the use of which can be adjusted at any angle and is therefore serviceable in cutting exagonal and oxagonal frames. From his own experience of it, Mr. Morell considers it the most efficient tool on the market.

MESSRS. R. & A. MAIN, of Glasgow, who have gained a reputation in several classes of work, are also makers of various kinds of cooking and heating apparatus. The testimonies of their success in the last department are manifold. The fact that "Main" cookers are employed in the Royal kitchens and by Lyons & Co. will by many judges be considered as outweighing the gold medals received by the company at various international exhibitions. There is an apparatus described in their catalogue adapted to the use of steam, coal and gas. Judging by the illustrations, ranging from steamers, grilles, &c., are all of the kind which can sustain the rough usage of the assistants to cooks, who have the weakness for making a noise with metalwork.

Entrance and Wicket Gates.

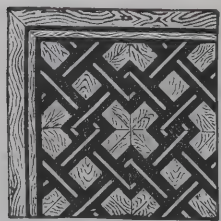
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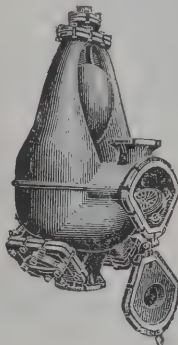
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FOUNTAIN PENS.

have received from the London Pen Company, Ltd., of 101, Old Street, W.C., a specimen of their guarantee fountain pen," so termed by reason of the important fact that it carries a guarantee certificate for a period extending two years, while the indications are that it is practically everlasting, for the materials are evidently of the quality, and a notable feature is the simplicity of construction, so that satisfaction is insured in all respects. The same company's stylographic pens, of which a specimen has also been submitted to us, are equally perfect in construction, and form a valuable complement to the equipment of all who have much writing to do under circumstances of a varying character.

In this connection it is interesting to note that Mr. C. W. Benson, the patentee and founder of the London Pen Company, Ltd., who came over to this country from America in 1879, and whose lamentable death recently occurred, was recognised as the father of the fountain pen trade and the leading authority on the subject, with which he was bound during a long life, while the numerous patents that issued from his inventive and mechanical genius would practically constitute a history of the useful article in question.

ENGLISH STEEL-FRAMED BUILDINGS.

Messrs. E. F. Blakeley & Co., Vauxhall Ironworks, Liverpool, have been very busy throughout the year in the construction of steel buildings, roof principals, churches, &c. The completion of the new steel framework and fireproof building for Messrs. G. H. Lee & Co., Basnett Street (Messrs. Pearson & Simon, architects) is an important addition to the architectural buildings of Liverpool. Important steelwork extensions have been carried out for Messrs. Lever Bros., Ltd., Port Sunlight (Messrs. Wm. & Segar Owen, architects), the Wolverhampton Corrugated Iron Co., Ltd., at Ellesmere Port, and other prominent manufacturers throughout the country; also electric car sheds at Swinton for the Lancashire United Tramways, Ltd. (Messrs. Matear & Simon, architects); steelwork for the new grand stand

for the Liverpool Football Club (Mr. Archibald Leitch, architect, Glasgow and London), and churches at Birmingham (for the Prison Commissioners), Horwich, Blackley, Wallasey, &c. Messrs. Blakeley & Co. have supplied a very large number of steel roof principals for various corporations



and works, and exported on behalf of British houses a large number of iron buildings, wharves, piers, stores, bungalows, &c. The illustration shows Messrs. Geo. H. Lee & Co.'s extension.

CORRESPONDENCE.

How to Fight Socialistic Legislation.

SIR,—The short interval between the late autumn session and the coming session of 1907 barely gives us breathing time before we are again flooded with vote-hunting measures contemplated no doubt by the Government, plus the private members' bills that will be supported or taken up by the Government. Knowing, then, as we do from past experience the trend of the policy of this and, indeed, of all Governments since 1870, it would be well to inquire how far the administration of the day fulfils the object and duties of Government. To what

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end do we pay our Secretaries of State 5,000l. a year? Is it to enslave us with inspectors and inspectresses and hamper industry by restrictions on trade and labour, plus interference with contract, and the transfer of property and property rights from the less numerous to the more numerous voting classes of the nation? Or is it, as I have heard in bygone years a Liberal Attorney-General declare it to be, the primary duty of Government to maintain and secure our liberty and property of all kinds, including a Briton's free right—using Lord Bramwell's famous words—"to bestow his labour and his talents as seems to him best," a right practically taken away by the Trade Disputes Act of last session? That Act now allows picketing that need not be peaceful, and which can only be met, in the interests of the liberty of labour and trade, by the counter-picketing of pickets—a course for which an efficient organisation already exists.

Well, such being the primary duty of Government, it is needless, looking to the Socialistic vote-hunting measures that have been passed, and not resisted by the so-called Opposition, both parties striving to retain or gain the support of the Socialist Labour Party, whose avowed object is the doing away with individual liberty and the absorption of property of all kinds into the hands of a labour-governed State—it is, as said, needless to inquire how far the two main parties in the State, when holding the reins of power, have fulfilled that duty. Their measures and actions give a clear and definite answer.

Where, then, is there a remedy for this state of things to be found? To whom can we look? The Duke of Devonshire will not, I fear, move. Lord Rosebery seems inclined to remain in his lonely furrow, from which the Scots Greys alone have been able momentarily to move him. Whither shall we turn? To whom shall we appeal? Why, to all true Britons who love liberty, who are in favour of private as against State-owned property, and who are prepared to stand by individualism with its endless chances of success in life, and resist the coming of the dead level of Socialism so repugnant to the feelings of free men. Yes, let all such band themselves together irrespective of party, and strive by their votes to give effect to principles which all Governments know to be sound, but have not the courage to support. Meetings should be held alike in country and

in town, and anti-Socialist defence associations formed will steadily resist all Socialistic measures no matter what they come.—Yours faithfully,
WEMYS
Gosford, Longniddry, N.B. : January 15, 1907.

NOVELTY IN ROAD-MAKING.

At a meeting on Monday of the members of the Midland Association of Local Government Officers, Mr. G. H. the surveyor of Aston Manor, said most things with which we were acquainted had undergone changes of a revolutionary character during the past century. But that was not so with the art of road-making. He was, indeed, inclined to say that the roads made 1,800 years ago were more serviceable and more scientifically constructed than they were to-day. In the history of the British Isles there appeared to have been two periods of road construction: the first in the reign of Claudius Cæsar, Emperor of Rome in the year 43, and the second in the year 1811 by Mr. McAdam. Of the two systems the latter had been more universally adopted, but in his opinion the former was more preferable. All that was useful and scientific in McAdam's system was to be found in Roman construction. It would therefore appear that although the world had been revolutionised more than once during the last eight centuries, the art of road-making had been little more than stationary. After the Romans left the country in 406 A.D. next to nothing was done to maintain the roads in a proper state of repair. Later on they were absolutely neglected and gradually fell into disuse, and it was not until that time on until the beginning of the nineteenth century the roads of the country went from bad to worse. In regard to modern roads he was of opinion that there was not half enough steam-rolling done. Given a good hard and dry foundation, with equally good broken stone and with skilful steam-rolling, a far better road could be made than by any admixture of binding material. Our main thoroughfares were to remain under macadam. A great deal more money would have to be expended on maintenance than hitherto. Many would have to be entirely reconstructed in order to provide the necessary foundations. Having regard to that possible heavy

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expense, the heavier cost of reconstruction and the relatively short life of the best macadamised road, it not be altogether out of the question to suggest that ad of the future would be a reversion in all the ial particulars to the Roman roads of Claudius. That say, a hard coherent scientifically-formed foundation, d by a water-tight pavement. Such a road would he demands of all sorts and kinds of traffic. It would e comparatively dustless and mudless, and easily cleansed ept in repair. The foundation once properly con- d would last as long as the Roman foundations, and eface would have a minimum life of twenty years. It e kept in repair at a fraction of the cost of the best amised road. The initial expenditure would, of e, be very great. But as the resources of Great a surpassed those of the Roman Empire, should the on of expense be a fatal objection to it?

"GROGS" IN CANADIAN BRICKMAKING.*

chosen as the subject of this paper one which I think of great interest and also of great importance to clay- rs. By "grog" is meant those substances which e ded to strong clays to render them milder and more worked. As a rule only one such substance is used ckmakers in this country, and that is sand; but a few e can be used in case sand is scarce, e.g. loam, pow- brick-bats, sawdust, coal screenings, &c. Of course e several grogs have different effects upon the brick or e product to which they have been added, and I wish to e briefly a few of the effects of these grogs on our e in Ontario.

ere is a common error among builders and contractors e general concerning the addition of grogs. They believe e addition of sand or powdered brick to a clay is an e tuation and a detriment to its use as a building e rial, much as we view the addition of cotton or shoddy e woollen fabric. This error on the part of brick users, e many brickmakers also, is a serious one, for the addi-

A lecture delivered by Professor Baker, of the School of e ing, before the Association of Canadian Clay Products Manu- e ctors, and published in the *Canadian Architect*.

tion of these grogs is just the reverse of the above. They improve the brick in several ways, as I hope to show you.

Looking at this subject first from the standpoint of the brickmaker, you all know well the difficulties that have to be met in working a clay that is too strong or fat, as it is often called. In the first place, such clay is difficult to mine or dig; it sticks to the ploughs, spades, scrapers or whatever else may be used to dig it. It sticks together so that it can scarcely be picked apart. You all know just how tough a clay bank can be. If, however, there be a certain amount of sand in the clay it digs so much more easily.

The tempering of a strong, stiff clay is a most difficult thing; it is almost impossible to do it by hand, and if it is done by a pug-mill or other machines the tough clay will prove a great user of power. About the only way to temper and disintegrate such clay is to dig it in the fall and allow it to lie in a heap over winter, when with frost and wet and dry it will slowly slake and break up to a workable condition. But some of you have not time for this, and should add sand to such clay in your pug-mill, or tempering pit, or to the brick machine itself, if you do not temper in a separate machine.

In the next part of brickmaking, viz. moulding, sand plays a very important part. It is almost impossible to shift a strong clay from the moulds; such clay will fit the mould so tightly, and it will be so close in grain that it will rub the moulding sand off the moulds and make it almost impossible to shift the brick when made. It is astonishing what an improvement a little sand will make to such a clay in this respect.

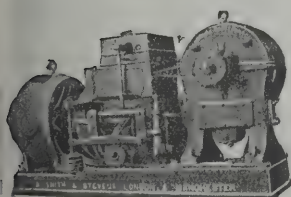
In drying either stiff mud or stock brick an addition of sand will make an enormous difference in the rate. Very strong clay will crack and slake or a dry shell will form, keeping the interior of the brick wet, or the brick will warp and shrink out of shape by unequal drying and the accompanying air shrinkage. When sand is added it renders the clay leaner or milder; it will not require so much water for moulding, and the grains of sand keep the brick more open, so that the moisture can escape in drying. Again, the sand will not shrink, so that the bricks will keep their shape much better, as only part of the material of which they are made shrinks.

We have seen from the above remarks, certain parts of

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which must describe conditions which all of you have experienced in one respect or other of your industry, that the addition of sand makes clay working much easier in every respect, from the digging of the clay to the burning of the finished product.

But all that we have said is from the standpoint of the brickmaker; but what of the brick user? Does the addition of this sand mean a poorer article for builder and contractor? This is the other standpoint from which I wish you to study this question.

Two great classes of strains are put upon brick in building; the one is a tensile strain which would tend to pull bricks apart, the other is a pressure which would tend to crush the brick. The second of these is most important, as it is practically the stress to which bricks are subjected in a building by the weight placed on them. In order to submit clays to some of these tests, I took several of our Ontario clays and subjected them to these tests, as follows:—

Table of Clay Tests.

Sample.	15 per cent. Sand.			25 per cent. Sand.			33 per cent. Sand.		
	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.
A . .	250	210	230	320	365	342	250	265	257
B . .	290	325	307	380	350	365	270	290	280
C . .	300	340	320	350	375	362	326	300	313
D . .	210	185	197	330	350	340	280	295	287
E . .	235	270	252	295	310	302	200	230	215
	261			342			270		

The raw clay with its own 15 per cent. of sand was formed into a briquette, then the percentage of sand was increased to 25 and then again to 33 per cent. These briquettes were made about the shape of the figure 8, the narrow part being 1 inch wide and the whole briquette is 1 inch thick, so that at the smallest section, that is, at the place where they will naturally break, the cross section would be 1 square inch. The weight applied was in pounds, so that the results were in lbs. per square inch. The briquettes were all burned in the same muffle furnace, so that all three sets of briquettes were subjected to the same conditions in burning.

From the above tests we see that the addition of sand to these clays makes them stronger and better able to resist the pulling strains to which they are subjected. We

see here that the best results were obtained when the cent. of sand is 25, whereas 33 per cent. is a little too much. This, of course, simply means that you can get too much even of a good thing, and of course there is a possibility of increase of sand, which, seriously overstepped, becomes a detriment instead of the reverse.

The crushing test, or the ability to withstand weight placed upon it, is still more important to brick users than some tests of these are also of interest. In these tests small cubes were made 1 inch to an edge, so that the cubes were 1 cubic inch and any face was 1 square inch. Pressure was then placed on this, and gradually increased until the cube crushed. Four tests were made on ordinary red brick, as sold in general for building, and these required an average of 2,460 lbs. to the square inch to crush the brick. This figure is given as a standard for ordinary stock brick and for comparison with the tests given below.

Table of Clay Results.

Sample.	15 per cent. Sand.			25 per cent. Sand.			33 per cent. Sand.		
	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.
A .	3150	2820	2985	3190	3390	3290	2640	3060	2850
B .	2900	2580	2790	2990	3375	3182	3400	2760	3080
C .	2620	2760	2690	3250	3580	3415	3615	2880	3247
D .	3480	2844	3162	3640	4370	4005	2510	2640	2575
E .	3710	3410	3560	4360	4720	4540	3390	3570	3480
	3027			3686					

Here again we see that the addition of sand improves these products. The small blocks were all burned in one kiln at one time, so that the conditions were uniform for all. The tests show that 25 per cent. of sand is the best, while 33 per cent. oversteps the limit and the ability to withstand pressure begins to drop again. You will notice also that the average of tests made on the clays having 15 per cent. of sand in them, and this, by the way, is the average of our Ontario clays, is about the same as the standard of four tests made on ordinary stock brick as sold in general for building purposes, which shows that the tests were about as fair as could be made. We realize, of course, that many tests must be made before any general statements can be made, but it seems sufficiently established when an average of ten tests on a clay having 15 per cent. sand in it gives 3,027 lbs. to the square

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ordinary stock brick of commerce made from such also gives 2,460 lbs., and that ten tests of clay with the content increased to 25 per cent. gives an average of 5 lbs. per square inch, that the addition of sand to clay is a desirable thing. It seems certain, at any rate, that the addition of 25 per cent. of sand, or one shovel of sand to three shovels of clay, is a decided improvement on strong brick, but this per cent. of sand should not be seriously stepped or the values drop again.

Do not mistake me to mean that every one of you should add 25 per cent. to your clay in working; some of you have already clay already, and no doubt you know it and are satisfied with the way it works into brick. But others, and the majority at that, have a strong clay difficult to handle and to work up—do not hesitate to use sand. It will not hurt the strength of your brick unless there be limestone in it, and this is very rarely the case.

If you suspect limestone in your sand, put a little of it in a glass tumbler or a bottle, then pour in a little acid of any kind, and warm it slightly by placing it in a little warm water. If there is any limestone in your sand you will see effervescence or bubbling coming off the sand. If your clay burns to white brick or buff brick, this will not hurt them, but if your clay burns to red brick, avoid any sand or loam that shows limestone, for this will tend to the colour of the brick by making them light in colour, and they will be spotted.

The addition of combustible grogs, *e.g.* sawdust or coal screenings, is for a different purpose entirely, and this is a subject which has not been considered very much in this country. In Europe such grogs have been used to a considerable extent. Coal, *e.g.* is powdered and mixed in the clay; when the kilns are burned this fine coal dust is also used and helps to distribute the heat throughout the brick and aids in the burning. The particles of clay fuse together and knit to each other, and a more or less porous brick results.

Considerable use is now made of coarser materials as grogs, *e.g.* coarser coal or sawdust is commonly used. This is used in the manufacture of porous bricks, terra-cotta bricks, and fireproofing.

The aim of the architect and contractor now is to erect buildings that will be fireproof and yet not too heavy.

This is now accomplished by making the main structure or shape with iron and filling in with terra-cotta lumber or fireproofing. To make this we may use any kind of clay, as the colour of the product does not signify, provided it is strong and light. The clay is pugged thoroughly with coarse sawdust, the blocks of any desired shape are made, as in the stiff mud process, by varying the die; they are dried like tile, after which they are burned in a down-draft kiln. The sawdust soon catches fire and helps to burn the blocks, and after burning out the small pores are left, making the blocks quite porous or vesicular, so much so that the blocks are very light and can be used for ceilings, arches, domes, roofs, partitions, &c., or for any of the purposes to which heavier timber would be used. These blocks are so porous that nails, screws, spikes, &c., can be driven into them with about as great ease as into timber. The rough porous blocks serve admirably to plaster on to, so that a building of any shape may be covered by them and plastered over and painted. For this reason most of the interior decoration now seen in large buildings is accomplished in this way.

The discussion of grogs so far has been confined to different substances that are added to the raw material. There is one new use for grogs now which may not be well known to you all. All of you who are working with the ordinary scoved kiln or Dutch clamp kiln have experienced the difficulty of burning the brick right to the outside of the kiln. This has been aided in many ways, *e.g.* by leaving the heads more open in piling, to cause more draft in that part; or again, the centre of the kiln may be covered on top by mud, or by asbestos sheets, thereby throwing the draft to the outside around the edges. But a new and much better method may now be used. This consists in placing a row of hard coal screenings, which are cheap, around the edge of the kiln on top. The ridge of hard coal is about 18 inches wide and rounded up like a potato ridge. In setting the kiln the heads are left open as usual, and a row of skintlers are usually placed on the very outside row. After the kiln has burned up considerably in the usual way, and when the heat begins to get up through the heads, the kiln man goes up on top, and by the use of a small wedge like a poker he works the brick a little and allows

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The above illustration shows Fire Escape Staircase recently erected at the Goyt Mill, Stockport.

a little of the coal to trickle down into the kiln. This coal takes fire and helps to burn the brick, and at the same time creates an extra draft through the heads, which soon draws more of the kiln fire to those parts. This act should be repeated every hour, letting only a little of the coal trickle down each time, so as not to choke the drafts or cause too much fire in the heads. By this process your kilns can be burned right to the scoving. I have seen them done, and good red face brick shipped from against the scoving. In down-draft kilns, of course, the fire can be drawn to any part of the kiln by the use of dampers.

I have confined all my remarks to this one division of clay manufacture, because I am convinced that it is a most important matter to you all, and I am sure it is one that has not received its share of consideration on your part. These are not experiments; they are points that are in use by successful clay-workers, and I hope I have been able to arouse your interest in this great department of your work.

PROGRESS IN MEXICO.

THE British Consul at Mexico city (Mr. L. J. Jerome) calls attention, in his recent report, to the gradual introduction into Mexico of a higher standard of living among all classes, particularly among the working classes in the cities and towns. Hitherto the vast majority of the population have been regarded as a negligible quantity—in fact, as regards all articles imported into the country, as non-consumers. The change pointed out greatly extends the Mexican market, not only for those commodities of first necessity, but for many things which might well be classed almost as luxuries, and yet are being sought for by sections of the community who until recently had either no wants, or at most such as could be very easily satisfied.

Among other developments pointed out by Mr. Jerome are the extension of hydro-electric power for light, traction, industrial and irrigation purposes, and renewed activity in railway construction. He adds:—"I believe that if properly looked after there would be a good demand for hardwood sleepers for railways. The possibilities of Mexico as a market for boilers, engines and machinery seem to be entirely overlooked. In April, May, June and July of 1905

I visited many of the provincial towns and inspected a number of factories of all kinds, and I must confess to considerable disappointment in finding the small proportion of British-made machines, engines and boilers. I believe there will be an increased demand for these articles. I can too strongly point out that very few indeed have been cases where purchasers of these articles have not met obligations. The cases that I know of are so few that I would not mention them but for the fact that at home the idea seems to be prevalent that there is considerable selling machinery in Mexico."

As regards cement, the British Vice-Consul at Vera Cruz (Mr. L. J. Nunn) considers there is an opportunity for the British manufacturer to get a share in a trade that is steadily increasing, as, whilst it is true that the harbour works at Vera Cruz are now completed, still there are many public works of equal magnitude projected and at present in the course of being carried out which will involve an expenditure of millions of dollars, a great portion of which will be spent in cement. For instance, there is not a town of importance that has not in view the improvement of its drainage, waterworks, streets, pavements and similar projects, in all of which large quantities of cement will be required, and in Vera Cruz itself there is the work of building and equipping a joint railway terminal station. Last, but not least, is the ordinary demand from the public in general for small buildings.

Mr. Nunn further reports that a company has been formed to take in hand the construction of warehouses, extra wharfage and the other general improvements necessary to make Vera Cruz a first-class port. All that now remains to be done is to obtain the Government approval of the plans, which, once effected, there will be no further delay. As the company will be registered in London, Mr. Nunn says British manufacturers would do well to keep the movements of this new enterprise in view in order to make an effort to secure the large orders that will be placed for cranes (probably electrical), and general labour-saving devices, structural iron, steel and cement. The many buildings required, a full hotel equipment, a discharging plant, a dredger, a steam cutter and the like, or less general equipment incidental to the requirements of a dock company.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tender and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50l. and 25l. to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25l. will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

CONTRACTS OPEN.

AUSTWICK.—Jan. 28.—For the mason, slater, plasterer, joiner, plumber and glazier's work required in the erection of various buildings, comprising administration, isolation, laundry, discharge and mortuary blocks, scarlet-fever pavilion, stable and cart-shed, for their new isolation hospital at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, surveyor, Town Hall, Settle.

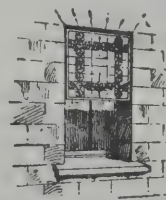
BAGSHOT.—Jan. 28.—For the erection of schoolrooms, vestries, &c., for the Wesleyan church. Mr. W. J. Hodson, architect, The Avenue, Camberley.

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BARNSELY.—Jan. 28.—For the whole of the work (except plumbers and glaziers) required in erection and completion of new meter works off East Gate. Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnsley.

BARROW-IN-FURNESS.—Feb. 4.—For the erection and completion of proposed witnesses' rooms at the police-court. The Borough Engineer, Town Hall.

BIRSTWITH.—Feb. 6.—For erecting three cottages at Birstwith, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, York.

BLAYDON-ON-TYNE.—Feb. 6.—For erecting goods warehouse, &c., for the North-Eastern Railway Co. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

BOOTLE.—Jan. 28.—For the construction of public convenience on the south-east side of the canal, Stanley Road. The Borough Engineer, Town Hall, Bootle, Lancs.

BRADFORD.—Jan. 28.—For alterations at the receiving offices, Manor Row, for the Corporation. The City Architect, Whitaker Buildings, Brewery Street, Bradford.

BRADFORD.—Jan. 28.—For the erection of St. Joseph's College, Bradford. Mr. Edwd. Simpson, architect, 12 Cunliffe Terrace, Manningham.

BURNLEY.—Feb. 5.—For the erection of a county court at Burnley, for the Commissioners of H.M. Works and Public Buildings. Deposit 1*l.* 1*s.* H.M. Office of Works, Storey's Gate, S.W.

BURRINGTON.—Jan. 29.—For the erection of station buildings and a cottage at Burrington, Somerset, for the Great Western Railway Co. The Engineer at Bristol Station.

BURY ST. EDMUNDS.—Feb. 11.—For the erection of a covered grand stand to accommodate about 3,500 persons, and other work in connection therewith, for the Bury St. Edmunds pageant, July 8 to 13. Mr. Walter D. Harding, A.M.I.C.E., engineer, Town Hall, Bury St. Edmunds.

BURY.—Feb. 2.—For the joiners' work and painting required in connection with the museum at the art gallery. The Borough Engineer, Bury, Lancs.

BURY.—Feb. 2.—For the erection of the extension to the central tramway depôt in Rochdale Road. Deposit 2*l.*

Mr. Arthur W. Bradley, A.M.I.C.E., borough engineer and surveyor, Bury, Lancs.

CARLTON.—Jan. 31.—For the erection of a temporary timber bridge over the river Aire at Carlton, within the rural district of Skipton. Deposit 1*l.* Mr. F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

CATERHAM.—Feb. 6.—For remodelling the two general bath-rooms at Caterham asylum, Surrey. Deposit 1*l.* Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, Metropolitan Asylums Board Offices, Embankment, London, S.E.

CHATHAM.—Feb. 12.—For the erection of a laundry building and bakery on land adjoining the workhouse at Chatham. Deposit 1*l.* 1*s.* Mr. E. Farley Cobb, architect, 20 High Street, Rochester.

CLANDON.—Feb. 4.—For the erection of a smallpox hospital about two miles from Clandon station, Surrey, on the London and South-Western Railway. Deposit 5*l.* 5*s.* Send names to Mr. T. W. Weeding, clerk to the Surrey Smallpox hospital committee, County Hall, Kingston-upon-Thames.

CUTSYKE.—Feb. 1.—For the erection of a signal cabin at Cutsyke, near Castleford, for the North-Eastern Railway Company. Mr. W. J. Cudworth, company's engineer, York.

CUTSYKE.—Feb. 1.—For the erection and construction of a new bridge over the Leeds and Pontefract Road at Cutsyke, near Castleford. The work comprises a steel bridge, with abutments of concrete, brick and stone, the abutments being for double line and the superstructure for single line of railway. Mr. W. J. Cudworth, the North-Eastern Railway Company's engineer at York.

EMBLETON.—Jan. 31.—For the erection of a villa at Embleton, Cumberland. Messrs. Stoker & Nicholson, architects and surveyors, 62 Pow Street, Workington.

ESHER.—Feb. 5.—For the erection of a house and premises. Mr. D. G. Andrew, architect, Bridge Road, East Molesey.

FELIXSTOWE.—Jan. 30.—For the extension of the air-compressing station at the sewage works, for the Felixstowe and Walton Urban District Council. Mr. H. Clegg, A.M.I.C.E., surveyor to the Urban District Council, Town Hall, Felixstowe.

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For Index of Advertisers, see page x.

GREAT YARMOUTH.—Feb. 5.—For the extensions to carshed, Caister Road. Mr. J. W. Cockrill, M.I.C.E., borough surveyor, Town Hall, Great Yarmouth.

GUILDFORD.—Feb. 2.—For carrying-out additions, alterations and reparations to the old school buildings at the workhouse. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

HALIFAX.—Jan. 28.—For building a mission-room at Pye Nest. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

HALIFAX.—Feb. 12.—For pulling-down old premises and the erection of four shops, offices and appurtenances thereto in George's Square. Mr. Thos. Kershaw, architect, Lancashire and Yorkshire Bank Chambers, Halifax.

HEREFORD.—Feb. 11.—For extensions to the buildings at the electricity station in Widemarsh Street. Mr. John Parker, city engineer, Hereford.

HULL.—Feb. 6.—For erecting shop for repairing and testing chains at Alfred Street, for the North-Eastern Railway Co. Mr. William Bell, the Company's architect, York.

HOVE.—Feb. 6.—For building office, shedding stores and other works at Sackvill Road depôt. Mr. H. H. Scott, borough surveyor, Municipal Offices, Hove.

IPSWICH.—Jan. 28.—For the execution of alterations at the (a) Foundation Street school premises and the (b) Turret Lane school premises. Mr. E. T. Johns, architect, Tower Chambers, Tower Street, Ipswich.

KEIGHLEY.—Jan. 31.—For the erection of the first section of All Saints Church, Highfield. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

LANGWITH.—Feb. 4.—For the erection of an isolation hospital at Langwith, Derby. Messrs. Rollinson & Son, architects, Corporation Street, Chesterfield.

LEADGATE.—Jan. 30.—For the building of Council chamber, offices, &c., in St. Ives Road. The Council Chamber, Front Street, Leadgate, Durham.

LONDON.—Feb. 6.—For alterations and additions to St. Luke's parochial schools in Old Street, Finsbury, E.C. Deposit 2*l.* 2*s.* Messrs. Mark W. King & Sons, 6 Holborn Viaduct, E.C.

MANCHESTER.—Feb. 4.—For general builders' work required in erection of an electric-car depôt at Chorlton Road. Deposit 2*l.* 2*s.* Mr. J. M. McElroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

MANCHESTER.—Feb. 6.—For the erection of the Grange Street special Municipal school, Bradford, and the Devonshire Street Municipal school, All Saints, Manchester. Deposit 2*l.* 2*s.* in each case. The Education Offices, Deansgate, Manchester.

NEW BRIGHTON.—Jan. 28.—For the erection of the new school, New Brighton, for the Wallasey Urban District Council. Deposit 1*l.* 1*s.* Mr. Edmund Kirby, architect, 5 Cook Street, Liverpool.

OVER ALDERLEY.—Feb. 1.—For alterations and additions to the school buildings, Over Alderley, Cheshire. Mr. H. Beswick, county architect, Newgate Street, Chester.

PENKETH.—Feb. 7.—For the erection of a public elementary school for 350 scholars at Penketh, near Warrington, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

POOLE.—Jan. 30.—For the erection of a police station. Deposit 2*l.* 2*s.* The County Surveyor, Wimborne.

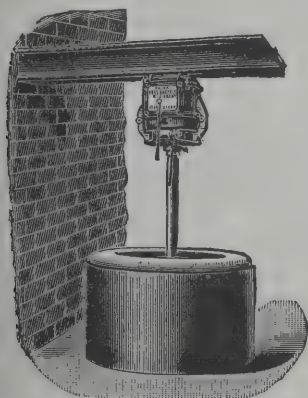
REPPS-CUM-BASTWICK.—Feb. 4.—For the erection of a Primitive Methodist church. Mr. Arthur S. Hewitt, architect, Bank Chambers, Great Yarmouth.

ROCHE.—Feb. 11.—For new closets, new drainage scheme, playground enlargement, cloak-room alterations, &c., to the Roche Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

SALTBURN-BY-SEA.—Jan. 31.—For the erection of a shelter on the lower promenade, for the Urban District Council. Mr. G. S. L. Bains, C.E., surveyor to the Council, Council Offices, Windsor Road, Saltburn-by-Sea.

SCARBOROUGH.—Feb. 1.—For the construction of an arch bridge over Westbourne Grove Road, also for coal depôts and platform walls at or near the company's Washbeck goods yard, Scarborough, for the North-Eastern Railway Company. Mr. W. J. Cudworth, the company's engineer at York.

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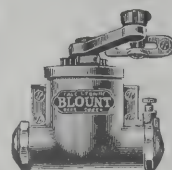
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14 & 16 EUSTON BUILDINGS,
GOWER STREET STATION, LONDON.

SCOTLAND.—Jan. 28.—For the mason, carpenter, plasterer, plumber, slater, painter and glazierwork of a dwelling-house to be erected at Aboyne. Mr. Al. Grant, Pine Villa, Aboyne.

SCOTLAND.—Feb. 5.—For the erection of enclosing walls, railing and gate in connection with provision of new parish burying-ground at Balure, Kinlochspelve, Mull. Mr. George L. MacBain, surveyor, Tobermory.

SCOTLAND.—Feb. 5.—For post office at Stornoway. Deposit 1*l*. 1*s*. Mr. W. T. Oldrieve, H.M. Office of Works, Parliament Square, Edinburgh.

SOWERBY BRIDGE.—Jan. 28.—For the mason, carpenter and joiner, plumber and glazier, plasterer and slaterwork in the erection of six houses at Tuel Lane. Mr. H. Thompson, architect, Southgate Chambers, Elland.

STOCKPORT.—Jan. 28.—For the construction of a verandah, &c., to an existing shelter in Vernon Park. Mr. John Atkinson, borough surveyor, Stockport.

SUNDERLAND.—Jan. 30.—For the erection of cottage homes at the north-east corner of the workhouse grounds, Hylton Road. Deposit 2*l*. 2*s*. Messrs. T. & T. R. Milburn, architects, 20 Fawcett Street, Sunderland.

TOTTINGTUN.—Jan. 30.—For the building of a short length of retaining wall and contingent work at Black Lane, Turton Road. Mr. L. Kenyon, surveyor, 33 Chapel Street, Tottington, Lancs.

VENTNOR.—Feb. 7.—For the completion of a pavilion at the pierhead. The Surveyor, Town Hall, Ventnor, I.W.

WALES.—Jan. 26.—For the erection of 15 houses at Abercrave, Swansea Valley, for the Abercrave Colliery Co. Mr. J. Cook Rees, architect, Neath.

WALES.—Jan. 30.—For supplying and erecting the steel and ironwork of the proposed Rhiwarthen bridge, Penllwyn. Mr. Hugh Hughes, clerk to the District Council, Aberystwith.

WALES.—Jan. 31.—For the erection of four houses and shop in Castle Street, Caergwile. Mr. J. A. Conde, architect, Connah's Quay.

WALES.—Feb. 1.—For the erection of ninety-four houses and seven shops, near the New Welsh Navigation Steam Coal colliery, in the Ely Valley, near Tonyrefail. Deposit 2*l*. 2*s*. Mr. Philip John Jones, architect, Cilfynydd, Pontypridd.

WARRINGTON.—Feb. 8.—For the erection of a public elementary school, to be known as the Bolton Council school. Deposit 1*l*. 1*s*. Mr. J. Moore Murray, secretary and director, Education Office, Sankey Street, Warrington.

WATFORD.—Feb. 6.—For the erection of stores, buildings and stables at the Council offices. Deposit 1*l*. 1*s*. Mr. D. Waterhouse, surveyor to the Council, 14 High Street, Watford.

WEST KYO.—Jan. 30.—For the erection and completion of two cottages at West Kyo. Mr. Robert Muse, West Kyo, Annfield Plain, R.S.O., Durham.

WINCHESTER.—Feb. 6.—For alterations to the Corn Exchange. Mr. J. Ashton Sawyer, chartered surveyor, 59 High Street, Winchester.

WORCESTER.—Jan. 31.—For an extension to the Victoria Institute. Deposit 2*l*. 2*s*. Names by Jan. 15 to Mr. A. G. Parker, quantity surveyor, 5 Foregate Street, Worcester.

MR. RAYMOND F. CRIST, writing from Johannesburg to the American Department of Commerce and Labour on the trade conditions at that centre, says:—Our goods will have to rely largely upon past reputation to bring future sales. . . . Every sentiment of loyalty to Great Britain as the mother country is appealed to, and in addition the colonial Governments set a pronounced example in support of these appeals by awarding contracts of every nature—especially large ones—wherever by so doing it is not too offensive, to British manufacturers. In all municipal work the rule is to give the contracts to the mother country. An instance was cited to me where a difference of 12,000*l*. in a contract had failed to throw it on to American bidders, the contract going to England on a bid of 53,000*l*. as against 41,000*l*. Engineers are often brought out from the mother country by the different colonies in special cases, and contracts drawn up by these engineers are awarded to their friends at home. This is only one of many ways in which these colonies are worked for the benefit of "home industries."

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GLAZED BRICKS.

TENDERS.

CARDIFF.

or additions to Hancock's Brewery. Mr. HENRY BUDGEN, architect.			
Hatherley & Co.	£2,085	0	0
Walters & Son	2,038	0	0
Small	2,015	0	0
Hallett	1,980	0	0
Allan	1,975	0	0
Beames	1,965	0	0
Knox & Wells	1,963	15	6
Evans	1,895	0	0
Shepton & Sons	1,873	17	0
Davies & Sons	1,820	0	0
E. Williams	1,810	0	0
THOMAS & Co., Cardiff (accepted)	1,799	0	0
C. Williams	1,780	0	0

CHEPPING WYCOMBE.

or street works. Mr. T. J. RUSHBROOKE, borough surveyor.

LEE, High Wycombe (accepted)	£396	0	0
LEE (accepted), Benjamin Road.	398	0	0
LEE (accepted), Drain in Amersham Road.	119	0	0

CHESTERFIELD.

or the erection of two shops at covered markets. Mr. V. SMITH, borough surveyor.

Denby & Co.	£299	0	0
Collis & Sons	220	0	0
Wright	219	11	6
KIRK, Chesterfield (accepted)	197	7	6

GRIMSBY.

or extension of water mains. Mr. H. G. WHYATT, borough engineer.

Sangwin	£369	7	3
Tabor	302	10	8
Dolby	221	0	0
Hewins & Goodhand	209	0	0
HEWINS, Grimsby (accepted)	192	17	6

INGLESHAM.

For the construction and maintenance of works for water supply. Mr. F. REDMAN, engineer, Swindon.

Scul	£1,455	7	0
Godwin	1,003	17	1
Jenkins & Son	999	16	3
Hughes	989	3	2
Streeter & Co.	953	11	6
Spackman	938	17	1
Meredith Bros.	922	10	0
Tabor	912	17	1
Westwood	901	4	9
Collingwood & Co.	873	7	10
Chick, Carden & Co.	833	0	0
YOUNG, Witney (accepted)	755	14	3

IRELAND.

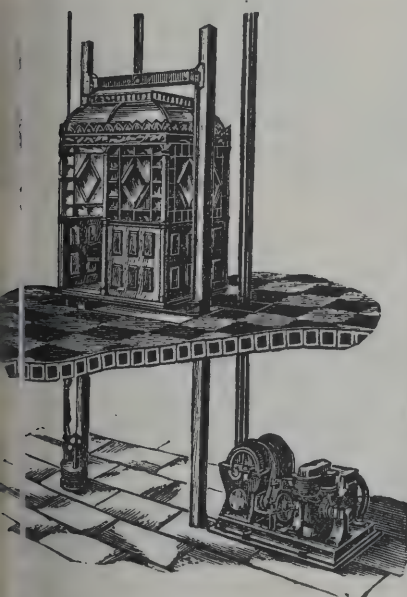
For constructing reservoir and distribution works in connection with the proposed waterworks scheme. Mr. F. BERGIN, engineer, Dublin.

BLAKE, Dublin (accepted)	£10,092	0	0
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For heating and ventilation of technical school, Londonderry. Mr. E. J. TOYE, architect, Londonderry.

Robinson & Co.	£1,750	0	0
Mackenzie & Moncur	1,672	0	0
Lowden & Co.	1,479	0	0
Shannon	1,427	10	0
Taylor & Fraser	1,376	0	0
Stubbs, Son & Hall	1,369	15	0
Brightside Engineering Co.	1,315	0	0
Musgrave & Co.	1,288	10	0
Milan	1,270	5	0
Matthews & Yates	1,262	0	0
Donaghey	1,245	0	0
Rowell & Sons	1,219	4	0
Ritchie & Co.	1,111	0	0
Jones & Attwood	1,104	0	0
HADEN & SONS, Birmingham (accepted)	903	0	0

LIFTS



R. MIDDLETON,
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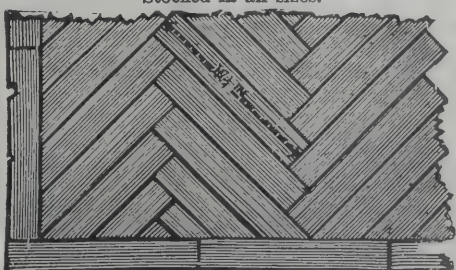
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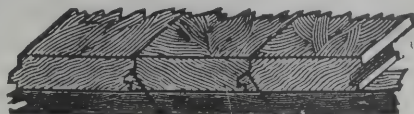
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JOHANNESBURG (S.A.).

For the supply and fixing of steel joists, chequered plates, handrails, &c., at the generating station, Newtown.

Tarry & Co., Ltd.	£1,250	4	4
United Engineering Co., Ltd.	1,217	11	9
J. & R. Niven	1,144	11	0
Reid & Knuckey	1,090	10	9
Blane	784	11	3
SCHONBERGER & KRAFOCHWILL (accepted)	599	17	9

For the construction of Brixton and Krugersdorp Roads, Johannesburg.

Jowett & Rainey	£9,842	11	0
Olwage	9,545	16	0
Stowe	8,917	3	11
J & W. A. Ledingham	8,757	2	0
Tirapani	8,522	12	4
Brindley	8,157	14	9
Proudfoot	8,149	9	9
Weightman & Amery	6,716	3	9
Prior	6,281	16	6
JOWETT & CO. (accepted)	5,996	11	0
Maher (informal)	3,726	10	6

KETTLE

For construction of a storage reservoir and other works, for the County Council of Fife. Messrs. BRUCE, PROUDFOOT & MACRAE, engineers, Cupar.

Cast-iron pipes.

LAIDLAW & SON, Glasgow (accepted)	£2,159	13	8
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General work.

MARTIN, Dunfermline (accepted)	1,873	13	3
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Valves, fountains, &c.

GLENFIELD & KENNEDY, Kilmarnock (accepted)	377	4	6
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LONDON.

For the erection of fireproof store and office at 4 Martineau Road, Highbury. Mr. H. W. RISING, architect, 34 Norfolk Street, Strand.

Calnan	£689	0	0
Gibson	664	0	0
SCOWEN (accepted)	655	0	0

LONDON—continued.

For making-up private streets. Mr. J. BARCLAY, engineer and surveyor.

Stile Hall Gardens.

Wilson, Border & Co.	£1,681	0	0
Adams	1,576	0	0
Pedrette	1,525	0	0
Watson, jun.	1,472	0	0
Nichols	1,447	0	0
Fry Bros.	1,422	0	0
Swaker	1,391	11	0
Bower Bros.	1,357	0	0
Free & Sons	1,350	0	0
Wheeler	1,317	0	0
Rhodes	1,304	11	0
Wall	1,270	0	0
Parry & Co.	1,244	0	0
Ball	1,230	0	0
Greenham & Co.	1,225	0	0
WIMPEY & CO. (accepted)	1,220	0	0
Morton	620	1	4

Blenheim Road.

Swaker	597	13	7
Morecroft	521	0	0
Wilson, Border & Co.	468	0	0
Pedrette	450	0	0
Nichols	443	0	0
Ball	433	0	0
Fry Bros.	427	3	10
Free & Sons	425	0	0
Adams	415	0	0
Rhodes	407	19	7
Parry & Co.	400	0	0
Wimpey & Co.	375	0	0
Bower Bros.	366	0	0
W. E. RHODES (accepted)	364	0	0
Wall	340	0	0

Abinger Road.

Morecroft	1,235	0	0
Wilson, Border & Co.	1,136	0	0
Nicholls	1,157	0	0
Pedrette	1,095	0	0

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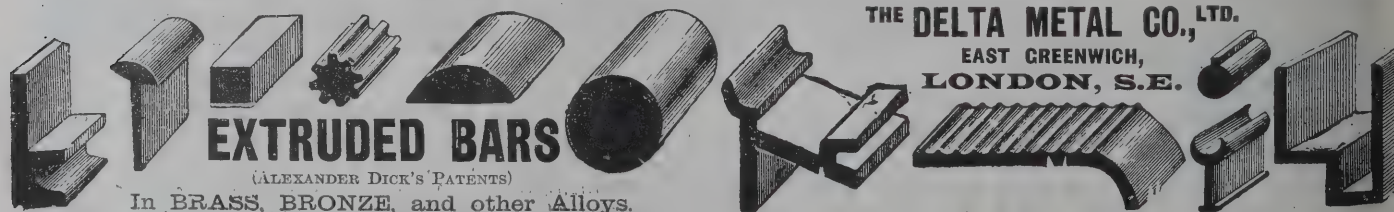
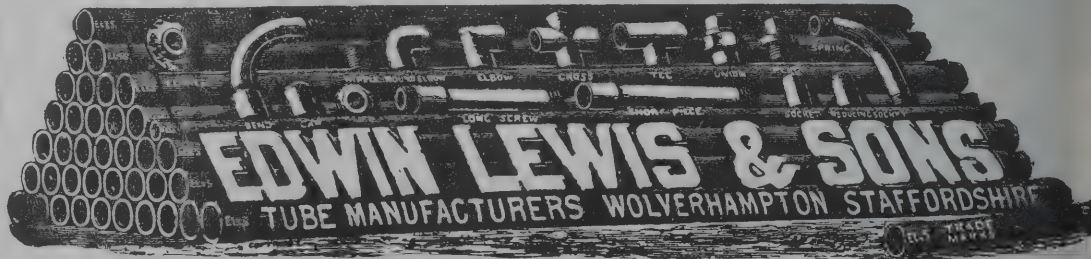
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For Index of Advertisers, see page x.

LONDON—continued.

Ball	£1,087	0	0
Swaker	1,063	17	6
Wheeler	1,043	0	0
Fry Bros.	1,040	5	4
Watson, jun.	1,021	0	0
Adams	1,010	0	0
Free & Sons	987	0	0
Rhodes	953	16	0
Parry & Co.	949	0	0
Bower Bros.	902	0	0
Wimpey & Co.	885	0	0
W. E. RHODES (accepted)	856	0	0
Wall	840	0	0

Beverley Road.

Wilson, Border & Co.	211	0	0
Morton	208	15	0
Adams	208	0	0
Free & Sons	205	0	0
Fry Bros.	198	0	0
Pedrette	198	0	0
Greenham & Co.	195	0	0
Nichols	195	0	0
Rhodes	183	18	0
Bower Bros.	183	0	0
Morecroft	180	0	0
Parry & Co.	175	0	0
Ball	174	0	0
Wall	170	0	0
WIMPEY & Co. (accepted)	169	0	0

Addison Road.

Wilson, Border & Co.	317	0	0
Morecroft	309	0	0
Swaker	305	0	0
Pedrette	285	0	0
Fry Bros.	278	0	0
Nicholls	275	0	0
Adams	271	0	0
Parry & Co.	269	0	0
Free & Sons	265	0	0
M. N. Rhodes	254	17	6

LONDON—continued.

Morton	£249	14	10
Wimpey & Co.	249	0	0
W. E. RHODES (accepted)	247	0	0
Ball	246	0	0
Bower Bros.	233	0	0
Wall	230	0	0

Geraldine Road.

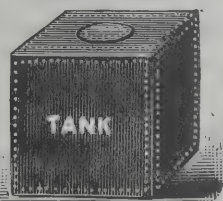
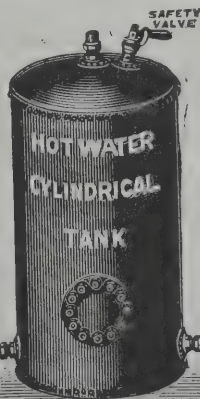
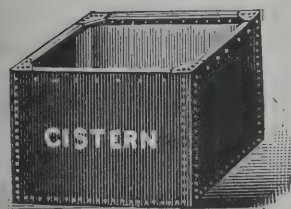
Wilson, Border & Co.	538	0	0
Adams	519	0	0
Nichols	467	0	0
Free & Sons	460	0	0
Swaker	456	16	6
Fry Bros.	455	15	0
Rhodes	447	9	0
Bull	445	0	0
Pedrette	440	0	0
Bower Bros.	434	0	0
Greenham & Co.	425	0	0
WIMPEY & Co. (accepted)	400	0	0
Parry & Co.	396	0	0
Wall	375	0	0
Morton	303	5	8

For the taking-down and re-erecting temporary church, and erection of new church, for the trustees of Springfield Road Primitive Methodist chapel. Mr. FRANK BETHELL, architect, Enfield.

Reason	£3,196	0	0
Thorne	2,844	0	0
Wilton	2,663	0	0
Steed & Sons	2,631	0	0
Porter	2,491	0	0
Stewart	2,481	0	0
Lawrence & Son	2,474	0	0
Jennings & Grenfell	2,400	0	0
Thomas & Edge	2,397	0	0
Mattock Bros.	2,287	0	0
Winter & Sons	2,265	0	0
Fairhead & Son, Enfield (provisionally accepted)	2,218	0	0

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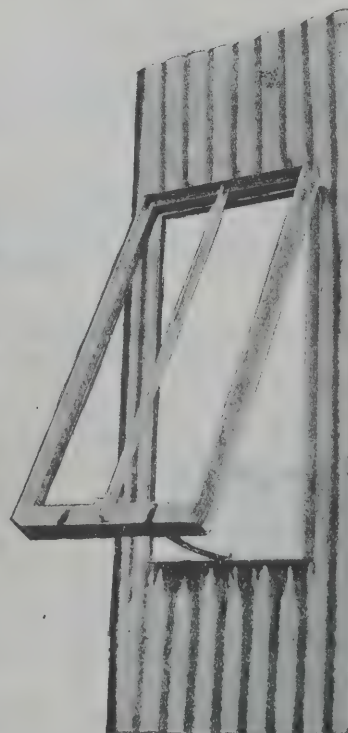
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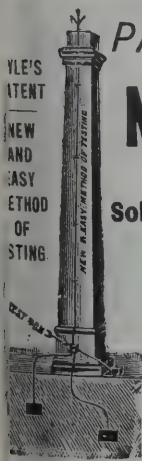
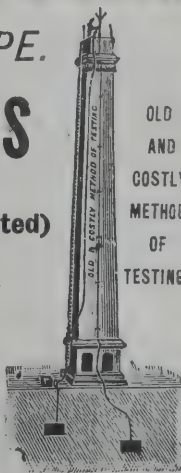
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COSTLY
METHOD
OF
TESTING.



LONDON—continued.

For the erection of tram-shed to accommodate 328 cars in Pemberton Gardens, Holloway.

Foster & Dicksee	£31,714	0	0
Mowlem & Co.	29,750	0	0
McCormick & Sons	29,372	0	0
Lawrence & Son	29,362	0	0
Holloway	29,331	0	0
Lovatt	29,310	0	0
Leslie & Co.	28,598	0	0
Carmichael	28,221	0	0
Patman & Fotheringham	28,203	0	0
Kerridge & Shaw	27,460	0	0
Kirk & Randall	27,296	0	0
Holland & Hannen	27,046	0	0
F. & G. Foster	26,522	0	0
Holloway Bros.	26,350	0	0
F. & H. F. Higgs	25,098	0	0
Wall, Ltd., London (recommended)	25,000	0	0

For the reconstruction on the conduit system of electric traction of the tramways in Holloway Road, Hackney Road and City Road, and the reconstruction on the overhead trolley system of the tramways from Coborn Road to Bow Bridge.

British Electric Equipment Co.	£120,000	0	0
Griffiths & Co.	114,506	0	0
White & Co.	108,324	1	0
Manders	106,093	3	9
Blackwell & Co.	104,314	0	0
Mowlem & Co.	102,989	0	0
Dick Kerr & Co., London (recommended)	93,115	12	11
Engineer's estimate	107,780	0	0

For supply of bull-headed rails for car-shed.

Cammell, Laird & Co.	£1,670	17	6
Barrow Hematite Steel Co.	1,613	10	8
P. & W. MacLellan	1,609	0	2
Bolckow, Vaughan & Co., Ltd. (recommended)	1,513	10	6

For the erection of public library at the junction of the Old and New Kent roads. Mr. CLAUDE BATLEY, architect.

PERRY BROS., 21 Whitecross Street, E.C.	£7,200	0	0
(accepted)			

LONDON—continued.

For the supply and delivery of (1) track rails and fastenings, &c., and (2) slot rails and conductor tee rails to be used for the construction or reconstruction for electric traction of further portions of the County Council's tramways.

Track rails, &c.

Steel, Peech & Tozer	£35,675	10	0
P. & W. MacLellan	32,758	2	6
Barrow Hematite Steel Co.	31,965	10	0
Bolckow, Vaughan & Co., Middlesbrough (recommended)	31,230	16	0
Scott	29,919	0	0
The Lorain Steel Co., U.S.A.	28,026	10	0
Le Bas & Co.	27,240	5	0
Engineer's estimate	25,907	0	0

Slot rails and conductor tee rails.

Barrow Hematite Steel Co.	26,658	15	0
Scott	26,087	10	0
Bolckow, Vaughan & Co.	25,651	5	0
Frodingham Iron and Steel Co., Ltd. (recommended)	23,047	0	0
P. & W. MacLellan	20,993	5	10
Le Bas & Co.	20,877	10	0
Engineer's estimate	19,310	0	0

MILTON.

For sewerage works at Milton, Hants. Mr. H. C. H. SHENTON, engineer, Westminster.

Wort & Way	£9,888	18	1
Moran & Son	8,631	0	0
Trimm	8,460	0	0
Cooke & Co.	7,961	0	0
Redhouse	7,949	2	10
Harrison & Co.	7,750	12	6
Neal, Ltd.	7,680	7	9
Firth & Co.	7,604	15	0
Smith & Co.	7,521	0	5
Napier & Sons	7,516	19	2
Streeter & Co.	7,495	6	4
F. Osenton	7,243	0	0
Bell & Sons	7,218	4	4
Crawford	6,952	1	1

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MILTON—continued.

Chick, Carden & Co.	£6,787	18	2
Cottle	6,578	12	6
Grounds & Newton	6,530	0	0
Rayner	6,522	4	4
Macdonald	6,505	14	3
A. G. Osenton	6,473	3	4
Riley	6,455	16	9
Osman	6,300	0	0
Douglas	6,254	17	0
BLACKWELL & Co., London (accepted)	6,080	8	8

NOTTINGHAM.

For the erection of school for senior scholars.

Lewin, Netherfield (recommended)	£6,825	0	0
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PRETORIA (S.A.).

For the erection of warders' quarters, Prison Reserve.

Templar Bros.	£15,104	0	0
De Rapper	14,640	0	0
De Waard	12,948	0	0
Munro & Co.	11,696	0	0
Dekkar	11,660	0	0
Reid & Co.	11,585	0	0
Brown & Co.	11,500	0	0
Wulfse	11,419	0	0
Smith	11,386	9	6
Edmanson & Thomas	11,096	0	0
Dey	10,964	0	0
Branniff	10,950	0	0
Lampen	10,813	7	6
Porter	10,766	0	0
Kroekel	10,481	0	0
Millar & Son	10,266	15	6
Macdonald & Thorpe	10,244	0	0
Stabb	10,151	18	4
Lane	9,967	0	0
Van Reenan, Mostert & Co.	9,922	6	11
Kirkness	9,834	0	0
Blake & Collins	9,808	0	0
Brown	9,514	10	5
Dewar	8,999	17	6
Corfield	8,949	0	0
PRENTICE & MACKIE (accepted)	8,693	0	0

RAMSGATE.

For the erection of additional staff accommodation at East Cliff House, Ramsgate, for the Metropolitan Asylums Board.

Dyke	£774	0	0
Paramor & Sons	763	0	0
Samson	750	0	0
May	725	0	0
Martin	722	0	0
Horne	720	0	0
Pettman	711	0	0
Ross & Co.	686	0	0
Denne & Son	663	0	0
Browning	658	0	0
Stiff	649	0	0
Miriam's	620	10	0
Anderson Bros.	598	0	0
Woodhall & Son	560	0	0
Goodbourn (recommended)	535	0	0

STIFFORD.

For the erection of disinfecter block and other work at hospital. Mr. C. M. SHINER, architect, Grays.

Davison	£1,355	14	0
Myall & Upson	1,283	0	0
Bruty	1,266	18	6
Brand & Sons	1,253	4	1
Sheffield Bros.	1,240	0	0
Godden & Son	1,223	19	0
Potter	1,218	18	6
Hammond	1,197	0	0
Miskin	1,177	0	0
Foster	1,136	0	0
Dobson	1,134	18	9
Brown	1,125	0	0
Pavitt & Sons	1,088	12	0
Davey	1,081	0	0
Butcher	1,071	0	0
MEAD, Little Thurrock (accepted)	1,043	10	9

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RIPLEY.

For constructing new offices, &c., at the town hall. Mr.		
G. W. BIRD, surveyor.		
Walker & Son	£869	15 0
Peach	824	10 5
Evans Bros.	795	0 0
Harris	770	12 0
NORMAN, Ripley (<i>accepted</i>)	757	5 3
Lee & Kirk	740	0 0
Harris & Hunt	663	8 8
Salt Bros.	661	10 0

THORNE.

For the erection of cooking range, &c., at workhouse.		
NEWTON, CHAMBERS & Co. (<i>accepted</i>)		
	£356	10 0

WITHERNSEA.

For the erection of three dwelling-houses, South Cliff.		
Messrs. CLOUGH & WRIGGLESWORTH, architects, Hull.		
Whitelam, Wilson & Co.	£977	14 10
Boyes & Oliver	926	18 8
Beal	885	0 0
Singleton	857	7 8
Nicholson	823	17 0
Wilkinson	805	11 8
Richardson	774	6 3
Berridge.	774	6 0

WOLVERHAMPTON.

For erecting waiting-room, &c., in Victoria Square. Mr. G.		
GREEN, borough engineer.		
T. & G. Perry.	£399	0 0
Willcock & Co.	385	0 0
Jones	380	0 0
Speake & Sons	377	0 0
Gough & Son.	360	0 0
Kidson	355	0 0
CAVE & SON, Wolverhampton (<i>accepted</i>)	347	0 0

BIRMINGHAM TEACHING PARIS.

It was stated at the annual meeting of the Birmingham District Drainage Board on Tuesday that the works had been inspected by a French deputation which had toured Europe and America in search of a satisfactory system. In his report Dr. Calmettes, the head of the deputation, said:—"Until recently the city of Birmingham has been obliged to set aside large areas of land in the low-lying parts of the farm to act as downward intermittent filtration beds with or without cultivation, and this for want of sufficient irrigation area to deal with the total flow of sewage. Thanks to biological filters, this land can now be cultivated in an ordinary way under the best and most economical conditions. So that having for a considerable time practised land irrigation, which they have carried out in a thoroughly scientific manner on their estate, the city of Birmingham, convinced from the progress of their experience that the results of purification in biological filters are better both hygienically and economically, have considered it necessary to adopt this latter method, and to continue the land treatment only to the extent to which arable land is capable of dealing with the quantity of sewage supplied to it without injury to crops. This is exactly the solution which, sooner or later, we are convinced the city of Paris will be forced to adopt."

HIS MAJESTY'S Consul-General at San Francisco (Mr. C. W. Bennett, C.I.E.) reports, according to the *Board of Trade Journal*, that the different insurance companies have now practically completed the settlement of losses incurred in the recent disaster at San Francisco, and that the British companies have fully sustained the reputation that, by long dealing in the States and elsewhere, they have secured for fair settlement of claims. The gross amount paid is, so far as can be ascertained, about forty millions sterling, whilst the actual loss caused by the fire, without including loss of income, &c., from burned buildings, is estimated at from seventy to one hundred millions. Eliminating property not insured at all, there is no doubt, says Mr. Bennett, that property in San Francisco was very much under-insured.

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HAMPDEN PARK HOTEL.

ROUGH OF GLOSSOP PROPOSED CONVALESCENT AND NURSES' HOME.

BUILDING AND BUILDERS.

The buildings and improvement committee of the Lincoln City Council have passed plans for the erection of a theatre in Saltergate by a syndicate of local and other gentlemen. The theatre will hold 1,500 people, and, it is anticipated, will cost about 15,000/. The plans have been prepared by Mr. W. Hancock, architect, of Leicester.

The building and stores sub-committee of the Bath Education committee report that, with regard to water consumption, the report of the surveyor of corporate property showed that for the quarter ended December the quantity of water used in the schools was 439,000 gallons, as compared with 349,000 gallons for the corresponding period of the previous year. The figures for the respective twelve months were 1,746,000 and 1,935,000.

MESSRS. PATMAN & FOTHERINGHAM have obtained the following contracts:—(1) Messrs. Thomas Cook & Sons' (tourist agents) new premises, 107, 108 and 109 Fleet Street, E.C.; Messrs. Smee & Houchin, architects. (2) Buildings, &c., May's Yard, Eagle Street, Holborn, W.C., for Messrs. H. & G. May; Mr. Hewish, architect. (3) Premises for the Express Dairy Company, Ltd., Tavistock Place, W.C.; Mr. Fitzroy Doll, architect. (4) Library, Hither Green, for the Lewisham Borough Council. (5) Alterations to Messrs. Schweppe's offices, Hammersmith, W.; Mr. Epton, architect. (6) Two conveniences in Aldgate and Soreditch, for the City Corporation of London.

An inquest was held last week at Ilkley on F. Carter, forty-three, foreman bricklayer, and W. Mitchell, forty-five, iron, who were killed by the collapse of a scaffold on the town hall building, in course of erection. With two others

they were removing a stone, weighing 5 cwt., on a trolley over the scaffold, when it gave way, and three of the men fell into the roadway. The stone struck Carter on the body and legs and then fell across Mitchell's face. Both men died almost immediately. The jury, in returning a verdict of accidental death, recommended that the Parliamentary committee now sitting to inquire into building accidents be asked to consider the advisability of making regulations respecting the erection of scaffolding and the testing of scaffold-poles.

ELECTRIC NOTES.

It has been officially decided that 15,600 cubic feet of water may be diverted from the American side of the Niagara Falls and 160,000 horse-power may be imported from the Canadian side without substantially impairing the scenic grandeur.

The chief officer of the London County Council tramways has designed an additional safeguard for the trams in connection with brake mechanism. Already it has been tested on two cars, and appears likely to meet in a great degree the special object for which it is designed.

The Marylebone Borough Council have decided, on the recommendation of the electric-light committee, to allow large consumers of the borough's electricity carrying on business in Oxford Street, Baker Street and Edgware Road a discount of 25 per cent. off their electric-light accounts, provided such accounts are paid monthly and within ten days of the date of rendering.

The watch committee of Bolton having threatened to take proceedings if the Corporation continued to permit the overcrowding of tramcars, the matter has been referred to the tramway committee to consider and report. It was stated by one councillor that owing to the inability of conductors to collect fares the Corporation were losing 1,000/. a year. As many as a score of people could be seen hanging on to the footboards, and these weighted the cars down to such an extent that the lifeguard dragged on the ground.

The promotion of a Parliamentary bill for the electrification of the tramways in Rawtenstall and Bacup was agreed to at a statutory meeting of electors of Rawtenstall. The scheme contemplates the outlay of 113,668/., also 82,310/.

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for equipment, 8,000*l.* for motor-buses, 5,500*l.* for land for municipal offices, 3,000*l.* for electrical motors and 5,800*l.* for sanitary purposes. The total is over 223,000*l.*, and the town clerk has made a statutory declaration of revenue to be derived from the expenditure, and puts it at 20,000*l.* a year.

THE Edinburgh Town Council have adopted the recommendations of the electric-lighting committee that the water in the sewer belonging to the Water of Leith Purification and Sewer Commissioners be adopted as the scheme for condensation at M'Donald Road Station at a probable cost of 6,000*l.*; that estimates be obtained for the following plant required at M'Donald Road Station:—Two turbo-generators, probable cost 15,000*l.*; condensing plant, switch-board, steam pipes, foundations, &c., probable cost 14,000*l.*; that application be made to the Secretary for Scotland for consent to the borrowing of a sum of 150,000*l.* for capital works, under the Electric Lighting Order of 1891.

THE Hamilton Town Council have sanctioned the proposal of the committee to ask the Secretary for Scotland for additional borrowing powers to the extent of 12,000*l.* in connection with the electric-lighting scheme for the burgh. The present borrowing powers have been exhausted, and the amount now asked for will leave about 5,500*l.* for ordinary extensions, after meeting the cost of those works already sanctioned and sums paid in excess of the previous borrowing powers.

THE business conducted by the electric supply committee of the Birmingham Corporation is making progress. There has of late been a very large demand from private consumers for electricity for power purposes, and in order to meet the demand the electric supply committee have decided to extend the supply mains. They resolved to ask the City Council for permission to obtain a special loan for the purpose. The cost of the extension has not yet been definitely ascertained, but high-pressure mains will be provided.

THE Mersey Docks and Harbour Board have adopted a recommendation of the works committee to improve the lighting of the dock estate at Liverpool and Birkenhead at an estimated cost of 6,812*l.*

VARIETIES.

THE Eccles refuse destructors burnt 11,578 tons of waste during 1906. Sales of clinker realised 405*l.* and of slag 3*l.* 11*s.*, and utilisation of the heat from the furnaces saved over 630*l.* in coal.

THE present acreage of Glasgow is 12,796, with a population of 801,000. Under the scheme for the proposed extension of boundaries it is proposed to add 15,542 acres, with 60,000 of a population, bringing the total to 28,338 acres and the population 861,000.

THE Staffordshire education committee on Saturday approved preliminary plans providing for four laboratories, viz. chemical, physics, mining and pottery, together with a large meeting-room, classrooms, offices, &c. The cost of an institute was estimated at 12,500*l.*

THE Cheshire County Council have decided to build a secondary school at Crewe, to cost about 18,000*l.* A site has been secured in Ruskin Road, and plans have been approved. The school will accommodate between 350 and 400 students, drawn from the town and district.

THE Smethwick Town Council have decided to adopt new by-laws providing that the height of rooms intended to be used for human habitation should be not less than 9 feet from the floor to the ceiling, and to forward them to the Local Government Board for approval.

THE engineering standards committee has issued its further reports. One deals with the British standard specification for carbon filament glow lamps, and the other with reference to British standard screw threads and pipe threads. They are published at the offices of the committee, 28 Victoria Street, Westminster.

WE have received a copy of the "City Diary" from its publishers, Messrs. W. N. & L. Collingridge, of the City Press offices. This handy annual, produced in the City of London, contains, for instance, a complete list with addresses of the members of the Corporation, a list of every public body connected with the City, and much further information of value for the business man.

THE Morecambe Town Council on Monday rejected a scheme for the construction of a marine lake on the

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suitable for Illumination. Copper Dials.

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THE SIMPLEST AND MOST RELIABLE ON
MARKET. Full Particulars on Applica

ore to cost 15,365*l*. In sections it would cost :—From
rd Street to Green Street, 5,288*l*; from Green Street to
e old jetty, 11,664*l*; or from Green Street to the Winter
rdens, 10,856*l*. It was proposed that the section costing
88*l* be adopted. The fishermen are hostile to the scheme.

THE East Ham education committee recently wrote to
e National Telephone Co. asking for a rental of 1*l*. 1*s*. per
num in respect of each of the wires crossing the play-
pounds of the schools in the borough. In reply the com-
ny state they are only prepared to pay 1*s*. per annum in
h case, and in consequence the education committee have
quested that the wires be removed at once.

THE Waltham Cross (Essex) Urban Council ordered
ir sanitary inspector to make a house-to-house inspection
the district, as a result of Mr. Rider Haggard's evidence
t summer before a select committee of the House of
mmons on the Housing of the Working Classes Bill.
e inspector's report was before the Council at their last
eting, and orders were given that a large number of
airs should be carried out to properties in the district.

THE Withington committee of the Manchester City
ncil, who were opposed in their policy of paving
suburban roads with stone setts by the property
iers in Chorlton-cum-Hardy, have decided, in accord-
e with the sanction of the Local Government Board, to
y out the work in Nicholas Road, Chorlton, with stone
s. The owners offered to do the work in tar macadam
defray the cost, but the committee rejected the offer.

THE Leeds Corporation Bill was before Mr. Jeune, one
the Examiners of Standing Order Proofs at the House of
mmons, on Monday. Under the Bill the Corporation
ers powers to construct additional waterworks in the
th and West Riding, and to abandon the Colsterdale
ervoirs and certain other works authorised under the
ct Act. The Bill also seeks powers to construct sewage
ks. The cost is estimated at 1,892,456*l*. The Bill was
red to proceed.

THE Maryport Harbour Commissioners have completed
negotiations for raising the required capital for the
ag over of the harbour estate and constructing a new
water dock with railway accommodation, in accordance
the Parliamentary powers. A preliminary contract

has been let to S. W. Harrison & Co., Birmingham, and
work will be started in a couple of months. The capital
required by the new company verges on a million. Under
the Bill they have to discharge mortgage bonds amounting
to 300,000*l*., and to produce evidence that not less than
300,000*l*. has been subscribed and two-thirds paid up

THE operations in connection with the extension of
Kirkcaldy Harbour are making steady progress, and in the
course of a few weeks the first section of the work—the
extension of the East Pier—will be completed. This ex-
tension carries the pier 600 feet further out than the original
pier. The other sections of the work—including South
Pier, dock and tidal basin—are to be commenced without
delay. The engineers' estimate the total cost of the scheme,
allowing 9,500*l*. for contingencies, at 109,500*l*., or 5,000*l*.
higher than the scheme sanctioned in September.

THE commercial attaché to H.M. Embassy at Madrid
reports the formation of an iron syndicate, the Central
Siderurgica, comprising twelve companies. It commenced
operations on January 1, and is to last for a period of five
years, prorogable from year to year. The consumption of
commercial iron, girders and plates will be divided pro-
portionately, and orders will be distributed from the central
office. Those companies who cease producing will be
reimbursed with a sum proportionate to the percentage of
the production due to them. Prices are fixed by the
directors, and from the first of the new year the price of
commercial iron was raised 30 pesetas, that of industrial
iron 40 pesetas and that of plates 30 pesetas.

THE Chester Town Council find that the new sewage
works at Sealand, which they have constructed according to
the most modern sanitary ideas, are capable of dealing with
only about two-thirds of the total sewage of the city in
winter time, and that to complete the works in such a
way as to deal with the whole volume of sewage will
involve the expenditure of about 66,000*l*., in addition to
the cost already involved of about 69,000*l*. Considerable
anxiety and uneasiness have been felt in the city as to the
scheme, and a reassuring statement from an expert would
be gladly welcomed. The general purposes committee were
n Tuesday authorised to consider what further expert
dvi e should be obtained, that they should report thereon

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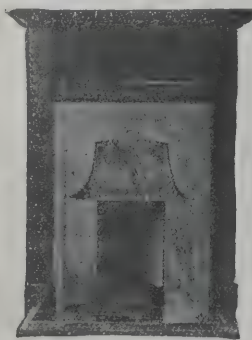
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to the Council, and, further, that the services of Major Tulloch, the engineer to the scheme, be dispensed with.

THE Metropolitan Asylums Board on Saturday considered a report presented by the works committee upon letters received from the Local Government Board suggesting modifications of the Board's proposals for the provision of a new boiler-house, workshops, &c., at the North-Eastern Hospital, the cost of which was originally estimated by the engineer-in-chief at 14,100*l*. The committee submitted plans of a further modified scheme for the erection of the boiler-house, coal storage, workshop and destructor-house at an estimated cost of 12,000*l*. The modified scheme was approved, and it was ordered that it should be forwarded to the Local Government Board for their sanction under seal.

GOLF is looked upon as not only one of the most healthy games, but also as one affording the least risk of accident to its votaries, but even golf is not exempt from its special dangers. A well-known J.P. recently lost an eye in consequence of a blow from a golf ball when playing on the Meyrick Park Links, the eye having to be removed. The sufferer was so far fortunate in possessing an accident policy with the Railway Passengers' Assurance Company, under which the sum of 500*l*. was forthwith paid.

BEFORE Judge Owen at Newport, Edward Turner, mason, sued George Banfield, collier, for 100*l*. for work and materials in connection with the building of three houses. According to defendant, Turner agreed to build the houses for 340*l*., providing he had the materials from the old houses. There was no agreement signed and there were no specifications. Several witnesses spoke to hearing the oral agreement for 340*l*. Plaintiff said he had only agreed to do the work as cheap as possible, and to draw 2*l*. 10*s*. a week as his own wages. Two witnesses said that 450*l*. would be a fair price for the work after allowing for the old materials. Others said 340*l*. would be a fair price. Judge Owen remarked there was a discussion going on in some of the papers about the value of expert evidence. Here was a case in point, where there was a difference of 110*l*. in a small amount, or 25 per cent. difference. His Honour decided that there had been no specific contract to do the work for 340*l*. It was the most loose way of building houses he had ever heard of. He gave judgment for 45*l*.

A MEETING has been held in Coventry of opponents the erection of municipal offices, with shops underneath, the Earl Street vicinity. It was resolved that the erection of municipal offices and shops should be opposed on the grounds that the present scheme is undignified for a town of the size and importance of Coventry; that the need for a town hall is urgent, and that it is not admitted that the city cannot afford a town hall; that even if the city cannot afford a town hall at the present time it is undesirable to utilise the site in such a way as to prejudice the erection of a proper town hall at a later period, or in such a way as to involve the purchase of another site for a town hall; and that it forms no part of the business of a municipal authority to speculate with the ratepayers' money in the erection of shop property. It was resolved, also, that steps should be taken to send a requisition to the Mayor to hold a public meeting on the subject, to get out a ground plan of the site and to instruct counsel to attend at the Local Government Board inquiry and oppose the application of the Corporation for a loan for this purpose.

THE London and Bath road, according to the report for the past year of Mr. R. J. Thomas, county surveyor for Buckinghamshire, is probably the most used by light motor-cars in the kingdom. He cites that a census taken at Maidenhead town hall on Henley Sunday gave an average of 107 cars per hour for twelve hours—no fewer than 1,284 motors for the day. During the year there has been an increase in road maintenance in the county of nearly 1,200*l*., and the main cause for this is stated to be the increase in the number of heavy traction engines, as well as the motor-car traffic, combined with the bad season. It has been found impossible to keep well-rolled, first quality granite down, the suction in grip of pneumatic tyres, especially those covered with projecting metal non-skid studs, tearing the smaller particles out of the road and dropping them on the hard surface, to be crushed into dust by ordinary traffic, and later swept away. A coating of granite now lasts only twelve months, whereas it had at least three years' life. In several cases tarmac has been used with satisfactory results.

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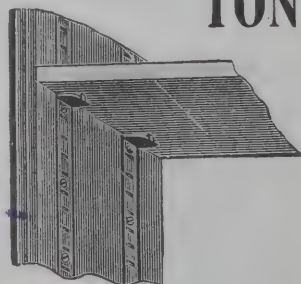
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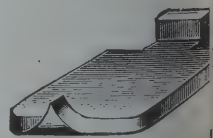
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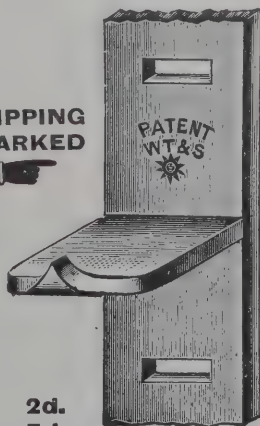
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NEW CATALOGUES.

The new illustrated general catalogue issued by McDowall, Steven & Co., Ltd., ironfounders, is of a size that befits so extensive a business. There are six sections, viz. (1) kitchen ranges, steam and gas-cooking apparatus; (2) stoves and fireplace suites; (3) rain-water goods and general castings; baths and sanitary fittings; (4) verandahs, railings, stairs; (5) stable fittings; (6) radiators, heaters and hot-water pipes. Each section is abundantly illustrated, and the outlay on the book must represent a large sum. Care is taken to give dimensions and prices. Those who wish to purchase any articles can therefore realise what is obtainable. But in London it would be an advantage to visit the capacious show-rooms of the company, in which each class of goods is arranged separately, so the visitor is enabled to select whatever is best adapted to his purpose. One great advantage is that the products of the Milton works are of the most modern forms or correspond with the latest conclusions of practical men. The lists introduced show the numerous modern buildings in which the appliances have been used, such as the Milton steam-cooking apparatus, which is well known throughout England, Ireland and Scotland. Captain Galton's grates are among the company's products. Then there are London County grates, which are remarkable for their simplicity. The ornamentation of the grates is always of an excellent character. And, indeed, it may be said that among the thousands of objects shown in the pages not one could be considered as ugly. That is high praise, but is not more than the character of the goods deserves.

One of the worries of householders and tenants of flats arises from unsatisfactory cooking-ranges. Attempts to improve them are generally unsatisfactory, and tenants object to the expense of introducing ranges which they cannot claim as their property. It is a great advantage of the ranges of the Wilson Engineering Company, Ltd., that they are portable. It is not to be supposed they are flimsy, for they are no less strong and enduring than those which are fixtures. Some are intended for use in large establishments, as in such places it is often convenient to change the position of a range. The Wilson Engineering Company

have many varieties, and there are also hot-closets, gas-roasters, pastry-ovens, hot-plates, boilers, besides cooking utensils. As specialists they have secured many important contracts, and frequenters of some of the principal restaurants in London have benefited by the inventions of the Wilson Engineering Company.

TWENTY years have elapsed since Mr. Horsfall introduced his "destructors" to sanitary authorities. The merits of the system have been recognised not only in this country but on the Continent and elsewhere. The destructors are used in Brussels, Hamburg, St. Petersburg, Zürich, Monaco, Neuchâtel, Cairo, Para, Pernambuco, Lorenzo Marques, Durban, Bloemfontein, Singapore, as well as in Edinburgh, Manchester, Newcastle-on-Tyne, Westminster, &c. In many hospitals it is considered to be an essential to sanitation. The long and varied experience of the company has enabled many adaptations to be realised, and these are described in the latest publication of the company. There is, for instance, a portable destructor, which can be drawn by horses and will consume at least 6 tons of refuse in 24 hours. The opportunities for so effectual an aid to sanitation are increasing daily.

At a meeting of the Llandudno District Council it was reported by the works committee that as the result of the recent storms a vast amount of shingle and sand appeared to have been moved, and the foundations of the concrete steps and of the platforms on which the shelters are erected were laid bare to a much greater extent than before. The committee were of opinion that some active measures should be taken to protect these works, and to prevent as far as possible the removal of sand and shingle, and they instructed the surveyor to give the matter his earnest attention and to report as to the best course to adopt, and, if necessary, visit for that purpose one or two of the seaside places where similar trouble has been experienced. The surveyor expressed the opinion that since 1895 no less than 50,000 tons of shingle had disappeared from the beach of Llandudno Bay.

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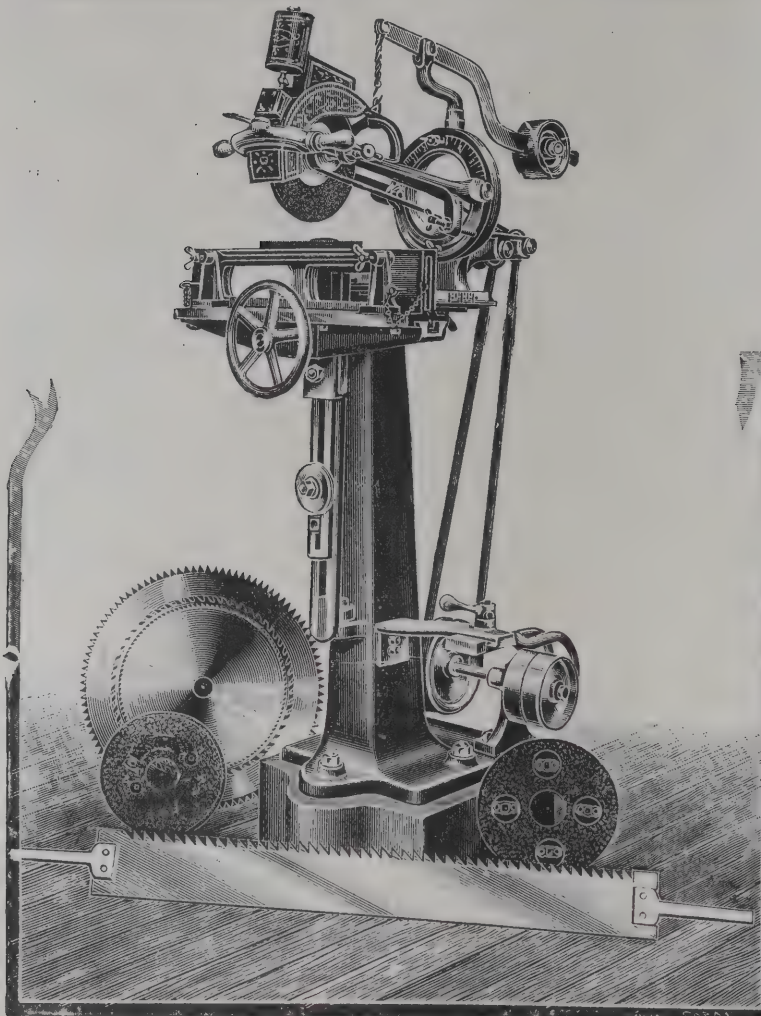
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IMPROVED SAW-SHARPENING MACHINE.

THE old process of sharpening saws by hand is being superseded by a machine perfected by M. Glover & Co. Under the old system saws had to be taken out of the benches every half-day. The new machine entirely obviates the necessity for punching, with all its drawbacks. By that means the life of the saw is lengthened, and the process of hammering can be often dispensed with. An expert sharpener can only file the teeth quite straight and sometimes he files them round. By means of the circular revolving emery wheel in M. Glover's machine the saw teeth are made slightly hollow, like a skate blade or a hollow-ground razor. This hollow-ground condition conduces to sharpness, and it is claimed that saws are able to cut better and retain the edge longer than if they were filed by hand. The means of easily adjustable contrivances, including brass indexes, all the various "angles" and "leads" required in saw teeth can be obtained by the machine, which is fitted with a motion that dispenses with all guesswork in "topping" for each gullet formed is of uniform depth. By means of the stop motion, the emery wheel is lowered to a given point for each tooth, the teeth are accurately sharpened to one height each tooth, therefore, doing an equal amount of work. More than half the teeth in a hand-sharpened saw sometimes do not work at all; they are "topped" shorter than others. The machine is fitted with a special guard and special attachment, by which the temper of the saw can be kept intact by the fine cold spray of water ejected exactly on the precise tooth undergoing treatment, and the case hardening of the saw is thus prevented. The cutting operation is continuous, as the wheel is driven steadily by a long leather belt without interruption. The machine is also kept tight by an improved arrangement

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whatever be the position of the emery wheel. It frequently happens that newly-punched saws have the teeth too long and too weak, with the result that they snap off. Then again, in order to make the saws last as long as possible it has been the general practice to resort to "topping" until there is hardly any gullet or shape of tooth left, in which case more power is required for sawing, and it is more difficult to produce good work quickly. The great saving of time as well as time which the machine insures should be appreciated in all saw-mills.

CHINESE TIN MINE.

A Chinese tin mine situated about 10 miles from Ipoh, in the State of Perak, has been fitted up within the last few years with the latest English machinery, which has already paid for itself over and over again. The puddles all sheds generally are situated in a valley, so that the ore descends by gravitation from the mine proper. It is quarried by Chinese labour, and paid for per cubic yard delivered to the works, all trucks and material being supplied by the mine owner. The mine was started some four years ago, the owner having acquired the land from a coffee planter. The output of washed tin ore is enormous, and the profits proportionately great. The so-called Chinese mining is carried on, the system being as follows:—Shafts are sunk at 10-foot centres apart to a depth of, say, 50 feet to 100 feet, according to the quality of the earth met with; then from each shaft the Chinese coolies drive horizontally, going on until they meet. In this way a layer of earth is removed, 4 feet thick, and sent up the shaft in baskets, which are hoisted by means of a wooden windlass. As this layer of earth is removed wooden props are inserted, which support stout boards at the top; these keep the roof from falling in. The feet of the props rest only on the floor, and as this is being continually dug out, the props gradually sink by the pressure of the superincumbent weight of the roof and earth above. The stout boards prevent the roof falling in, but as the ground is dug out they sink with their supports, and so always keep the 4 feet clear space which enables the men to work. The method is certainly dangerous, but effective. The surface above gradually sinks as the earth is removed from below. One would think it would be

better and as cheap in the long run, to excavate over the whole area.—*Work.*

LONDON COUNTY COUNCIL AND TENDERS.

The general purposes committee of the London County Council in their last report say:—The Council is from time to time recommended to accept a tender other than the lowest. It is necessary for the committee submitting the recommendation to satisfy the Council as to the reasons for passing over the lower tender or tenders, and as reasons of this nature cannot be fully disclosed, either in a report to the Council or in debate at meetings of the Council, the question of the adequacy of such reasons sometimes occasions great difficulty when the recommendation is being considered. In these circumstances we think the Council would favour an arrangement under which the committee making the recommendation would disclose to us the material facts, in order that we might be in a position, if we were not in agreement with the recommendation, to take action thereon at the meeting of the Council. We therefore recommend that the following be a standing order of the Council:—Whenever a committee resolve to recommend the Council to accept a tender which is not the lowest, that committee shall communicate to the general purposes committee the reasons for passing over the lowest tender or tenders. Such communications shall be made in sufficient time to enable the general purposes committee to consider the matter before the date on which the Council will have before it the report containing the recommendation in question.

THE ARTISTIC TREATMENT OF CONCRETE.*

The consideration of concrete from an æsthetic point of view may strike the average cement user as inappropriate and impossible, for hitherto the term "concrete" at once suggested foundations, piers, dams, abutments, and, nowadays, it more than likely calls to mind columns, beams, floors, walls and, in fact, the entire structural parts of

* A paper read before the National Association of Concrete Users by Mr. A. O. Elzner.

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buildings. But it must be evident that our experience with this new material, new only, however, in the sense of adaptation, will show that like all legitimate and substantial structural materials, it too will prove to be susceptible of artistic treatment in design. Wood and stone architecture are as old as the hills, and the art of the Mediævalist in developing true styles with these humble materials rightfully belongs to the world wonders. Brick and terra-cotta can scarcely claim quite so much distinction, although in point of artistic treatment they were brought to high development in the Gothic art of Italy. Iron and steel, however, do not fare quite so well except in a small way along the lines of purely ornamental work; for when the modern rolling mill began to turn out its product of structural shapes, and engineers discovered the wonderful possibilities of rivetted sections and connections, there was a great rush for structural iron and later for steel. Everything imaginable was made of it, and more in Europe than here. Bridges and viaducts, certain classes of business blocks and public buildings, even churches and cathedrals, all vied with one another in their architecture of iron and steel, and while some notable attempts achieved a measure of success, it required many years to develop an artistic style of design. And even at this late day, structural engineers, as a class, seem determined to ignore the application of æsthetic principles to their designs of exposed work.

But we feel quite hopeful. There has been and is much teaching and preaching of æsthetics. Schools, periodicals and municipal art societies are doing much to educate the popular taste and to create a demand for beauty in public works, and this campaign, whose influence is spreading rapidly, will undoubtedly bring designers to recognise and appreciate the necessity and propriety of combining beauty with utility in all visible constructions.

This problem will be greatly simplified in concrete work; for here, for the first time, we come to deal with a plastic material which can be moulded and modelled at will. Beauty, however, in structural design is worthy of the name only when, like beauty in nature, it has character. It must not be a servile copy of the style peculiar to some other material, but in fact must express the individuality of its own nature and must not dissemble.

It is just this peculiarity that we must be careful of in our concrete block architecture. At present the tendency in the manufacture of these blocks is to imitate split face of stone ashlar. This is radically wrong in principle and should not be tolerated. A flat, smooth face will always look well. However, if a pitched or split face is desired, let it be produced by casting the block flat and then pitching off the face with chisel and hammer just as is done with stone. The clean fracture of the concrete thus exposed will be eminently effective and artistic, and will have all the merit that belongs to truthfulness. Plain concrete ashlar walls might in some cases be effectively relieved by the introduction of bands of decorated blocks with some simple ornament moulded in the face, very much as is done with terra-cotta, but by all means avoid moulded rock-face work. It is artistically bad. The frequent and constant repetition of a few regular sizes and patterns ruins an effect which should be counted largely as accidental, but always expressive of a fine artistic sense in the selection and grouping of the individual blocks. Artificiality, imitation and misrepresentation are stamped all over such work, and can be recognised at first glance.

Solid concrete walls have a great advantage over block walls in that they lend themselves much more readily to artistic treatment. This is especially true where they are used in suburban and country buildings, perhaps because of the touch of nature in the surrounding landscape which more nearly accords and harmonises with the broad treatment that can be so effectively employed on wall surfaces. Perhaps the best sources of inspiration that can be had for such treatment are to be found in the Spanish missions of California, which, although not concrete, nevertheless at once suggest its use, and above all are fine examples of the artistic value of broad wall surfaces relieved by exquisitely proportioned openings judiciously spaced and not infrequently embellished by moderate use of ornamentation.

Let us say then, speaking of Domestic architecture where walls are made of solid concrete the surfaces should be as unbroken as possible, avoiding especially artificial jointing, of which such frequent use is made, obtained either by scratching a joint into the fresh mortar while the surface is plastered, or after the removal of

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forms, or by planting bevelled wood strips on the inner face of the forms, thereby moulding the joint directly into the concrete.

Both methods are highly objectionable, utterly senseless and aesthetically very bad, and should be shunned. In work of moderate cost, where effects are to be sought in an inexpensive, straightforward and natural way, there can be no offence taken if the concrete is left untouched after removing the forms. In fact, this method has so much merit that it might with perfect propriety be classed as the most thoroughly artistic. That is probably just what the builders of the old Spanish missions would have done if they had had concrete to use for their buildings. To be sure, if such treatment is to be used, some care should be exercised in the preparation of the formwork, so that it will not result in the effect of a lot of patchwork.

In more pretentious work several methods of treating the exposed concrete are available. A thin skin or crust of port cement usually is found to cover the surface where concrete was deposited wet and was well tamped. This crust may be removed while still soft by means of a stream of water having some force, or by stiff wire brushes, in which cases the forms must be removed promptly and just as soon as the work will stand it. This, however, involves considerable danger and should be done only by thoroughly experienced persons. If successfully accomplished, the effect of the rough surface thus produced is good and consistent, for it exhibits the material in its true nature and avoids all semblance of artificiality.

This treatment, however, entails so many difficulties that it will not be very popular, and it will be advisable to adopt some other simpler and safer method giving similar results. The surfaces can be tooled all over with a chisel and some classes of stonework, but while the result may be effective, it is rather expensive and slow work and will therefore be but sparingly used. It is difficult, too, to avoid loosening an occasional pebble or stone and thus spotting the surface with objectionable blemishes, and possibly opening up some internal cavities which are quite apt to occur and so starting a leak in the wall.

A simple and inexpensive yet thoroughly practical method of securing an artistic effect consists of covering the wall surface with a splatter-dash coat of cement mortar

applied by splashing it on with a paddle or a broom, or, better still, it may be first spread on with a trowel and then roughened by stippling with a stiff broom or brush or even a flat board, in which case the roughening is obtained by suction against the board. When such treatment as this is to be used, it may be highly appropriate in some cases, and, indeed, quite interesting, to decorate parts of the surface with some simple panelwork or freehand modelling. In case of panels it is best and simplest to adopt sunken work, as this can be readily produced by merely planting a board or block of desired shape against the inside face of formwork, which leaves its impress upon being removed from the concrete. Or else a reverse mould made of some artistic bit of carving for a panel, or over a door or window, or a frieze, &c., may be nailed against the forms, and the resulting impress will be thoroughly effective, although a much higher artistic value would be due such work if it were modelled by hand directly in the cement mortar as it is applied and before it has had a chance to harden.

This sort of work is being done extensively and successfully in Germany, where the modern style of "Nouveau art" presents abundant opportunity for endless designs. It is already finding much favour in our own country and ought to reach a high degree of development.

Mouldings, especially in continuous courses, if attempted at all, should be of the simplest possible design; bold, yet of moderate projection and free from small delicate members. Square effects and bevelled projections serve very well in the place of conventional moulding, and rather accentuate the character of the work and heighten its effect. Dentils of fair size can be worked in to good advantage and with comparatively little difficulty. Such work should, however, be used sparingly, on account of the impracticability of treating the surface of the resulting small members, unless great freedom and latitude are allowable, without detriment to the artistic character of the design. It is particularly difficult to do this in case the walls are to be plastered over with cement mortar. Where this is done, the work should be finished under the float rather than the trowel, so as to minimise the tendency to crack or craze, a great source of annoyance and disfigurement. Trowel finish, furthermore, almost invariably produces a

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SAMPLES SENT ON APPLICATION.

series of blotches of different shades and textures which, if introduced into rough work, have much artistic value, but must be classed as nothing better than blemishes in smooth trowelled surfaces. Moreover, it is extremely difficult and well nigh impossible in plastering over moulding or projecting band-courses, to keep the edges straight and true as they should be in smooth finish, with the result that the poor slovenly workmanship imparts an air of cheapness and flimsiness to the building instead of the reverse, value and substance.

Such then are some of the readier methods that can be employed in producing artistic effects with concrete. This humble material, so replete with possibilities, but as yet so little understood, is manifestly destined to take an important place in the construction of our buildings and must therefore strongly influence their design. But it means long, continuous and close observance and study of its nature, its possibilities and its limitations. If our designers will devote themselves sufficiently to this subject, as it so well deserves, they will discover in concrete a new and useful friend, and with its help will evolve a new architecture, full of life and character, strength and dignity, and all else that goes to make up a living style.

EDINBURGH BY-LAWS.

At the Edinburgh Dean of Guild Court Mr. George Marr, solicitor, asked to be allowed to deviate from plans previously before the Court in regard to two tenements at Piersfield. Lord Dean of Guild Wilson said the Court could not approve of the deviation so far as the piers were concerned, and Mr. Marr pointed out that the burgh engineer's inspector gave his approval to their erection. The Dean said that was not according to their information. The applicant had gone in defiance of his warrant, and the Court could not and would not grant warrant for these piers. The Court took exception to the piers on the question of their strength, and on their recommendation the petitioner agreed to put up iron pillars alongside of the piers to strengthen them. That had not been done, but something different.

Mr. Marr said his client was quite willing to do that. No full inquiry had been made, and they were quite satisfied that the building material would be sufficient and satisfactory. Provided the buildings were structurally of sufficient strength, he thought he was entitled to have what asked for, though he might have been guilty of an offence and subject to a fine. It was assumed that the material was sufficient and that it was approved of.

The Dean asked how that could be assumed when the Court never saw what was being done? They expected the petitioner would build according to the warrant granted, but instead of doing what he was asked to do, he had put up brick piers instead of stone ones. The question of brick piers was never before the Court at all. The inspector reported on the case from time to time, and the petitioner, though he got warning about it, persisted in the work.

Mr. Marr: No, I was never warned as regards the piers. I got no intimation that the piers were considered unsatisfactory. That is the point on which my case rests.

The Dean: You never could have got the Court to sanction piers such as you have built. I do not consider them built at all in the proper sense of the word. The foundations are not good to begin with, and the piers built with blue brick. And what sort of mortar have you used? It was mixed with soil, and the Court would not allow that. The public must be protected.

Mr. Marr asked if the case could be continued, and the Dean, in replying, said they would be quite prepared to do that, but on no account would they allow the piers to exist as they were. They must come down, and when they came down they must have proper foundations.

Mr. Alexander Mitchell, the builder, pointed out that they took down the piers the whole building would fall.

Mr. Marr thought they were entitled to have a clear pronouncement of the Court as to what they were required to do. He was advised that he was entitled to rely upon the burgh engineer's inspection. They were desirous of doing everything possible to make the building satisfactory to the Court.

The Clerk of Court (Mr. David Lyon) said it was not for the Court to prescribe; it was for the petitioner to make another suggestion, and it would be considered.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50l. and 25l. to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25l. will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

CONTRACTS OPEN.

BARROW-IN-FURNESS.—Feb. 4.—For the erection and completion of proposed witnesses' rooms at the police-court. The Borough Engineer, Town Hall.

BIRMINGHAM.—Feb. 5.—For alterations and additions to the warehouses and buildings in the occupation of the Severn and Canal Carrying Co. at the Worcester Wharf. Mr. W. F. Hobrough, local engineer of the Worcester and Birmingham Canal, Stoke Prior Wharf, near Stoke Works Station.

BIRSTWITH.—Feb. 6.—For erecting three cottages at Birstwith, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, York.

BLAYDON-ON-TYNE.—Feb. 6.—For erecting goods warehouse, &c., for the North-Eastern Railway Co. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

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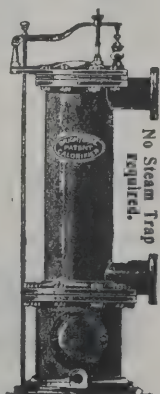
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BURY ST. EDMUNDS.—Feb. 11.—For the erection of a covered grand stand to accommodate about 3,500 persons, and other work in connection therewith, for the Bury St. Edmunds pageant, July 8 to 13. Mr. Walter D. Harding, A.M.I.C.E., engineer, Town Hall, Bury St. Edmunds.

BURY.—Feb. 2.—For the joiners' work and painting required in connection with the museum at the art gallery. The Borough Engineer, Bury, Lancs.

BURY.—Feb. 2.—For the erection of the extension to the central tramway depôt in Rochdale Road. Deposit 2*l.* Mr. Arthur W. Bradley, A.M.I.C.E., borough engineer and surveyor, Bury, Lancs.

CAISTOR.—Feb. 6.—For alterations and improvements to the laundry at the workhouse. Deposit 1*l.* is. Mr. A. A. Padley, clerk, Union Offices, Caistor, Lincs.

CAMELFORD.—Feb. 2.—For the erection of a residence at Camelford, Cornwall. Mr. Ernest Wise, M.S.A. (Wise & Wise), Launceston.

CATERHAM.—Feb. 6.—For remodelling the two general bath-rooms at Caterham asylum, Surrey. Deposit 1*l.* Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, Metropolitan Asylums Board Offices, Embankment, London, S.E.

CHATHAM.—Feb. 12.—For the erection of a laundry building and bakery on land adjoining the workhouse at Chatham. Deposit 1*l.* is. Mr. E. Farley Cobb, architect, 20 High Street, Rochester.

CLANDON.—Feb. 4.—For the erection of a smallpox hospital about two miles from Clandon station, Surrey, on the London and South-Western Railway. Deposit 5*l.* 5*s.* Send names to Mr. T. W. Weeding, clerk to the Surrey Smallpox hospital committee, County Hall, Kingston-upon-Thames.

DUNDEE.—Feb. 5.—For erecting branch library at Perth Road. Mr. J. Thomson, city architect, Municipal Offices, 91 Commercial Street, Dundee.

DURHAM.—Feb. 7.—For erection and completion of thirteen dwelling-houses upon the Allergate building estate.

Deposit 1*l.* Mr. George Ord, architect and surveyor, The Avenue, Durham.

EASTBOURNE.—Feb. 15.—For alterations and additions to the laundry and kitchen at the Union workhouse. Mr. F. Cooke, architect, 2 Hyde Gardens, Eastbourne.

EGREMONT (CUMBERLAND).—Feb. 7.—For the erection of two houses at Mountain View. Mr. James Nicholls, sen., 11 Main Street, Egremont, Cumberland.

ESHER.—Feb. 5.—For the erection of a house and premises. Mr. D. G. Andrew, architect, Bridge Road, Epsom, Surrey.

GLASGOW.—Feb. 4.—For alterations and additions to Pinkston power station, for the Corporation. The whole work will be let in one contract. Mr. James Dalrymple, general manager, 46 Bath Street, Glasgow.

GREAT WYRLEY.—Feb. 11.—For Landywood new Council school, Great Wyrley (accommodation 350), Staffordshire. Deposit 1*l.* is. Apply to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

GREAT YARMOUTH.—Feb. 5.—For the extensions to caisson shed, Caister Road. Mr. J. W. Cockrill, M.I.C.E., borough surveyor, Town Hall, Great Yarmouth.

GUILDFORD.—Feb. 2.—For carrying-out additions, alterations and reparations to the old school buildings at the workhouse. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

HALIFAX.—Feb. 12.—For pulling-down old premises and the erection of four shops, offices and appurtenances thereto in George's Square. Mr. Thos. Kershaw, architect, Lancashire and Yorkshire Bank Chambers, Halifax.

HEREFORD.—Feb. 11.—For extensions to the building at the electricity station in Widemarsh Street. Mr. John Parker, city engineer, Hereford.

HULL.—Feb. 6.—For erecting shop for repairing and testing chains at Alfred Street, for the North-Eastern Railway Co. Mr. William Bell, the Company's architect, York.

HOVE.—Feb. 6.—For building office, shedding stores and other works at Sackville Road depôt. Mr. H. H. Scott, borough surveyor, Municipal Offices, Hove.

LANGWITH.—Feb. 4.—For the erection of an isolation hospital at Langwith, Derby. Messrs. Rollinson & Son, architects, Corporation Street, Chesterfield.

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MACCLESFIELD.—Feb. 13.—For the erection of a laundry Parker Street, for the Managers of the Macclesfield Sanitary Industrial school. Deposit 10s. Mr. Jabez Wright, architect, 27 King Edward Street, Macclesfield.

MANCHESTER.—Feb. 4.—For general builders' work required in erection of an electric-car depot at Chorlton Road. Deposit 2l. 2s. Mr. J. M. McElroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

MANCHESTER.—Feb. 6.—For the erection of the Grange Street special Municipal school, Bradford, and the Devonshire Street Municipal school, All Saints, Manchester. Deposit 2l. 2s. in each case. The Education Offices, Deansgate, Manchester.

MANCHESTER.—Feb. 16.—For the erection of engine and boiler-houses, offices, workshops, &c., for a hydraulic pumping station in Water Street. Deposit 1l. 1s. The City Engineer, Town Hall, Manchester.

MANCHESTER.—Feb. 11.—For the execution of general contractors and plumbers' work that may be required in connection with the drainage of houses and other premises for twelve months ending March 31, 1908, for the Corporation. Deposit 1l. 1s. Mr. H. Prescott, manager of the City Engineer's drainage department.

MATTERDALE.—Feb. 23.—For the erection of elementary school and master's house at Matterdale, Cumberland. Mr. Joseph Forster, architect, 13 Earl Street, Carlisle.

PENKETH.—Feb. 7.—For the erection of a public elementary school for 350 scholars at Penketh, near Warrington, Lancashire. Deposit 2l. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

RAINHAM.—Feb. 13.—For the erection of a house at Rainham, Kent. Mr. W. L. Grant, architect, Sittingbourne.

RAWMARSH.—Feb. 4.—For the erection of a Wesleyan church at Rawmarsh, Yorks. Names to Mr. W. J. Hale, architect, 13 St. James's Row, Sheffield.

REPPS-CUM-BASTWICK.—Feb. 4.—For the erection of a Primitive Methodist church. Mr. Arthur S. Hewitt, architect, Bank Chambers, Great Yarmouth.

ROCHE.—Feb. 11.—For new closets, new drainage scheme, playground enlargement, cloak-room alterations, &c., to the Roche Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

ST. ANNES-ON-SEA.—Feb. 9.—For the enlargement of Wesleyan church and schools. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

SCOTLAND.—Feb. 5.—For the erection of enclosing walls, railing and gate in connection with provision of new parish burying-ground at Balure, Kinlochspelve, Mull. Mr. George L. MacBain, surveyor, Tobermory.

SCOTLAND.—Feb. 5.—For post office at Stornoway. Deposit 1l. 1s. Mr. W. T. Oldrieve, H.M. Office of Works, Parliament Square, Edinburgh.

SCOTLAND.—Feb. 16.—For the erection of schoolmaster's house at Westruther. Mr. T. R. Atkinson, architect, Earlston.

SHEFFIELD.—Feb. 4.—For the erection of additions and alterations to the school and outbuildings in Mayfield, Fulwood. Deposit 1l. 1s. Messrs. C. J. Innocent & Son, architects, 22 High Street, Sheffield.

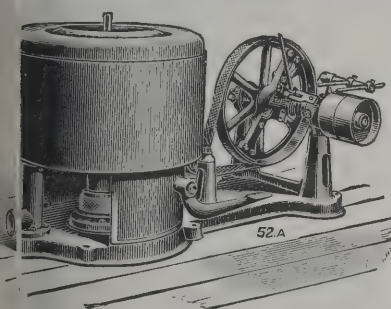
TOLWORTH.—Feb. 15.—For the erection of a ward pavilion and other additions and alterations at the Tolworth isolation hospital, near Surbiton. Deposit 5l. 5s. Mr. W. H. Woodroffe, architect, 57 Lincoln's Inn Fields.

VENTNOR.—Feb. 7.—For the completion of a pavilion at the pierhead. The Surveyor, Town Hall, Ventnor, I.W.

WALES.—For building Primitive Methodist Sunday school fronting Cromwell Road, Newport, Mon. Messrs. Newland, Davis & Hunt, architects, Commercial Street, Newport, Mon.

WALES.—Feb. 7.—For alterations and additions to the Tredegar Arms hotel, Crosskeys, Mon. Messrs. Lansdowne & Griggs, architects, Metropolitan Bank Chambers, Newport.

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WALES.—Feb. 16.—For erection of a reading-room, caretaker's cottage, &c., on site at Coedpenmaen, near Pontypridd. Mr. Philip John Jones, architect, Cilfynydd, near Pontypridd, and Tonyrefail.

WARRINGTON.—Feb. 8.—For the erection of a public elementary school, to be known as the Bolton Council school. Deposit 1*l*. 1*s*. Mr. J. Moore Murray, secretary and director, Education Office, Sankey Street, Warrington.

WATFORD.—Feb. 6.—For the erection of stores, buildings and stables at the Council offices. Deposit 1*l*. 1*s*. Mr. D. Waterhouse, surveyor to the Council, 14 High Street, Watford.

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WINCHESTER.—Feb. 6.—For alterations to the Corn Exchange. Mr. J. Ashton Sawyer, chartered surveyor, 59 High Street, Winchester.

WORCESTER.—Feb. 8.—For the rebuilding of Tyseley bridge, on the Warwick main road, in the parish of Yardley. Mr. J. H. Garrett, county road surveyor, Shire Hall, Worcester.

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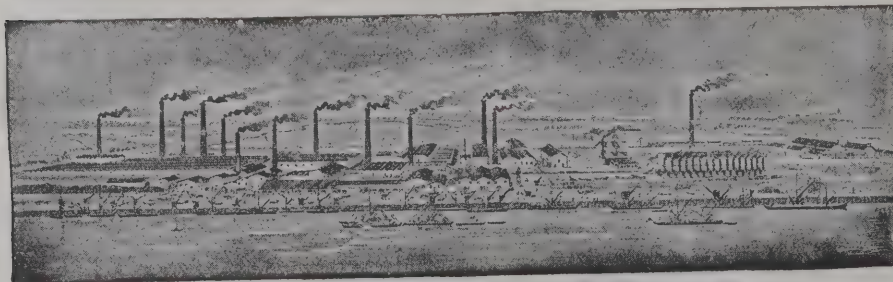
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ROBSON, Newcastle (accepted)	448	0	9

CLACTON-ON-SEA.

For the erection of model laundry, Convalescent Road, Messrs. BAKER & WRIGHTSON, architects, Clacton and London.

Chambers	£1,664	0	0
Burch	1,660	0	0
Farr	1,598	0	0
Dobson & Son	1,585	0	0
Gladwell	1,577	0	0
Everett & Son	1,530	0	0
Ellis & Co.	1,530	0	0
Canler	1,470	0	0
Linzell	1,469	0	0
Marrable	1,403	0	0
McKay	1,398	0	0
SMITH, Clacton (accepted)	1,389	0	0

ENFIELD.

For the erection of junior mixed school at Bush Hill Park. Mr. G. E. T. LAWRENCE, architect, 22 Buckingham Street, W.C.

Evans & Co.	£14,554	0	0
Tout	8,283	0	0
Roberts & Co.	8,000	0	0
Oak Building Co.	7,997	0	0
Hyde & Co.	7,990	0	0
Jackson & Co.	7,943	0	0
Davies & Son	7,900	0	0
Pavitt & Sons	7,869	0	0
Rowley Bros.	7,781	0	0
Parker & Son	7,744	0	0
Price	7,727	0	0
Foster	7,673	0	0
Patman	7,653	0	0
Patman & Fotheringham	7,500	0	0
Brand	7,382	0	0
Parsons	7,377	0	0
Mattock & Parsons	7,373	0	0
Clayton	7,249	10	0
Thomas & Edge	7,200	0	0
Nightingale	7,173	0	0
Wall	7,120	0	0
Fitch & Co.	7,111	0	0
Monk	7,075	0	0
Moss & Co.	7,075	0	0
Hawkins & Co.	7,017	0	0
Sabey & Son	6,900	0	0
Fairhead & Son	6,897	0	0
Wisdom Bros.	6,858	0	0
Harris & Son	6,750	0	0
Lawrence & Son	6,694	0	0
Guttridge	6,649	0	0
Clark & Son	6,628	0	0

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ETHERIDGE, Old Kent Road, S.E. (accepted)	704	14	5

HENFIELD.

For supply and laying 2,500 yards of 4-inch water-main at Henfield. Mr. F. SLAUGHTER, surveyor.

Duke	£994	0	0
Martin	940	0	0
Huley	800	0	0
McDonald & Hunt	750	0	0
Soan	744	0	0
Roberts	720	0	0
Davies, Ball & Co.	706	0	0
Rutter & Sons	669	0	0
Osman	668	0	0
Hughes	660	0	0
Peattie	655	0	0
King	635	0	0
Collingwood	600	0	0
Watson	595	0	0
STREETER & Co., Godalming (accepted)	585	0	0

IRELAND.

For the erection of tower and spire at Julianstown Church, lengthening church and other alterations. Mr. J. F. FULLER, architect, Dublin.

J. Pemberton	£2,476	0	0
H. Pemberton	2,295	0	0
Collen Bros.	2,290	0	0
Smullen & Son	2,178	0	0
Donovan & Son	2,160	0	0
Bolton & Son	2,100	0	0
Crampton	2,090	0	0
Henley	1,873	0	0
M'LAUGHLIN & HARVEY (accepted)	2,170	0	0

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Dublin.			
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Kennedy	575	0	0
Dowd & Son	546	12	0
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M'Namara	506	5	0
Jolly	501	0	0
LITTLE (accepted)	483	3	0

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MAGUIRE & GATCHELL (accepted)	169	0	0
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For additional work.

MAGUIRE & GATCHELL (accepted)	54	0	0
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For alterations and additions to Woodcote Lodge, Kenilworth. Mr. C. M. C. ARMSTRONG, architect, Warwick.

G. F. Smith & Sons	£1,660	0	0
E. SMITH & SON, Kenilworth (accepted)	1,499	18	0

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Moss	5,100	0	0
Oldridge & Sons	5,087	0	0
Parsons & Townsend	5,035	0	0
Hawkey	4,922	0	0
Potter Bros.	4,850	0	0
Clayton	4,794	0	0
Roberts & Co.	4,750	0	0
Drowley & Co.	4,709	14	0
Price	4,597	0	0
Fitt	4,585	0	0
Foster	4,555	0	0
Hyde & Co.	4,455	0	0
GODDARD & SON, Dorking (accepted)	4,449	0	0
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Turnbull & Son	£550	0	0
Kennard Bros.	508	0	0
STAINES & Co. (accepted)	490	0	0

For the construction of underground convenience at Brockwell Park. Mr. HENRY EDWARDS, borough engineer.

Builders' work.

Doulton & Co.	£2,670	0	0
Spencer, Santo & Co.	2,628	0	0
Thomas & Edge	2,558	0	0
Jennings, Ltd.	2,506	5	10
Parsons	2,476	0	0
Moss	2,460	0	0
Mellows & Co.	2,460	0	0
Lacey	2,431	0	0
Glendinning	2,343	7	0
Wall	2,520	0	0
Pasterfield & English	2,198	0	0
F. & G. FOSTER (accepted)	1,992	0	0

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Pasterfield & English	396	0	0
Lacey	359	0	0
Thomas & Edge	300	0	0
Parsons	289	0	0
Jennings, Ltd.	280	12	8
Moss	280	0	0
Spencer, Santo & Co.	260	0	0
Doulton & Co.	256	0	0
G. & D. Musgrave	233	10	0
Mellows & Co.	217	0	0
Glendinning	214	4	4
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Whole tenders.

Martin, Wells & Co.	2,819	0	0
Nightingale	2,394	0	0

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For alterations and additions at infirmary, Lower Road, Rotherhithe. Mr. A. H. NEWMAN, architect, 31 Tooley Street, S.E. Quantities by Messrs. W. T. FARTHING & SON.

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Reason	45,500	0	0
Godson & Sons	45,473	0	0
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White & Co.	44,877	0	0
Johnson & Co.	44,700	0	0
Holliday & Greenwood	43,997	0	0
Moss & Sons	43,609	0	0
Minter	43,355	0	0
Wall	43,300	0	0
Blake	43,200	0	0
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PORTER, 2 Arthur Street, N.E. (accepted)	1,467	13	6

Knightland Road.

Griffiths & Co.	980	13	11
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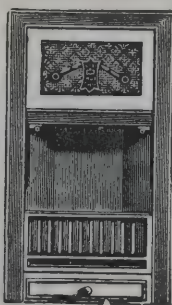
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Bird & Co.		575	0	0
Stubbs, Son & Hall		539	0	0
Hughes		516	0	0
Allin & Sons		475	0	0
Ell		460	0	0
Blakeborough & Sons		460	0	0
Davies, Ball & Co.		391	0	0
Porter		385	0	0
FLEMING, Clifton Street (accepted)		327	0	0

For the erection of conveniences at Mountsfield Park, Hither Green.

Thomas & Edge		£310	0	0
Harding & Son		266	10	0
Smith & Son		259	0	0
Stevens		235	0	0
LOASBY & SALMON, 224 Hither Green Lane, S.E. (accepted)		227	0	0

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For additions to Singlegate Council school. Messrs. A. W. JARVIS & F. A. RICHARDS, architects, Westminster.

Hawkins		£1,072	10	0
Mark Patrick & Son		1,059	0	0
Kemp		1,049	0	0
Kent		1,040	0	0
Patrick		1,040	0	0
Kelland		986	0	0
Dove Bros.		979	0	0
Rice & Son		959	0	0
Duncan, Stewart & Sons		957	0	0
Martin, Wells & Co.		957	0	0
Burgess & Sons		920	0	0
WALLER (accepted)		912	0	0

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For the erection of boot and shoe factory. Messrs. MORGAN & BUCKINGHAM, architects, Norwich.

Carter & Wright		£17,022	0	0
Hawes & Sons		15,900	0	0
Smith		15,400	0	0
Greengrass		15,386	0	0
Hurn		15,370	0	0
Scarles Bros.		14,938	0	0
Daws & Sons		14,739	0	0
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Amy	1,025 0 0	824 0 0
Free & Sons	815 0 0	631 10 0
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Yewen	717 0 0	579 0 0
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Child	426 13 6
Plumb	425 0 0
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Batten Bros.	385 0 0
Fisher Bros.	370 0 0
GUNTER, Broadway (accepted)	340 0 0

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For the laying of mains in connection with the water supply of Whittington and Gobowen, for the Oswestry Rural District Council. Messrs. BERRINGTON, SON & MARTIN, engineers, 28 Victoria Street, Westminster, S.W., and Wolverhampton.

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Dean & Co.	3,937 11 6
Tyler	3,729 9 8
Smith & Co.	3,363 0 6
Clark	3,311 0 0
Buckley	3,190 0 0
Higgins	3,012 6 0
P. & S. Kearsley	3,007 13 0
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Horswill	533	0	0
King & Barker	514	0	0
Holliday	477	15	0
D. T. Jackson	432	6	3
J. Jackson	419	8	8
Symes	405	0	0
Wilkinson & Co.	403	19	7
Wood	403	0	0
Horlock & Son	400	0	0
Westgate	381	0	0
Jerram	340	14	10
WORKS MANAGER (accepted).	323	0	0

(Received too late for classification.)

LEIGH-ON-SEA.

For the erection of new infants' school at Leigh-on-Sea.

Loasby & Salmon	£5,439	0	0
Dowsing & Davis	4,143	0	0
Brown	4,049	10	0
Green	3,880	0	0
Stephens & Bastow	3,868	0	0
F. & G. Foster	3,781	0	0
Roberts & Co., Ltd.	3,560	0	0
Rayner	3,385	0	0
Eaby & Chivers	3,362	15	5
Moss	3,300	0	0
Potter & Son	3,250	0	0
Crisp & Jones	3,249	0	0
F. & E. Davey, Ltd.	3,157	0	0
E. Davey	3,148	0	0
Elvy & Son	3,129	0	0
Hammond & Son	3,087	0	0
F. Davey	3,047	0	0

Recommended that the tender of Messrs. J. S. Hammond & Son, of Romford, for the sum of 3,087*l.*, be accepted; but, failing their completion of the contract, that the tender of Messrs. R. Elvy & Son, of Southend, for the sum of 3,129*l.*, be accepted.

TRADE NOTES.

MESSRS. HAHN & Co., timber importers, of Alexandra Wharf, Victoria Docks, London, E., inform us that they have altered their telephones, and they are now 1374, 1375 and 1376 East.

THE New Holland Council schools are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

BEFORE specifying for paints, architects should read the small handbook concerning "Velure," which Messrs. C. Chancellor & Co. have issued. "Velure" paints having been used for royal and other yachts, in Government buildings, for hospitals, in baths, gasworks, &c., have undergone severe tests which have proved their endurance.

WE have received from Messrs. Wm. E. Peck & Co. a very neat desk calendar issued with a sample of the "Samson" solid braided sash line, copies of which they will be pleased to forward on application. The merits of the "Samson" cord are now widely known. The care taken in manufacturing the various sizes, ranging from 3-16th inch for sashes weighing up to 10 lbs., to 3-8th inch for sashes heavier than 90 lbs., accounts in a great measure for its durability.

MANY builders in the Metropolis believe that to store timber on their own premises adds too much to the cost of the material, owing to the high price which has to be paid for land. They find it is far more economical to trust to timber merchants. In eastern London Mr. E. C. Young has provided a stock of timber in his yard in Virginia Road, Bethnal Green, which is equal to meet all emergencies. Not only timbers required in everyday use, but mahogany, walnut, teak and other varieties are obtainable without delay. Ready-made balusters, newels, brackets, and it may be said whatever is needed in machine work, can be found on the extensive premises. The arrangements are adapted to meet builders' requirements promptly, carefully and economically, and Mr. Young's success since he started augurs well for his good fortune in the future.



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ILLUSTRATIONS.

THE NEW WAR OFFICE, WHITEHALL.—DETAIL OF EXTERIOR.

MARINERS' CHURCH, ST. IVES.—FROM SOUTH-EAST—INTERIOR.

THE COTTAGE, HIGHLANDS ESTATE, ST. LEONARDS-ON-SEA.—THE DINING-ROOM—THE HALL.

BOROUGH OF GLOSSOP PROPOSED CONVALESCENT AND NURSES' HOME.

VARIETIES.

THE directors of the Theatre Royal, Dublin, propose to expend a large sum on the erection of a winter garden as an annexe to the theatre.

MR. E. H. BALLARD, of Doncaster, is the architect for a new wing to the Yorkshire Institution for the Deaf and Dumb, at Doncaster.

THE architects for the new boiler and engine-houses being erected for the Accrington Gas and Water Board at a cost of 5,449*l.* are Messrs. Haywood & Harrison, of Accrington.

THE architectural practice recently carried on by Mr. Walter Slater at 9 High Street, Wrexham, has been purchased by Mr. C. D. Rutter, who will carry it on in future under his own name.

SOME time ago work was found for eighty-nine unemployed at the Salford sewage works in connection with the clearing away of an embankment between two sets of trestles. Of this number twenty-three discharged themselves and only one has completed sixteen weeks' work.

THE Dixon House Cricket Club, formed by members of the head-office staff of the Associated Portland Cement Manufacturers (1900), Ltd., held their sixth annual Bohemian Concert on Wednesday, the 30th ult., at King's Hall, Holborn Restaurant, Mr. Herbert E. Brooks being in the chair. A most excellent programme was presented and thoroughly enjoyed by the large audience present. The artists, stewards and concert committee are to be congratulated on their successful efforts.

THE War Office scheme for the enlargement of the buildings of the Royal Military College at Sandhurst is now in progress. It is intended to increase the accommodation to twice the present size, so that 700 officer cadets can be constantly under training. The plans for the extension have been sent down to the Barrack Construction Department of the Royal Engineers at Aldershot, and the work is to be commenced at once, the estimated cost being 186,000*l.*

THE Lichfield City Council considered last week the appointment of a city surveyor and sanitary engineer in the place of Mr. Emerson Brooke, who has resigned. A sub-committee reported that they had selected six from the 214 candidates, and these were interviewed by the Council. Eventually Mr. W. B. Chancellor, surveyor to the Brownhills Urban District Council, was appointed. The salary is 200*l.* per annum.

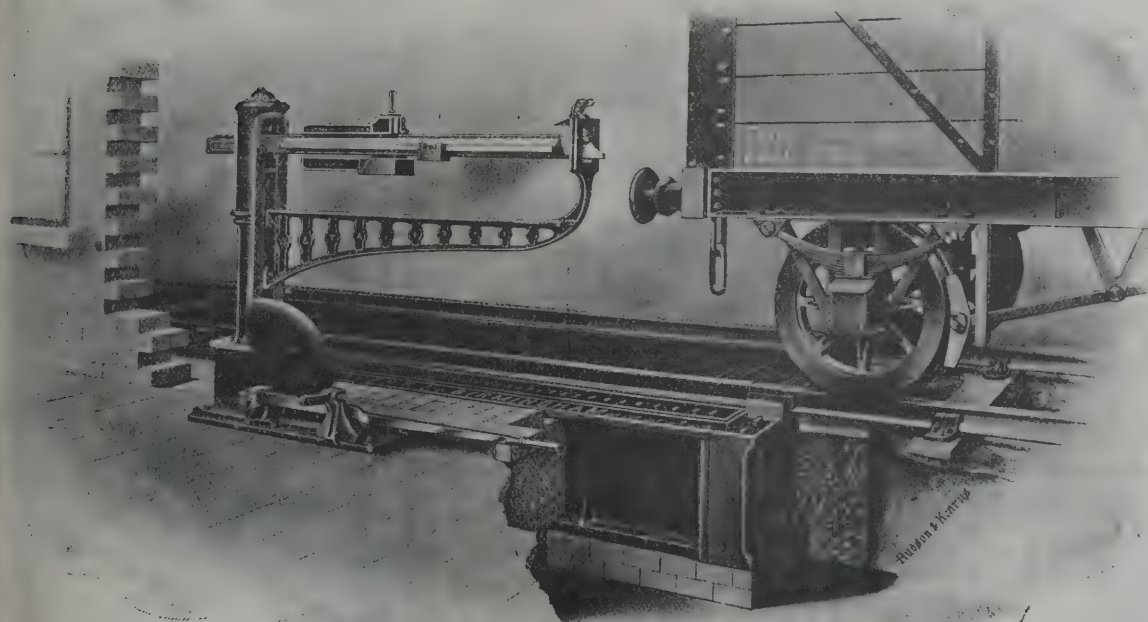
THE brick manufacturers in the Oldbury, West Bromwich, Rowley and adjacent Black Country districts have agreed that the price of common bricks will be advanced 1*s.* per 1,000 on February 1. They state that the prices of coal and other articles largely used in making bricks have been advanced considerably lately, the effect being that producers are not obtaining a fair amount of profit, whilst in some cases the common-class bricks are being sold below cost price. It may be mentioned that the rate at which common bricks are being sold at the present time is 5*s.* or 6*s.* per 1,000 below what it was six years ago.

INFORMATION has been received at the Board of Trade from the Italian Consul-General in London to the effect that the committee of the Palermo hospital are calling for tenders for the construction of new buildings at an estimated cost of 2,705,538 lire (about 108,222*l.*). Contractors prepared to undertake the work must send documents (plan, specifications, &c.), to the secretary of the hospital at Palermo, and deposit an amount as caution money not later than eight days before April 5 next, when tenders will be opened at 4 P.M. Further particulars may be seen at the Italian Consulate General in London, 44 Finsbury Square, E.C.

SIR WALTER PHILLIMORE has made an offer to the Kensington Borough Council, through his estate agents, to



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Capacity
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surrender land 542 superficial feet in area for the widening of the southern portion of Hornton Street, leading into Kensington High Street. The ground is of considerable value, but it is pointed out that "by reason of his interest in the borough he does not ask for any payment." The works committee recommend that the offer be accepted, the sum of 45*l.* to be spent by the Council in making the requisite alterations.

THE King's Norton and Northfield District Council held a meeting last week in accordance with statutory provisions to deal with the Bill which the Council are promoting to obtain further powers in respect to tramways, electric lighting and main roads, and to make better provision for the good government of the district. The Chairman announced at the beginning of the meeting that the threatened opposition of the builders to the Bill had been withdrawn, on the undertaking being given to make it clear that the Council did not claim a right to original plans and drawings, and on accepting the gravelling of courts as an alternative to flagging.

At the Salford County Court, before his Honour Judge Parry, it was stated that a labourer had twisted his knee on October 31 while employed on the conversion of a chapel in Greengate into a warehouse. The staircase upon which he fell was covered with debris at the time he was asked to ascend it by his employer. The defendant urged that compensation was not recoverable under the Act owing to the fact that the building was merely in course of conversion and not in process of demolition. When a substantial part of a building was left standing and incorporated into a new building there was no demolition. His Honour said it was clear that the building was being partially pulled down, and that under judgments of the House of Lords partial demolition must come within the meaning of the word "demolition" and not within that of the words "construction" or "repair." Why the Act of Parliament should leave out this particular act of partially demolishing a building over 30 feet in height he was unable to say. He certainly regarded this as one of those miserable points which would probably not trouble their brains after July 1. He awarded the plaintiff 8*s.* a week from fourteen days after the accident until March 1, to be followed by a declaration of liability and a nominal award.

LIBRARY AND MUSEUM FOR PLYMOUTH.

THE decision has been given in the competition for the new free public library and museum for Plymouth, by Mr. Henry T. Hare. Mr. Hare's award was as follows:—

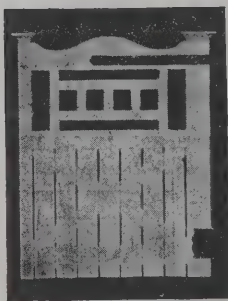
- 1st, Messrs. Thornley & Rooke, the Crescent.
- 2nd, Mr. J. Leighton Fouracre, Garden Street.
- 3rd, Mr. John H. Vincent, Garden Street.
- 4th, Mr. B. Priestly Shires, Old Town Chambers.

The building is designed to fill in the entire length of available frontage to Tavistock Road, at present vacated with the proposed new buildings, screening as far as possible the somewhat unsightly returning walls of the existing shops in that thoroughfare.

The library is provided with a central entrance, from which access is gained to the borrowers' counter, which is upwards of 65 feet in length, and provided with the usual indicators. On the right, upon entering the entrance hall, will be found the general reading and newspaper-room, 57 feet by 42 feet, possessing not only cross-ventilation from Tavistock Road and Tavistock Place but also a certain amount of top-light. The room is also in direct communication with the lending library, and is thoroughly well supervised by the porter from his office. On the left-hand side of the hall will be found the lecture room, 41 feet by 30 feet, which faces Tavistock Road, and has an emergency exit direct to the street, the exit being also in touch with a lecturer's retiring-room, lavatory, &c. There is also a magazine-room, 39 feet square, amply lighted from Tavistock Place, as well as top-lighted. The lending library provides accommodation for 26,900 volumes and has a separate staff entrance, conveniently approached from Tavistock Place. A wide and ample stone staircase leads to the first floor, where will be found allocated the local collection room and reference library, the sizes being respectively 41 feet by 30 feet and 55 feet by 43 feet. One attendant can completely supervise both these rooms from a central counter. These rooms are lighted from both sides of the wall, through ventilation again being attained, and both are top-lighted. On this floor also is situated the librarian's room, 25 feet by 18 feet, with strong-room accommodation attached. It will be possible for the librarian to supervise a large amount of the lending

Entrance and Wicket Gates.

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Free.

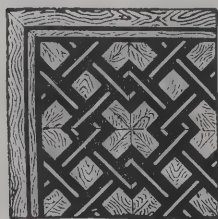


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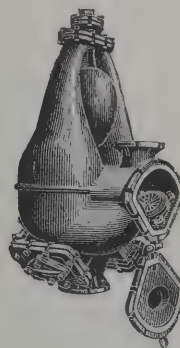
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For Index of Advertisers, see page x.

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Has no moving parts except the valves.

Needs no skilled attention.
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On Sale or Hire.

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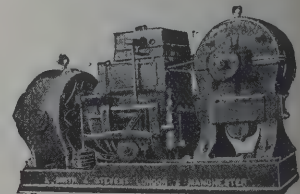
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VOLUME LXXVI. OF THE ARCHITECT
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Imperial Buildings, Ludgate Circus, E.C. 4.

library and borrowers' counter downstairs by means of a bay window looking into the space below. The librarian has direct access from his room not only to the reference library, but also to the stack-room, where the main bulk of the books for the reference library are stored, as well as to the working portion of the library. The stack-room gives accommodation for 26,000 volumes, and in close connection with it will be found the catalogue-room, store and binding-rooms, the whole being connected with the ground floor by means of a special staff staircase. In the basement are the usual book stores, general stores, packing-room and reading cellar. The basement is connected with the rest of the building, both by means of a staff staircase as well as a book lift. A separate entrance is also provided for large packages of goods, &c.

The museum has a spacious entrance hall about 45 feet square. It is top-lighted, and has a gallery running round the four sides, from which it will be possible to look down into the hall. The gallery forms part of an arched arcade and forms an imposing feature in the design. There is an ample stone staircase at the further end of the hall, in direct view of the public entering the main entrance. On each side of the main entrance will be found cataloguing and cloak-rooms. On the ground floor are two imposing galleries, 80 feet by 30 feet, and over these picture galleries of a similar size, top-lighted. The museum galleries have ample windows provided in both walls. Provision has been made for two large galleries on each floor as regards future extension, and so arranged that the public will be able, when they are built, to traverse the rooms without crossing the main entrance. A staff staircase and goods entrance, with lift in connection therewith, are provided in Tavistock Place, and the work-rooms are in close connection with them. In the basement is a large lecture-hall, accommodating some 300 people, which can be approached from Tavistock Road, as far as the public are concerned, without entering the museum, and there is also an emergency exit in connection with the lecture-hall to Tavistock Place, which again can be utilised without traversing the museum entrance hall. A laboratory is in the basement for the curator's use. It is at the platform end of the lecture hall, and it will be available for science demonstrations, &c. As regards the elevation to Tavistock Road, it has been

felt desirable by the architects to carry both the museum and library through at one continuous level, so as to obtain the architectural composition asked for by the assessor in the instructions to the competitors. The acute slope of the street has, however, entailed the library windows being introduced at some different levels to those of the museum. It is at present proposed to face a large portion of the building with local limestone, the dressings and the mouldingwork generally being in Portland stone. The style of the architecture may perhaps be best described as a simple treatment of English Renaissance. The total cost of the scheme as submitted by the architects is 25,000*l.*, viz. 13,000*l.* for the library and 12,000*l.* for the museum and art gallery.

CORRESPONDENCE.

Window Cleaning at Hotels.

SIR,—The dangers which window cleaners run in working without efficient safeguards have unfortunately been again exemplified by a fatal accident at a London hotel. It is not difficult, however, to provide against accidents of this class. A strong leather belt to be worn by the window cleaner and provided with a life line, which can be attached temporarily to the top of a window opening, is all that is required. My own firm made a number of these for the London School Board, and have recently fitted 150 windows at Holborn Viaduct Chambers, for the Chatham and Dover Railway, with the necessary "eyes" to take the steel snap-hooks which are attached to the life line. The belt, &c., is sufficiently strong to hold a man if he slips off a sill, and, were some such inexpensive appliance in regular use, there would be no more accidents of the class referred to.—Yours faithfully,

J. C. MERRYWEATHER.

Whitehall Court, S.W. : January 30, 1907.

T-SQUARE CLUB.

THE Ladies' Night will be held on Tuesday, February 12, at the theatre of the Guildhall School of Music. An architectural play, "The Mystery of Marcus, or Antony and Cleopatra in a New Light," by Mr. T. H. Leverton, will be performed. Non-members can obtain tickets of Mr. Leverton, at 10 Lancaster Place, Strand.

THE "DRAWWELL" GRATE

WAS PLACED

First in the Final Tests

at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

N.B.—All Grates bear the Trade Mark and Name of "Drawwell" on firebrick to insure against imitation.

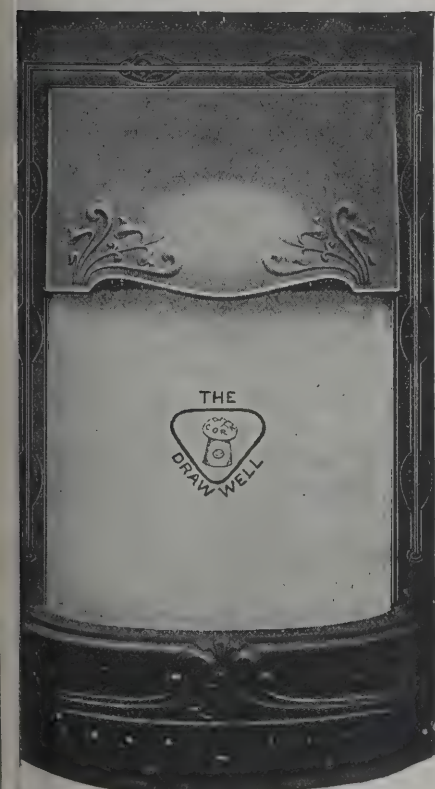
This Grate can only be supplied through Builders' Merchants, Ironmongers, &c., but Drawings and Particulars can be obtained from

J. & R. CORCKER, Ltd.,

GENERAL IRONFOUNDERS, Ferham Works, ROTHERHAM.

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W. B. CLARKE, Agent, where the "Drawwell" can be seen in action.



ENGINEERING AND SCIENTIFIC ASSOCIATION.

THE opening meeting for the session 1907 of the Engineering and Scientific Association of Ireland was held on Monday evening in the College of Science. Sir Charles A. Cameron, C.B., president, occupied the chair, and delivered an address on a subject which was of great interest to architects and engineers from a public point of view—the necessity of securing their houses from the entrance to them of organisms which were so injurious to health. In former years very little was known, he said, compared with what they now knew of the deadly character of these things. An interposing layer consisting of asphalt should be laid between the foundation-walls and those above the surface of the ground. The atmosphere below the surface differed very much from that above ground. The President urged that pure air was as absolutely necessary as pure water if they wanted to keep enteric fever away from their residences. He described the ground on which the city of Dublin was built near the river. He said that the eighty-four houses erected by the Corporation were built with every consideration for the public health, and he had never heard of a case of enteric fever breaking out in any of those houses.

The following members were elected:—C. Howard Egan, electrical engineer; R. H. Hall, borough surveyor, Naas; R. H. Moynihan, engineer-in-charge, Dublin water-works; Kynan Quang, assistant electrical engineer.

BUILDING REGULATIONS IN EDINBURGH.

THE application by Mr. George Marr, solicitor, to deviate from the original plans for two tenements at Piersfield, was again considered by the Edinburgh Dean of Guild Court. Mr. Marr asked the Court to receive an amended plan, and that his proposals be agreed to. The Dean said he was sorry to say the petitioner had not accepted the situation. It would have been very much better to have done what the Court asked. The Court adhered to their former warrant, and the piers must come down and be built with stone on a proper foundation. Mr. Marr sub-

mitted that what they had brought forward was a substantial structure. He thought that as it stood at present the structure was perfectly substantial, as well as the foundations. They were willing, however, to improve the foundations to the extent indicated. He would ask that in the circumstances the matter be remitted to the burgh engineer so that they might arrange with him. The Dean intimated that the Court were not prepared to do that. Mr. Marr said he was not aware that the Court took upon themselves to prescribe materials. He had always considered it was sufficient for the Court that the materials were substantial. The Dean: We do not consider them substantial. I would point out to you that either you or the builder signed the plans before the warrant was granted on the condition that they were to be stone piers, and it was pointed out at the time that they were not strong enough, and we asked you to put in iron standards. You signed for that and ignored the whole thing, and put up brick piers. Mr. Marr said there was no record as to stone being required. The Dean: We have it on the plan. Mr. Marr thought it was hard on him that objections should be taken now to the foundations. He submitted that had the burgh engineer considered the objections valid he should have insisted at the time in having the matter put right.

THE directors of the First Garden City, Ltd.—the Hertfordshire enterprise—report that the success of the company generally has been most encouraging. The accounts show an apparent loss of 5,575*l.* on the year. No credit, however, has been taken for any increase in the value of the estate beyond the amount of the actual outlay upon it. The ground rents created during the same period amount to 1,110*l.*; these represent, at twenty-five years' purchase, a capital value of 27,750*l.* This shows an increase in the value of the part of the estate comprised in the leases largely exceeding the cost incurred by the company in respect of it, without taking into consideration the increased value of the rest of the company's land resulting from the growth which these lettings indicate.

OUTSIDE FIRE ESCAPE STAIRCASES



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PLUMBERS' REGISTRATION COMMITTEE.

As the result of the polling of the whole of the registered plumbers in the London District, Messrs. John Knight and C. Rogersou, master plumbers, and F. Randall and W. J. Jarvis, operative plumbers, have been elected members of the registration committee for London for the present year. The other members of the committee are Messrs. W. D. Caröe, M.A., F.S.A., master; Chas. Hudson, R. P. Warden; J. W. Hart, R.P., and Dr. F. J. Waldo, J.P., representing the Worshipful Company of Plumbers; Messrs. W. Fayers, J. Johnson, J. J. Rawlings and C. Thomerson, representing the London Society of Associated Master Plumbers; Messrs. F. Barter, G. H. Manser and F. R. Wyatt, representing the London management committee of the United Operative Plumbers' Association; Mr. W. H. M. Smeaton, representing the London Plumbers' Society; Mr. T. W. A. Hayward, A.M.Inst.C.E., representing the Incorporated Association of Municipal and County Engineers; Mr. H. D. Searles-Wood, F.R.I.B.A., representing the Royal Institute of British Architects, and Mr. W. Atkins, R.P., representing the Executive Council of the United Operative Plumbers' Association of Great Britain and Ireland.

LAND VALUES TAXATION.

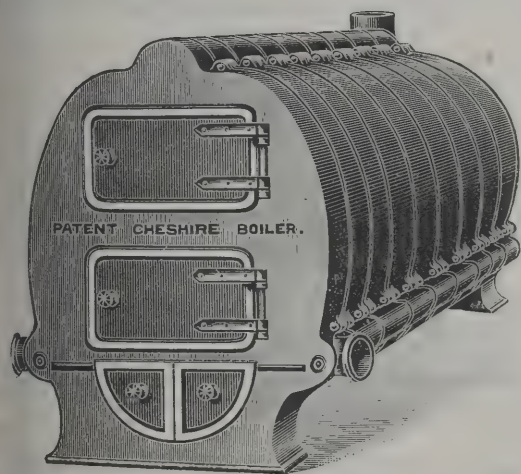
THE following report of the Local Government, Records and Museums Committee (No. 2) of the London County Council on the separate valuation of land explains the policy it is proposed to adopt:—

We have had under consideration the report of the Select Committee of the House of Commons appointed to consider the Land Values Taxation, &c. (Scotland) Bill. The main object of the Bill was to levy a new and additional rate, not exceeding 2s. in the £, on the owners of land in burghs, the rate being fixed according to the yearly value (calculated at 4 per cent. on the capital value) of land apart from the buildings and erections upon it. The Select Committee heard a very large amount of evidence, and had before them, amongst other documents, the report of the Royal Commission on Local Taxation, and, although they were of opinion that the particular Bill referred to them should not be proceeded with, they stated their views at

length upon the principle involved. Briefly, the conclusions arrived at were that the new standard of rating based upon the yearly value of land, apart from the buildings and improvements upon it, is sound and would prove advantageous; that to set it up, by estimating the value of land apart from buildings, is practicable; and that in making the valuation regard must be had to all restrictions validly imposed on the land, and to recent expenditure in preparing it for use.

The report of the Select Committee is probably the most important document on the subject since the report on urban rating and site values made by five members of the Royal Commission on Local Taxation in 1901. The Select Committee agree with the views expressed in the report of 1901, that a land valuation is practicable; that the charge would be an equitable readjustment of local burdens; and that it would encourage building, facilitate industrial developments and tend to assist in solving the housing problem; and they consider that the advantages are not dependent upon the question as to what proportion ought to be contributed by persons interested in the property. The Select Committee, however, go much further in their report. The minority report of the Royal Commission above referred to recommended that a small rate, limited to expenditure tending to increase the value of urban land, should be imposed on site values; whereas the Select Committee rejected the Scotch Bill on the ground, *inter alia*, that land values are not taken as the sole basis of rating, and recommended the introduction of a measure making provision for the valuation of land, apart from the buildings and improvements upon it.

It appears to be not unlikely that legislation will be introduced on the lines recommended by the Select Committee. We are of opinion that such legislation should not be restricted to Scotland, but should be extended to England and Wales, and we propose that the Council should so inform His Majesty's Government. We have given instructions for copies of the report of the Select Committee to be sent to members, and we recommend the Council to pass the following resolutions:—“(a) That His Majesty's Government be informed that, in the opinion of the Council, any legislation which may be introduced to provide for a separate valuation of land, as recommended

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by the Select Committee of the House of Commons upon the Land Values Taxation (Scotland) Bill, 1906, should be extended to England and Wales. (b) That a copy of the foregoing resolution be sent to the President of the Local Government Board."

THE WICK ESTATE, HOVE.

THE recent decision of the Hove Town Council to purchase St. Ann's Well and Wild Garden as a public park has been attended by immediate developments in the district, and an important scheme of road construction and house building on the Wick estate is now in progress. It embraces, says the *Sussex Daily News*, the construction of five new roads—one a continuation of Highdown Road westward to the bridge crossing the railway at Holland Road, with four roads leading from this in a north-easterly direction to the Old Shoreham Road. Hove residents know how remarkable has been the growth of property in the triangular piece of land between Montefiore Road and the Dyke Road, and how house-building is proceeding further westward between Montefiore Road and the Drive and on the southern side of Goldsmid Road. Then there is the new street being laid out between the railway and D'Avigdor Road. The latest scheme is, however, one of the most important of recent years.

Acting under the instructions of Mr. Mark Tucker (manager of the Wick estate), Messrs. Dudeney & Collings, of 74 St. James's Street, Brighton, have effected the sale by private treaty of about 14 acres of freehold land situate north of the railway line, and having frontages to Old Shoreham Road and Montefiore Road, and in conjunction with Messrs. Overton & Scott, of Ship Street, they have been appointed agents for the development scheme.

The new road westward from Highdown Road to the railway bridge is to be called Lyndhurst Road, and the four other roads running parallel with Montefiore Road to the Old Shoreham Road will be named Avondale Road, Glendale Road, Ferndale Road and Silverdale Road. In Lyndhurst Road plots will be laid out for about a hundred properties, some being reserved for the erection of shops. The frontages here will be about 18 feet per plot. The estate plans also provide for a frontage of 25 feet each for

fifteen good-class houses on the western side of Montefiore Road, while there are about twenty plots with 24-foot frontages, exclusively for private houses, on the Old Shoreham Road. For each of the other four roads running parallel with Montefiore Road, thirty-six frontages of 18 feet, suitable for the erection of small villas, are allowed for. The annual rental value of the proposed new properties will range from 35% to 55%.

The details incidental to the road-making are now well in hand, so that building operations may be commenced in the early spring. Messrs. Dudeney & Collings have already disposed of a number of the freehold plots, and they are in a position to offer other valuable frontages on reasonable terms.

THE SIZE OF CITIES.

THE general purposes committee of the Birmingham City Council are to consider and report whether, in their opinion, the time had arrived for a further extension of the city boundaries, especially in view of the fact that several outside local authorities were applying for incorporation. Mr. Chamberlain has been approached on the subject, and has replied, through his private secretary, as follows:—

"Mr. Chamberlain would not like to give a final answer to such a question without seeing the report of the general purposes committee and learning what arguments they have in favour of the course they may recommend. Personally he still retains the conviction that a population of more than 500,000 cannot be governed to the best advantage from one centre, but there may be circumstances which would force a larger organisation upon us, and the increase of all the suburbs of Birmingham may raise exceptional conditions which necessitate exceptional treatment. Mr. Chamberlain, however, does not think that, even if it should be shown to be necessary, that these outside districts should be brought under one common control, it will be to the advantage of Birmingham. On the contrary, it will probably add to the expense in proportion to population. On the other hand, the different outside areas are insufficient in size and population to justify their formation into



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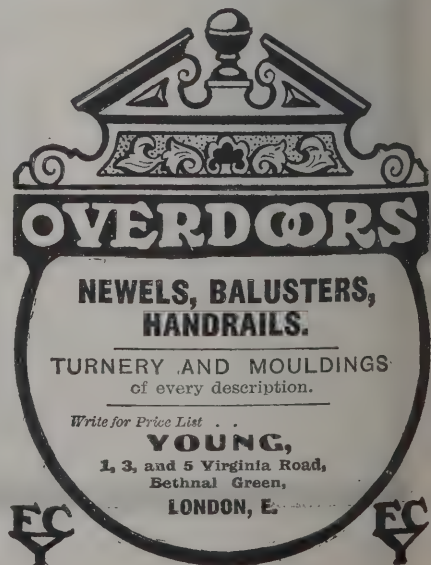
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separate municipal bodies, so that the general purposes committee may think that the time has come when they can no longer avoid the responsibility of enlarging our municipal area. Subject, however, to their opinion on this point, Mr. Chamberlain would be inclined to hope that it may be found unnecessary to increase the present municipal area of the city."

DEFECTIVE CONCRETE CONSTRUCTION.*

WHEREVER failures occur it is generally cement that has to bear the blame. And on this material all the sins of omission or commission are heaped, and yet it should be noted that it is extremely rare that failures are traceable to the quality of the cement used. Where an unbiased examination is made the failure is generally found to be due to bad workmanship, improper design, insufficient strength and a too early removal of the forms for the construction of all of these, and many failures occur from improper material, insufficient mixing, improper consistency for effective tamping. In these days of machine mixing too little attention is given to the rigorous inspection of the process. As an illustration of this point I would state that on a large piece of work the system used in the mixing of the concrete was such that the sand was thrown in by one man, the crushed stone by another and the cement by a third; the latter being called away from his post failed to perform his part, but during the interval the sand and stone went in with rhythmic precision. It is obvious what the effect of these batches of concrete would be, and how fatally they would affect the strength of an important part of the structure. In another case which I have in mind the cement, sand and stone were fed automatically from hoppers so adjusted as to give the requisite proportion. At the time of this inspection the cement hopper had choked, but the sand and stone were flowing on and the operator, who was totally unaware of the fact, remarked, when his attention was called to it, that he thought the concrete looked rather peculiar. Perhaps the greatest source of failure is the strength of the forms; too little attention is given to the

* From the presidential address by Mr. R. L. Humphrey at the meeting of the National Association of Cement Users in Chicago.

design of these forms and they are often made entirely too light for even normal conditions, and where a temporary load in excess of that for which the structure was designed comes upon it the structure is either dangerously strained or collapses. I have in mind cases where excessive quantities of cement have been stored on the green concrete structure, and in one instance producing a collapse of the floor panel.

Concrete of improper quality is often used, and I recently saw in New York cinder concrete consisting of one part of cement and five parts of cinders going into a reinforced concrete structure. Again, the length of time which should elapse before the centring is removed has a marked bearing on the question of failures. The time required for concrete to harden sufficiently to permit the removal of the forms is naturally a variable one, depending on the design, the weather condition and the strength of the concrete. A concrete with a small percentage of cement will require a longer time to acquire the requisite strength than a richer mixture; it will also take concrete longer to harden in cold than in warm weather, and a beam of long span must be stronger than the one of short span before the form can be removed.

Another source of failure is the lack of attention to details, especially as regards connections in the erection of a structure. The structure may be properly designed with the requisite amount of steel, yet the structure may be fatally weakened by the character of the connections. A reinforced concrete structure should be practically a monolith—the tension members must be continuous in beams and columns. It makes a material difference as to the length of the splice allowed in such columns or whether the splice in continuous beams is adequate. I have in mind an instance which came to my notice of an enterprising labourer who, observing the rod in a column projecting out of the concrete in the column of a several storey building, seized a sledge hammer and drove the bar down flush with the surface of the concrete. The remedy for all this is inspection, most careful inspection.

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and its quality must be ascertained before use. When we consider the way in which so delicate a material is handled by unskilled labourers it is not surprising that failures should occur. A steel beam or channel is fabricated at the mill and undergoes during the process of manufacture a most rigid and careful inspection, and in the erection again undergoes careful inspection. On the other hand a concrete structure is fabricated on the site and is subject to little, or at the best indifferent, inspection, and the unintelligent labourer contributes to the abuse. The same careful and rigid inspection should be given the erection of a concrete structure as a steel structure receives, and until this is done we may expect failures.

The comparatively few failures in concrete structures are allowed to overshadow the great number of excellent examples of well-designed constructions of this class. And it should be noted that what failures there are occur during the process of erection, and are almost invariably due to a too early removal of the forms or bad workmanship. The failure of a structure of concrete by reason of improper design, bad workmanship or poor materials, no more affects the value of concrete for constructive purposes than the failure of a structure of steel due to similar conditions should condemn steel for structural purposes. We may expect failures as long as incompetent men will undertake to design structures in concrete and unskilled and ignorant persons will attempt to "skin" the work for the purpose of increasing their profits; and it will only be the continual loss of life that results from these failures that will bring the authorities to such a realisation of their responsibilities as will result in laws which will properly safeguard the public.

Amid the ignorance and wonder that attends the use of a new material the charlatan practises his art unchecked, new forms of patented construction are constantly springing into existence, many absolutely devoid of merit, and the public are being proportionately humbugged and deceived. Plans and specifications are generally prepared by the contractor, and for every skilled competent contractor there are many who are incompetent, who do not hesitate to skin the work in order that they may finish it without loss of profit, having taken it at a figure entirely too low to admit of proper workmanship with first-class materials. Such prac-

tices are wholly unnecessary, for first-class legitimate construction can successfully compete with other forms of construction, and there are many reliable concerns capable of executing such work.

Owners, architects and engineers are criminally responsible where they award work to irresponsible contractors lacking in the requisite experience and knowledge for safe construction, or who permit structures to be erected under the direction of competent persons who do not give the work their personal supervision. Where the charlatan reaps his greatest harvest is through the medium of the beguiling literature giving strength values based on tests primarily made for the purpose of developing and exploiting the strongest features of the system for which he holds the patent. Many concerns rush in with inadequate experience, acquiring this at the expense of their clients.

IRISH COTTAGES.*

ONE once went in for a competition. It was not a very celebrated competition, nor were the premiums large—they ran, if memory serves aright, from 20*l.* to 50*l.*—no great inducement even in these strenuous times. One thought, however, that the "kudos" resulting from success might be great, and so competed.

Unfortunately, between twelve hundred and two thousand architects, engineers, builders, plumbers and private individuals thought similarly, and applied for the conditions. Most of these were from Ireland, but a goodly sprinkling were from England, Wales and Scotland, while it is rumoured one man wrote from South Africa. Things must be in a sad way out there.

As to how many of the two thousand actually started preparing plans one has no accurate information—probably from five hundred to seven hundred—but it is reported that eight hundred sets of drawings were sent in by 386 competitors, representing approximately the same number of bosoms inflated with hope, and as the result is not yet

* A paper on the competition instituted by the Local Government Board, read at the Designs Club of the Architectural Association of Ireland, and printed in the *Irish Builder and Engineer*.

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noised abroad, it is probable that 385 of these bosoms are still inflated with hope, which has long since died in one's own—squashed out with the dead weight of long odds.

Doubtless you will by now have guessed the competition referred to; some may even have been sanguine enough to have entered, and be reckoned among the 385 hoppers; if that is so one has no desire to become a wet blanket, but a cursory review of the conditions laid down may provoke an instructive discussion.

Roughly speaking, one was asked to provide and fix at a cost of 130*l.* a one or two-storey cottage, complete in all details, with a living-room containing 1,200 feet of fresh air, and three bedrooms, one containing 900 and the other two containing 600 cubic feet of the same commodity. Moreover, this cottage was to be well and truly built with external walls not less than 10 inches thick, dashed or plastered, thereby ordaining that concrete, that delightfully cheap material, if employed, should be cement plastered externally.

Brickwork was obviously out of the question, therefore one's choice lay between masonry and concrete. One consulted many people—builders and brother professionals—and much advice was the result, mostly of a contradictory nature.

Masonry, of course, had the merit of being the more familiar material to country builders, while concrete could be produced at a very low price by the liberal employment of displacers, to which, surely, much objection cannot be raised, provided always the cement is good. "Displacers at suitable intervals approved by the architect." Heaven help the architect who has to stand by and point out how frequently the displacers may be displayed; but such presumably would be the specification phraseology, if the term can be excused.

But then, even with displacers, one had to superadd the wretched cement plaster, bringing the cost at least up to, if not over, the price of masonry, and so one tossed up, and concrete won.

This question settled, one prepared typewritten schedules, and distributed them among one's country builder friends. Sketches, too, of stairs and so forth were attached, and these were returned in due course conscientiously priced.

One's most particular friend (a notorious price-cutter) was requested to furnish detailed estimates for both one's designs, a one storey and a double-decker.

Those schedules were interesting reading. One learned from them that, whereas ordinary excavation in co. Dublin costs 1*s.* 6*d.*, in co. Kildare it costs 1*s.*, and in co. Cork 8*d.* Concrete, on the other hand, in co. Dublin (with profuse displacers) can be brought down as low as 14*s.* per yard, while in co. Cork the lowest cut appears to be 17*s.*—this is for foundations. In the matter of rising walls (6-1) concrete in Dublin appeared to cost 16*s.*, while in Cork it jumped to 26*s.*

Lead laid in co. Dublin seemed to be worth about 35*s.* per cwt., while it can be laid in Kildare for 30*s.* A simple staircase (about fourteen risers) costing in Dublin 8*l.* 10*s.*, can be built in Cork for 4*l.* every time. It seemed obvious from the first that a 130*l.* cottage could not be fully plastered inside; one, therefore, asked for a price for rendering only, finished smooth with a hand-float; this in Dublin costs 1*s.* 6*d.* per yard, but a Kildare man will do it as often as one likes for 7*d.* The variation in cost of roofing complete with American slates was almost as great, amounting to 1*l.* per square. But someone may say, "These builders were fools and knew not their honourable trade." To such an one I would say they were men of large experience, and well known in their own districts, and, moreover, with the exception of he who is referred to as "one's most particular friend," they did not know for what purpose they were pricing the schedules—thinking, doubtless, that some vast scheme was afoot, from which, in the days to come, they would reap large emoluments. In due course the most particular builder friend arrived with his estimates—they were very complete, and he had stuck to his schedule as closely as a brother sticks, but alas! the one-storey edifice worked out about 150*l.*, and the two-storey at 168*l.* Consternation was on top for a little—the Local Government Board competition was an impossibility unless drastic measures were adopted. To reduce the size of the buildings was impossible—firstly, because the drawings were already completed, and, secondly, because six inches off any dimension would reduce the cubing below the stated level.

It seemed the only course one could adopt was to cull

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the honey from every flower, and price at the lowest rate quoted for each material, irrespective of locality. This course had the merit that it could truthfully be asserted that one's prices were those in vogue in localities with which one was familiar—one of the Local Government Board conditions.

By pricing at the lowest rates picked from all three schedules, now known as "the honey system," a substantial reduction was effected, and the price of the cottages, if well and truly built in the Utopian county thus arrived at; but then, horror of horrors, the outbuilding had not been included, so once again the fat was in the fire.

Some judicious pruning in the thickness of concrete and other floors, in the size of sashes and doors, in the dimensions of chimney-breasts, foundations and so forth, brought the external conveniences into the fold, and then one's only labour was to fill in the forms and write a short specification.

So much for the competition; but it behoves us to look at the conclusions to which one is forced. Unquestionably the cottages asked for were much too large for the figure stated. The apartments were unnecessarily big, and there was one room too many. It seems impossible to design a cottage with the room capacity required with a total cubing of less than about 7,000 cubic feet. This, divided into 130%, works out at about 4½d. per cubic foot, a price at which no permanent and habitable dwelling-house can be erected with good materials. Besides, when estimating cost by cubing, one does not as a rule include grates and sanitary arrangements, even though the latter take the form of the homely bucket.

But the Local Government Board cottage at 130% had to include all these things and a small range to boot, or, if in a turf country, an open hearth with fire-bars and hobs which must be formed with some fire-resisting material. One cannot help thinking that the Irish farm labourer, that delightful individual of whom one hears so much and sees so little, should be able to content himself, and, incidentally, his wife and offspring, in a cottage of three rooms—two bedrooms and a living-room.

We all know the old familiar plan—wall and chimney-breast in the middle living room, right-hand side as one enters the tiny porch, and two bedrooms to the left. If

it has worked so well in the past, why shouldn't it work again? and if very carefully designed and arranged with the most economical materials, it might be produced for 130%. If, on the other hand, cottages must be erected for that figure containing four rooms, and the Local Government Board allowance of 3,300 cubic feet, the only solution is mud—this sounds prosaic, but so says an eminent Dublin architect who has taken a great interest in this threadbare but ever recurring subject.

Admittedly, mud on one's clothes, and to road users, is offensive, but mud in the walls of a cottage has merits. The mud cottage is familiar to us all—it has stood the test of time, and when unroofed its walls have bravely weathered a score of winters, which would have reduced its masonry rival in similar plight to a pile of uninteresting stones.

Consider for a moment its demerits. The examples of mud-built cottages one sees suffer principally from lack of light and ventilation, and, perhaps, a somewhat tumbled-down hearth.

Surely these defects are easily overcome, the first by the fitting of ample windows and the latter by building the hearth with brickwork.

This and a concrete and tiled floor, together with the joinery, are the only skilled works in the establishment, for surely a labourer, with the help of technical education, can puddle clay.

The roof would, of course, be thatched with rough fir rafters, and fir ties could be embedded in the mud at the angles of walls to bind them together.

Internal partitions would be lathed and rendered smooth, and all walls inside and out lime-whitened. From an æsthetic point of view, there is no doubt as to which material scores—the cry goes up, "the muds have it every time"—the massive walls slightly battered (I refer to their plumbing, of course), the golden thatch with neatly trimmed eaves, the creepers peeping in at the ample windows, and the much-maligned mud cottage becomes part of the landscape at the low cut of 130% each, and everyone, including the Local Government Board, is satisfied.

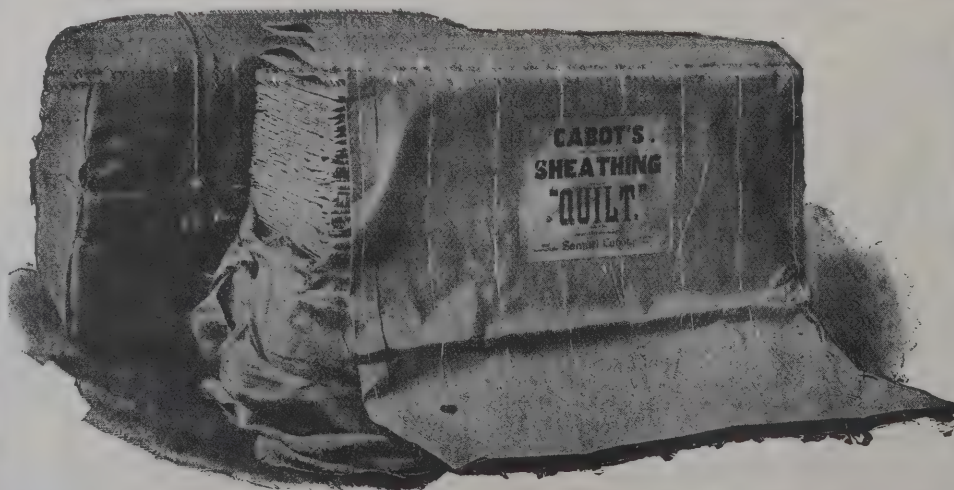
N.B.—Since writing the above the award has been published, and has fully justified the death of hope in the heart of the author.

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The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

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TENDERS, ETC.

* * * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50% and 25% to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20% and 10% will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

SALFORD.—Feb. 16.—Architects are invited to submit their names for appointment as architect for the erection of public baths. Only those with previous experience will be entertained. A limited number will be selected by the committee for competition. Further particulars of Mr. L. C. Evans, Town Clerk, Salford.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25% and 15% respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

ACCRINGTON.—Feb. 11.—For the work in connection with proposed alterations to the post office and Dr. Craig's house at the corner of Blackburn Road and Market Street, Church. Mr. A. H. Aitken, town clerk, Town Hall, Accrington.

BAILDON.—Feb. 13.—For the erection of a pair of semi-detached houses on the Park Mount Estate, Kirklands Road, Baildon, Yorks. Mr. J. Harper Bakes, architect and surveyor, Calverley Chambers, Victoria Square, Leeds.



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BAWTRY.—Feb. 14.—For the alterations and repairs at the Bawtry mixed provided school, for the Bawtry district sub-committee. Mr. L. J. Blackburn, divisional clerk, 10 Priory Place, Doncaster.

BIRKENHEAD.—Feb. 26.—For alterations and additions to the workhouse at Tranmere, for the Guardians. Mr. Edmund Kirby, 3 Cook Street, Liverpool.

BRADFORD.—Feb. 9.—For the enlargement of two classrooms in the infants' department of the Lilycroft school, for the education committee. Mr. Tho. Garbutt, secretary, Education Office, Manor Row, Bradford.

BRIDGNORTH.—Feb. 21.—For the erection of a laundry and alterations at the workhouse, for the Guardians. Mr. E. Trevor, architect and surveyor, High Street, Bridgnorth.

BRIGHTON.—Feb. 22.—For the erection of a water-tower in the asylum grounds, for the visiting committee of the Brighton County Borough asylum, Haywards Heath. Mr. J. G. Gibbins, of the firm of J. G. Gibbins & Son, architects and surveyors, 3 Palace Place, Brighton.

BURY ST. EDMUNDS.—Feb. 11.—For the erection of a covered grand stand to accommodate about 3,500 persons, and other work in connection therewith, for the Bury St. Edmunds pageant, July 8 to 13. Mr. Walter D. Harding, A.M.I.C.E., engineer, Town Hall, Bury St. Edmunds.

CHATHAM.—Feb. 12.—For the erection of a laundry building and bakery on land adjoining the workhouse at Chatham. Deposit 1*l.* 1*s.* Mr. E. Farley Cobb, architect, 20 High Street, Rochester.

COCKERMOUTH.—Feb. 13.—For erection of a dwelling-house in New Street, for Mr. G. T. Tate. Mr. F. O. C. Nash, architect, Cockermouth.

CORNWALL.—Feb. 12.—For the erection of a dwelling-house near St. Levan Churchtown. Mr. John Rowe, Porthgwarra, Treen, R.S.O.

DERBYSHIRE.—Feb. 14.—For alterations and additions to the Clowne Council school, for the Derbyshire education committee. Mr. George H. Widdows, architect to the committee, County Education Offices, St. Mary's Gate, Derby.

EASTBOURNE.—Feb. 15.—For alterations and additions to the laundry and kitchen at the Union workhouse. Mr. F. G. Cooke, architect, 2 Hyde Gardens, Eastbourne.

EARL STONHAM.—Feb. 9.—For erection of a new classroom and other alterations and additions to Earl Stonham V. schools, for the managers. Deposit 1*l.* 1*s.* Mr. H. G. Bishop, architect, 6 Bury Street, Stowmarket.

EXMOUTH.—Feb. 13.—For carrying-out alterations and additions, new shop fronts, &c., at Prospect Place, Exmouth. Mr. Ernest E. Ellis, architect, Exmouth.

GLASGOW.—Feb. 23.—For the work of constructing substructure of machinery buildings, Shieldhall, for the Corporation. Mr. W. D. Hamilton, 59 Bath Street, Glasgow.

GREAT AMWELL.—Feb. 20.—For the construction of bays at Amwell Marsh pumping station, Great Amwell, Herts, for the Metropolitan Water Board. The Clerk to the Board, Metropolitan Water Board, Savoy Court, Strand, W.C.

GREAT WYRLEY.—Feb. 11.—For Landywood new County school, Great Wyrley (accommodation 350), Staffordshire. Deposit 1*l.* 1*s.* Apply to Mr. Graham Balfour, director of education, County Education Offices, Stafford.

HALIFAX.—Feb. 11.—For execution of the mason's work, joiner, slater, ironfounder and plumber's work in connection with a new roof to shed in Booth Fold, for the improvement committee. Mr. James Lord, borough engineer, Town Hall, Halifax.

HALIFAX.—Feb. 12.—For execution of the joiners' work required in connection with repairs to the snow slatting on the roofs of the borough markets, for the markets committee. Mr. James Lord, borough engineer, Town Hall, Halifax.

HALIFAX.—Feb. 12.—For pulling-down old premises and the erection of four shops, offices and appurtenances thereto in George's Square. Mr. Thos. Kershaw, architect, Lancashire and Yorkshire Bank Chambers, Halifax.

HALIFAX.—Feb. 18.—For the mason, joiner, concrete, plasterer, slater, painter, plumber's heating and cold steelwork required in the taking-down of the old school, All Saints, Salterhebble, and erection of a new school on the adjoining site. Messrs. Joseph F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

HEREFORD.—Feb. 11.—For extensions to the buildings at the electricity station in Widemarsh Street. Mr. John Parker, city engineer, Hereford.

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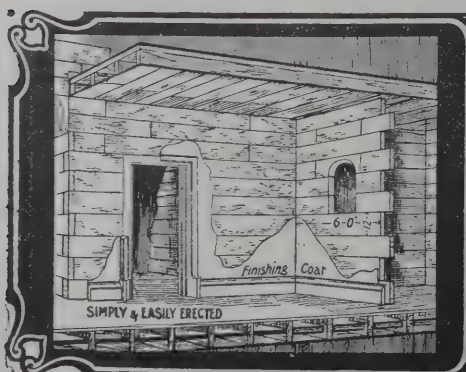
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LEATON.—Feb. 12.—For works in the erection of two detached houses in Wilmer Drive, Heaton, Yorks. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

ILFORD.—Feb. 12.—For the erection of a kiosk in South Ilford, for the Ilford Urban District Council. Mr. W. Benton, clerk, Town Hall, Ilford.

KIRBYMOORSIDE.—March 1.—For reseating and renovating and Primitive Methodist chapel, near Kirbymoorside. Mr. Vm. Atkinson, Sleightholmedale.

LEEDS.—Feb. 12.—For the erection of brewhouse and conveniences, &c., in Hardisty's Yard, off West Street. Deposit 10s. 6d. Mr. G. W. Atkinson, architect, 1 Mark Lane, Leeds.

LANDAFF.—Feb. 22.—For the erection of nine pairs of detached freehold cottages in Hawthorn Road, off Station, Cardiff. Mr. W. H. Dashwood Caple, Church Street, Cardiff.

LLANELLY.—Feb. 26.—For the erection of an additional room, &c., to Bigyn Boys' Council school, Llanelly, for Llanelly education committee. Mr. Ifor W. Watkins, secretary of committee, education committee, Education Office, Llanelly.

LONDONDERRY.—Feb. 11.—For the erection of a building in Londonderry for the purposes of a higher school of domestic economy in connection with Victoria high school. Mr. I. A. Robinson, C.E., M.R.I.A.I., M.S.I., Richmond Street, Londonderry.

MACCLESFIELD.—Feb. 13.—For the erection of a laundry in Market Street, for the Managers of the Macclesfield Technical Industrial School. Deposit 10s. Mr. Jabez Wright, architect, 27 King Edward Street, Macclesfield.

MANCHESTER.—Feb. 16.—For the erection of engine and mill-houses, offices, workshops, &c., for a hydraulic pumping station in Water Street. Deposit 17. 1s. The City Engineer, Town Hall, Manchester.

MANCHESTER.—Feb. 11.—For the execution of general alterations and plumbers' work that may be required in connection with the drainage of houses and other premises for twelve months ending March 31, 1908, for the Corporation. Deposit 17. 1s. Mr. H. Prescott, manager of the drainage department.

MATTERDALE.—Feb. 23.—For the erection of elementary school and master's house at Matterdale, Cumberland. Mr. Joseph Forster, architect, 13 Earl Street, Carlisle.

NOTTINGHAM.—Feb. 21.—For the enlargement of the post office at Nottingham, for the Commissioners of H.M. Works and Public Buildings. The Secretary, H.M. Office of Works, &c., Storey's Gate, London.

PRESTON.—Feb. 14.—For the erection of a domestic science centre at the corner of Marsh Lane and Spa Road, Preston, for the Corporation. Deposit 17. 1s. The Borough Surveyor, Town Hall, Preston.

PRESTON.—Feb. 19.—For the construction and complete finishing manual instruction-room, at the Grammar School, Cross Street, for the Corporation. Deposit 17. 1s. The Borough Surveyor, Town Hall, Preston.

RAINHAM.—Feb. 13.—For the erection of a house at the works, for the Rainham Waterworks Co., Kent. Mr. W. Leonard Grant, architect, Sittingbourne.

ROCHE.—Feb. 11.—For new closets, new drainage scheme, playground enlargement, cloak-room alterations, &c., to the Roche Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

ST. ANNES-ON-SEA.—Feb. 9.—For the enlargement of Wesleyan church and schools. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

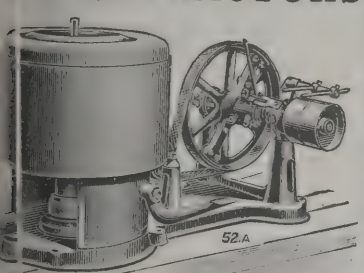
SCOTLAND.—Feb. 16.—For the erection of schoolmaster's house at Westruther. Mr. T. R. Atkinson, architect, Earlston.

SHEFFIELD.—For alterations and additions at the fire station, Rockingham Street, for the watch committee. Mr. Charles F. Wike, C.E., city surveyor, Town Hall, Sheffield.

SMALLWOOD.—Feb. 13.—For the erection of new Wesleyan chapel and school at Smallwood, near Sandbach. Messrs. Alfred Price & Son, architects, Sandbach.

STAFFORD.—Feb. 12.—For dining-hall to seat about 500, for Messrs. Siemens Bros.' Dynamo Works, Stafford. Mr. C. W. Millar, architect and surveyor, 57A Greengate, Stafford.

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STOCKPORT.—Feb. 11.—For the labour and material required in concreting and tiling the floor of the second-class plunge bath, and for enlarging the wash bath adjoining, both at the public baths, St. Petersgate, Stockport, for the baths sub-committee. Mr. John Atkinson, borough surveyor, Stockport.

STOCKPORT.—Feb. 12.—For the manual and team labour and materials required in the erection of three stalls in the covered market, and for weather screen to enclose same from the streets, for the manorial tolls committee. Mr. John Atkinson, borough surveyor, Stockport.

TOLWORTH.—Feb. 15.—For the erection of a ward pavilion and other additions and alterations at the Tolworth isolation hospital, near Surbiton. Deposit 5*l* 5*s*. Mr. W. H. Woodroffe, architect, 57 Lincoln's Inn Fields.

ULVERSTON.—Feb. 22.—For alterations and additions to the old Masonie Hall, Theatre Street, Ulverston, for Messrs. James Thompson & Co. Messrs. J. W. Grundy & Son, architects and surveyors, Central Buildings, Ulverston.

WALES.—Feb. 9.—For the erection of a Council school at Ammanford, Carmarthen, to accommodate 500 children. Deposit 3*l* 3*s*. Mr. W. D. Jenkins, county education architect, Carmarthen.

WALES.—Feb. 16.—For the erection of a minister's house for Salem (C.M.) chapel, Llanllyfni. Messrs. Richard Davies & Son, architects, Bangor.

WALES.—Feb. 16.—For erection of a reading-room, caretaker's cottage, &c., on site at Coedpenmaen, near Pontypridd. Mr. Philip John Jones, architect, Cilfynydd, near Pontypridd, and Tonyrefail.

WATCHET.—Feb. 18.—For the works required in erection and completion of a new school at Watchet, for the Somerset County education committee. Messrs. Hawkes & Andrew, Williton.

WEST KIRBY (CHESHIRE).—Feb. 18.—For the erection of a new school at West Kirby, for the administrative sub-committee for the Hoylake and West Kirby district. Mr. H. Beswick, county architect, Newgate Street, Chester.

WEYMOUTH.—Feb. 13.—For erecting business premises in St. Leonard's Road, Weymouth. Mr. S. Jackson, M.S.A., architect and surveyor, Bridge Chambers, Weymouth.

WEYMOUTH.—Feb. 13.—For the construction of public conveniences, partly under and partly above ground, in the Greenhill Gardens, with the necessary sewers, inspection chambers, &c., and other works in connection therewith, for the Town Council. Mr. H. A. Huxtable, town clerk, Municipal Buildings, Weymouth.

WIGAN.—Feb. 11.—For extension of boiler-house, engine house and other works at the Corporation electric generating station, Bradford Place, Wigan, for the Corporation. Mr. Harold Jevons, town clerk, Wigan.

At the annual meeting of the Master Masons' Association of Glasgow and neighbourhood in the Building Trades Exchange, the following office-bearers for 1907 were elected, namely:—President, Mr. George Barlas; vice-president, Mr. William M'Neil; treasurer, Mr. Robert Gilchrist. The following are the directors for 1907:—Messrs. Allan Muir, John Adam, Moses Barlas, Ebenezer M'Morran, George Sharp, Duncan Wilson, Alexander M'Lellan, Matthew Penman, Adam Duncan, John M'Ewan, John Kirkwood and J. B. M'Callum, with a representative from each of the Paisley Master Masons' Association in Airdrie and Coatbridge Master Masons' Association. Mr. William Sellar, of Sellar & Christie, 116 Hope Street, Glasgow, was appointed secretary.

Mr. P. M. CROSTHWAITE, C.E., inspector on behalf of the Local Government Board, held an inquiry recently in Surbiton Council Chamber into the application for sanction to a loan of 66,000*l*. for the purposes of a scheme of drainage and sewerage for the whole Surbiton district. Considerable interest was taken in the proceedings. The proposed works were on the highest form of sewage treatment within the Board required. The area taken—near Ewell, but still within the Surbiton boundary—was 32 acres. The promoters proposed to prevent any flooding by carrying a relief sewer from a point on the Hogg's Mill stream opposite Kingston to a point on the river Thames opposite Ram's Ait. An arrangement was come to by Surbiton and Kingston Corporation, the Thames Conservancy and the owner of the water-cress beds on Hogg's Mill stream, by which all are satisfied. The extra cost to Surbiton to increase the loan required to 71,000*l*.

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BAGSHOT.

For the erection of new schoolrooms, vestries, &c. Mr. W. J. HODGSON, architect, The Avenue, Camberley.		
Lawrence	£1,299	0 0
T. King	850	0 0
Martin & Wells	775	0 0
Watson	696	0 0
W. King	675	0 0
Chinchen & Co.	657	0 0
Nurse	657	0 0
Fisher Bros.	650	0 0
Deacon & Sons	629	0 0
KNIGHT, Camberley (accepted)	595	0 0
Carter	540	0 0

BATH.

For repairing and lining two reservoirs at Batheaston, and for constructing a straining well, &c. Mr. J. D. YOUNG, waterworks engineer, Guildhall, Bath.		
Bird & Son	£4,805	19 10
Labor	4,697	4 6
Vills & Sons	4,576	0 0
Mould Bros.	4,450	0 0
Moffat	4,428	15 8
Amery	4,382	19 0
Bentley & Son	4,339	10 0
Riley	4,311	14 0
Chick, Garden & Co.	4,251	0 0
Chancellor	4,149	11 8
Brown & Hiscot	3,999	11 8
Erwood & Morris	3,694	7 10
Ioran & Son	3,562	0 0
ambrose	3,555	2 8
Polborn	3,406	6 0
LAYWARD & WOOSTER, Bath (accepted)	3,301	15 2
leal	3,299	0 0
rice	2,899	0 0

BRISTOL.

For alterations to No. 22 Cotham New Road, for the Moravian Mission College. Messrs. LA TROBE & WESTON, architects, Bristol.		
Harvey	£569	7 0
Woodward	555	0 0
Hodges	549	4 6
Foster	549	0 0
Preece	546	0 0
Lewis	545	0 0
Clark & Sons	520	0 0
Forse	515	0 0
Williams & Sons	499	0 0
Hunt	497	0 0
Chown	489	0 0
Love	489	0 0
Wilkins & Sons	484	0 0
Walters & Son	474	0 0
Jones	469	0 0
Denby & Co.	445	0 0
Downs & Son	440	0 0
W. & J. BENNETT (accepted)	430	0 0

BURNLEY.

For the construction of new settling tank, storm-water filter, screening chamber, storm overflows and other contingent works connected therewith, for the Burnley Rural District Council. Mr. S. EDMONDSON, engineer.		
Hunter	£804	0 0
Cooke & Flannery	789	0 0
Rigby	645	0 0
Parker	575	0 0
Simon, Johnson & Co.	552	0 0
Thomber & Dixon	528	0 0
Bentley	523	0 0
Macdonald	504	0 0
BRASSINGTON, BRO. & CORNEY, Settle (accepted)	446	0 0

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For Index of Advertisers, see page 22.

BURNHAM.

For erecting schoolroom and additions to the Wesleyan church. Messrs. LA TROBE & WESTON, architects, Bristol.

Denby & Co.	£1,698	0	0
Forse & Sons	1,618	0	0
Stephens, Bastow & Co.	1,583	0	0
Harvey	1,492	14	0
Chown	1,418	0	0
Stead	1,397	0	0
Love	1,387	0	0
Walters & Son	1,387	0	0
Pittard & Son	1,385	0	0
Chick, Garden & Co.	1,365	0	0
Pople	1,290	0	0
Preece	1,266	0	0
Clark & Sons	1,242	10	0
Stockham	1,189	0	0
Tapscott	1,189	0	0
Fursland	1,180	0	0
POLLARD (accepted)	1,125	0	0

CLATTERBRIDGE.

For supplying and fixing mains and wiring, &c., for electric light at the hospital for infectious diseases at Clatterbridge, for the Wirral Joint Hospital board.

Stafford & Co.	£350	10	6
Heaney & Co.	287	7	6
Brewer & Brunt	225	0	0
Dargue, Griffiths & Co.	215	0	0
COLLINS & PRICE, Hoylake (accepted)	189	15	0

DURHAM.

For the building of Council chamber, offices, &c., in St. Ives Road, Leadgate, for the Leadgate Urban District Council.

Accepted tenders.

Jackson, Leadgate, mason	£298	6	9
Stokoe, Leadgate, joiner	65	9	4
Strachan, Blackhill, plumber	26	16	6
Cook, Consett, plasterer	24	12	0
Siddle & Sons, Consett, painter	11	18	4

Note.—Thirteen other tenders.

GUILDFORD.

For boiler and heating apparatus at public baths. Mr. MASON, borough surveyor.

Stubbs, Son & Hall	£561
Smith	549
Dickinson & Burne	548
Wenham & Waters	544
BOAZ & Co., Acton, London (accepted)	485

GRIMSBY.

For the erection of a villa in Humberstone Avenue. Mr. J. J. CRESSWELL, architect, 77 Victoria Street, Grimsby.

Simons & Brown	£807
Towle Bros.	709
G. & J. Smith	699
Kitching	690
Gilbert	686
Thompson & Sons	672
Kirton	665
WILKINSON & HOUGHTON (accepted)	650

HAPTON.

For the kerbing, flagging, paving and making-up of a number of streets in the village of Hapton, for the Burnley Rural District Council. Mr. S. EDMONDSON, surveyor, 18 Nicholas Street, Burnley.

Hopkinson	£3,487
Exors. J. Broadley	2,650
Edge & Co.	2,497
Townsend	2,421
Penwarden	2,329
Bannister	2,204
Coates	2,192
Miles	2,180
Sutcliffe	2,180
Wadge	2,139
Brown	2,130
Cooke & Flannery	2,092
GREEN, 181 Brunshaw Road, Burnley (accepted)	2,091

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HORNCHURCH.

erecting fire station, &c. Mr. E. J. LITTLE, architect, Hornchurch.			
Holliday	£371	4	3
Dockrill	371	0	0
Sibthorpe & Son	367	0	0
Partridge Bros.	318	12	0
Dowsing & Davis	312	10	0
Vestgate	308	5	0
BAILEY, Romford (accepted)	304	16	0

LEWISHAM.

the erection of sorting office.			
fitson & Co.	£1,804	0	0
Vigor & Co.	1,800	0	0
ewell & Leesty	1,737	0	0
enby & Co.	1,726	0	0
helbourne & Co.	1,594	0	0
icks & Co.	1,550	0	0
mith & Sons, Ltd.	1,543	0	0
peechley & Smith	1,541	0	0
Vallis	1,525	0	0
Iartin, Wells & Co., Ltd.	1,509	0	0
ulled & Co.	1,498	0	0
erry Bros.	1,497	0	0
taines & Co.	1,490	0	0
arsons	1,483	0	0
ightingale	1,451	0	0
atman & Fotheringham	1,450	0	0
nsell	1,444	0	0
asterfield & English	1,425	0	0
akers & Co., Ltd.	1,419	0	0
oasby & Salmon	1,410	0	0
ent	1,397	0	0
arker & Co., Ltd.	1,393	0	0
Whitehead & Co., Ltd.	1,388	0	0
Iattock & Parsons	1,353	0	0
onsdale	1,350	0	0
albraith Bros.	1,340	0	0
. & G. FOSTER (accepted)	1,277	0	0

KENILWORTH.

For alterations and additions to Woodcote Lodge. Mr. C. M. C. ARMSTRONG, architect, Warwick.			
G. F. Smith & Sons	£1,660	0	0
E. SMITH & SON, Kenilworth (accepted)	1,499	18	0

KINGSTONE.

For enlarging and improving the Council school at Kingstone, for the Staffordshire education committee.			
WARD & GODBEHERE, Smithfield Road, Uttoxeter (accepted)	£372	12	4

LEEK.

For works required by the gas committee.			
Smith & Sons	£1,288	1	5
Heath & Sons	1,065	17	3
Grace	1,022	6	5
Barker Bros.	994	4	0
SALT, Leek (accepted)	985	0	0

LONDON.

For combined school for sixty physically defective children and sixty mentally defective children at Whitechapel.			
Perry & Co.	£6,539	0	0
Appleby & Sons	6,508	0	0
Leng	6,333	0	0
Killby & Gayford	6,188	0	0
Parsons	6,179	0	0
Symes	6,074	0	0
Hawkins & Co.	6,043	11	10
Lawrence & Sons	5,996	0	0
Chessum & Sons	5,983	0	0
Grover & Son, Wilton Works, Islington (recommended)	5,983	0	0
Architect's estimate	6,254	0	0
For drainage of cottages at Surbiton, for the Metropolitan Water Board.			
Bull & Esdale	£575	0	0
Newson & Hawkins	347	0	0
Johnson	383	10	0
Kavanagh & Co.	371	0	0
Gaze & Sons (recommended)	323	0	0

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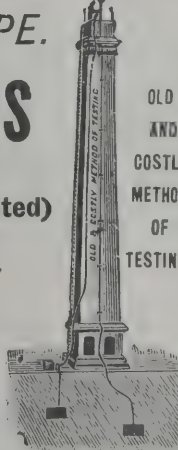
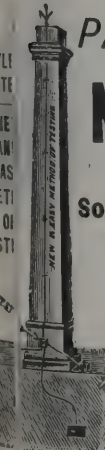
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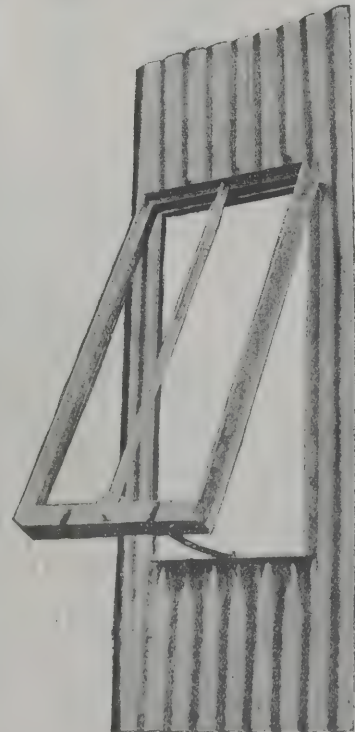


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LONDON—continued.

For the erection of school on the Osborne Place site, Whitechapel, for the London County Council education committee.

Perry & Co.	£6,539	0	0
Appleby & Sons	6,508	0	0
Leng	6,333	0	0
Killby & Gayford	6,188	0	0
Parsons	6,179	0	0
Symes	6,074	0	0
Hawkins & Co.	6,043	11	10
Lawrence & Sons	5,996	0	0
Chessum & Sons	5,983	0	0
Grover & Son	5,983	0	0
Architect's estimate	6,254	0	0

For the reconstruction of two railway bridges, one at Highbury station and the other in Holloway Road, in connection with the electrification of the tramways in Holloway Road.

Ewart	£13,208	14	0
Handyside & Co.	11,922	4	8
Heenan & Froude	11,737	10	2
Cochrane & Sons	11,455	7	11
Greig & Matthews	11,174	13	9
Nightingale	11,129	0	0
Fasey & Son	11,101	4	2
Hay & Son	11,085	2	5
Dick, Kerr & Co.	10,938	14	8
Wall	10,934	0	0
Pedrette & Co.	10,748	0	2
Muirhead & Co., London (<i>recommended</i>)	10,581	19	6
Chief engineer's estimate	11,952	13	6

For extensions of steam laundries at Highgate Hill. Mr. GEORGE CARTER, architect, 513 Holloway Road, N. (Contract No. 1.)

Stevens	£1,463	0	0
Sprowson & Babb	1,316	12	0
Brown	1,179	0	0
Mattock & Parsons	1,159	0	0
Steed & Son	1,109	0	0
Architect's estimate	1,120	0	0

LONDON—continued.

For installation of telephones, electric bells, &c., at North-Eastern hospital, for the Metropolitan Asyl Board.

Glover & Co.	£959
Jackson Bros.	859
Hiscock	820
Weston & Sons	789
Barton	783
Vaughan & Cook	720
Electrical Installations, Ltd.	698
Pullan	693
Sweet Bros.	689
Shalders & Davis	670
Cowtan & Sons	655
Private Wire and Telephone Installation Co.	650
Cox-Walkers, Ltd.	650
Bromley, Batstone & Kirk	640
Grant & Taylor	635
Potter & Sons	633
British Home and Office Telephone Co.	628
Bryden & Sons	620
Cross & Cross	616
Electrical Engineering and Maintenance Co.	610
National Telephone Co.	609
Furse & Co.	599
Boulting & Sons	596
Fryer & Co.	590
Bell Telephone and Electric Co.	581
Speedy, Eynon & Co.	580
Baxter & Impey	520
Lea & Warren	515
Glendinning, Hygienic Works, Rathgar Road, Brixton, S.W. (<i>recommended</i>)	400
Engineer-in-chief's estimate	500

For repairs to Laburnum cottage, Kew Bridge pump station, for the Metropolitan Water Board.

Harris	£134
Dorey & Co.	125
Newson & Hawkins	125
Chapman & Sons	123
Adamson & Sons (<i>recommended</i>)	119

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LONDON—continued.

retaining wall and the widening of the existing roadway and certain drainage arrangements at the Hornsey Lane pumping station, for the Metropolitan Water Board.

& W. H. Patman	£259	0	0
illmott & Sons	249	0	0
ird & Sons	249	0	0
owlem & Co.	233	0	0
ewra & Son (recommended)	219	6	10

proposed superstructure and extensions of steam laundries at the rear of 47, 49 and 51 Highgate Hill, for Mr. C. Lay. Mr. GEORGE CARTER, architect and surveyor, 513 Holloway Road, N.

Contract No. 1.

evens	£1,463	0	0
rosson & Babb	1,316	12	0
rown	1,179	0	0
attock & Parsons	1,159	0	0
eed & Sons	1,109	0	0
rchitect's estimate	1,120	0	0

extension of stores and erection of a barrow shed at Willesden reservoir, for the Metropolitan Water Board.

immers	£288	10	0
illow & Wright	275	12	0
ewson & Hawkins	269	0	0
apman & Sons	255	0	0
ennant & Co.	236	0	0
arfit & Co. (recommended)	223	0	0

MELTON MOWBRAY.

construction of an iron bridge over the brook in Regent Street, for the Urban District Council.

ARKE (accepted)	£409	0	0
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MERTHYR TYDFIL.

alterations and additions, building boundary walls, &c., and new playground at Clwydyfagwyr school, for Education Authority. Mr. J. LLEWELIN SMITH, architect. Quantities by architect.

ullivan	£965	10	0
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PORTSMOUTH.

For the drainage of Southsea, for the Corporation of Portsmouth.

NEAL, LTD., Portsmouth, Bristol and Plymouth (accepted)

SCALBY (YORKS).

For rebuilding and widening of Newby Bridge (stone) at Scalby, near Scarborough, on the Whitby and Scarborough main road, for the North Riding of Yorkshire County Council.

Exley & Sons	£1,950	0	0
Lyon	1,745	0	0
Keswick & Sons	1,734	0	0
Petch	1,320	0	0
Harland	983	0	0
DOUGILL & SONS, Aysgarth, S.O., Yorks (accepted)	975	0	0

SCOTLAND.

For mason, joiner, plumber, plasterer and slater's work of alterations on Craighrothie school, for the Ceres School Board. Mr. C. F. ANDERSON, architect, St. Andrews.

Accepted tenders.

Scott & Sons, mason	£71	10	0
Black, joiner	69	5	0
Batchelor, slater and plasterer	19	0	0
Howie, plumber	14	7	6

TRENHOLME BAR.

For widening and strengthening bridge (stone) near Trenholme Bar, on the Thirsk and Yarm main road, for the North Riding of Yorkshire County Council.

Nelson	£142	17	0
Brotton	112	0	0
Dougill & Sons	112	0	0
Pearson	99	2	10
Kirk	72	0	0
POTTER & SONS, Northallerton (accepted)	68	10	0

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TORPOINT.

For erecting ante-room, scullery, lavatories, &c., and for heating and renovating Good Templars Hall. Mr. A. J. ABBOTT, architect, Totnes.

Stevenson	£390	0	0
Rothery	360	0	0
Pane	344	18	0
SLEEMAN, Torpoint (accepted)	270	0	0
Whale & Son	261	16	0

WEST BRIDGFORD.

For the erection, upon land fronting Bridgford Road, of a building for use as offices, for the West Bridgford (Notts) Urban District Council. Mr. WM. PARE, engineer. Quantities by engineer.

Limon	£925	0	0
W. & J. Simons	910	0	0
Wright	881	0	0
Pepper	879	10	0
Hutchinson & Son	860	0	0
Thomas	855	0	0
Maule & Co.	829	0	0
Lewin	827	10	0
Crane, Ltd.	824	0	0
Parnell	819	10	0
Whittaker	818	0	0
Hodson, Rolley & Co.	811	1	6
Thompson & Sons	811	0	0
CUTHBERT, Nottingham (accepted)	803	0	0

WEST MALLING.

For the erection of villa at London Road. Mr. C. H. SOUTER, architect, West Malling.

Pye	£494	10	0
Allchin	489	0	0
Davison	482	0	0
Hodges & Son	457	0	0
LANGRIDGE (accepted)	435	0	0

(Received too late for classification.)

FAREHAM.

For the erection of secondary school, for the Governors Price's Charity.

HUNT, Gosport (accepted) £6,856 11 0
Tender afterwards withdrawn.

CROCKERELL, Southsea (finally accepted) 7,308 0 0

TRADE NOTES.

MESSRS. BRINDLEY & FOSTER, organ builders, of Sheffield have received the order for two large organs, both to electrically blown. One is for the East Ham (Weyleya Great Central Hall, and the other for St. John's Church Preston Park, Brighton.

MESSRS. GEORGE MILLS & Co., of Radcliffe, the proprietors of the Mills' modified "Titan" sprinkler, have received the following letter relating to the action of the sprinkler in the case of a fire which broke out in a wo stores:—"February 2, 1907.—From Glenpark Wool Floor Co., Flock Manufacturers, 200 Glenpark Road (off East Nelson Street), Glasgow.—Dear Sirs,—On the 24th ult. a fire took place in the curling-house of our premises, where large quantity of baled and loose flock was in course of preparation. The nature of the material caused the fire to spread with great rapidity, but we are very pleased to state notwithstanding the frosty weather which prevailed, the sprinklers operated so quickly and successfully that the fire was completely overcome before the arrival of the fire brigade.—Yours faithfully, for Glenpark Wool Floor Co., (Signed) ARCHD. CLARK, proprietor."

THE Danish Government propose to enlarge the harbour of Esbjerg at the expense of the State. A Bill has been introduced into the Folkething providing for the expenditure of 227,500*l.* on the commercial harbour and of a sum not exceeding 81,110*l.* on the fishing harbour. It is proposed to deepen the harbour to 24 feet, so that it will be practicable for large steamers.

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Section Books & Stock Lists on Application

ILLUSTRATIONS.

THE MANCHESTER WHITWORTH INSTITUTE, WHITWORTH PARK.

MEMORIAL CHAPEL, CONVENT OF ST. MARY OF NAZARETH,
EDGWARE.

HEREDOS AND ORNAMENTAL PANNELLING, WYCLIFF HALL CHAPEL.

THE NEW WAR OFFICE, WHITEHALL.—SECRETARY OF STATE'S
ROOM.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—TOP OF STAIRCASE.

ELECTRIC NOTES.

SIR ALBERT K. ROLLIT will act for the Oxford Tramway Company, and Mr James Swinburne, Victoria Street, Westminster, consulting engineer, for the National Electric Construction Company, in the arbitration to decide the amount to be paid for the Oxford tramway system. If the arbitrators fail to come to an agreement an umpire will be called in, the arbitrators themselves nominating him.

Mr. V. A. H. M'COWEN, electrical engineer to the Corporation of Belfast, has just been appointed to a similar position for the borough of Salford at a salary of 800*l.*, rising by annual increments of 100*l.* to 1,000*l.* Mr. M'Cowen went to Belfast in 1894, and the municipal electrical undertaking was inaugurated and has been carried out under his supervision, as well as a good deal of important work in connection with the recent electrification of the city tramways.

A DEPUTATION from Failsworth Urban District Council attended a meeting of the electricity committee of the Manchester Corporation recently asking for a supply of electricity to that district. It was stated that the committee had inquired into the matter and failed to get a sufficient guarantee to justify them in incurring the expense of laying down the mains. For that reason the matter was deferred until there was a bigger demand or until such time as the supply could be put in more cheaply.

The electrical undertakings in London have started their own journal, the *Electrical Bulletin*, published quarterly. The copy before us is a bright little production, smartly

written, and very naturally strongly urges the claims of electric lighting and heating as against any other form, but as gas is undoubtedly the enemy to be contended with, the *Electrical Bulletin* is very jubilant about gas failures. Each serves its purpose, both gas and electricity, and each has its failures, as all architects know oftentimes to their cost, and neither side has any right to be over-jubilant on that score.

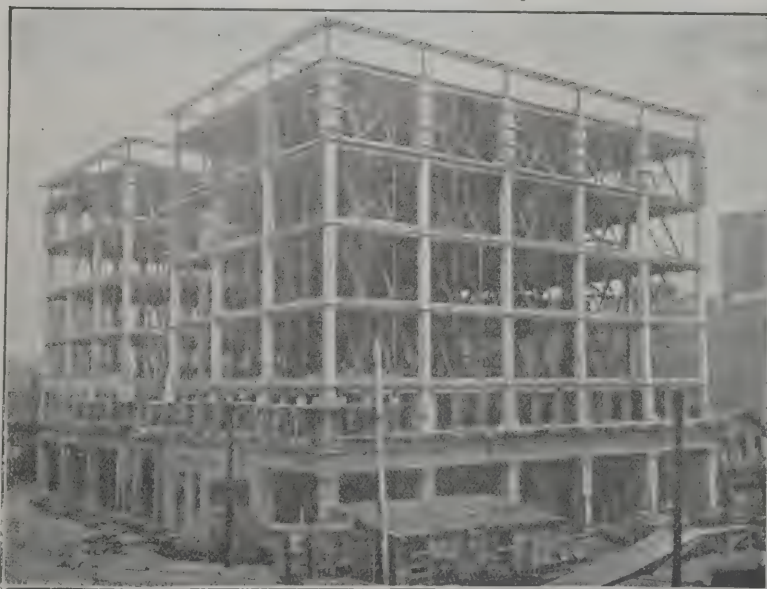
A NEW system of electric lighting for trains has been devised by Mr. J. Dalziel, of the Midland Railway Company's electrical department at Derby, and the company are experimenting with it. The regulation adopted, according to the *Manchester Guardian*, involves the use of three small machines, all of which have their armatures mounted on one shaft, which is independent of the armature of the main machine. One battery only is necessary, and this is required for supplying current when the train is standing or running at a speed below that at which the dynamo comes into action. The regulation of the lights is quite independent of the battery, which can be disconnected from the dynamo at any speed without interfering with the pressure on the lamps. The regulation is thus entirely electrical, compensation for speed variation or difference in load being made by the small regulating machines. It is claimed that in this system the battery is subject to much less severe usage, and that its capacity can be much smaller than in certain other systems, while the energy consumed by it is very low. The regulation is said to be as good at ninety miles an hour as at twenty, as the apparatus contains neither mechanical governors nor slipping belts.

VARIETIES.

PLANS have been prepared for a new Presbyterian chapel, school, lecture hall, &c., to be erected at the junction of King Street and Rhosddu Road, Wrexham. The total cost will be about 5,000*l.*

THE Manchester sanitary committee have decided to ask Dr. Niven, the medical officer of health, to attend the Brussels International Conference to be held in September in connection with the protection of child life. It was

An Example of the Kahn System.



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MARK THE FIXED SHEAR MEM-
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ECONOMY OF ERECTION—TO THE
OWNER THEY MEAN EFFICIENCY
AS WELL.

NO LOOSE MEMBERS TO FIX.

WE CHARGE NO ROYALTIES.

WE SELL TO ALL CONTRACTORS.

further agreed to appoint a deputation to visit Glasgow for the purpose of inspecting the lodging-houses there.

THE South-Eastern and Chatham Railway Company, whose system forms the direct route between London and the beautiful watering-places on the Kent and Sussex coasts, with cheap fares, fast trains and special week-end facilities, have issued four sets in colour of pictorial post-cards admirably illustrating the trains, stations, locomotives and steamers respectively.

DURING December the Metropolitan Water Board supplied 1,058,000 houses with a daily average of 209,503,000 gallons of water, and the population supplied was estimated at 6,872,768. The supply works out at 30.4 gallons per head per day, compared with 29.9 in the corresponding period last year. At the end of the month there were 7,164,000,000 gallons in store in impounding reservoirs, compared with 6,150,000,000 gallons last year.

THE top stone of the tower of the Stockport town hall was laid last week, and the structural part of the building completed. The foundation-stone was laid on October 15, 1903. It was originally estimated that the cost of the building would be 66,000*l.*, but the actual expenditure will be close upon 100,000*l.* This will involve a rate of 3*d.* in the pound for the town hall. Sir A. Brumwell Thomas is the architect.

THE Blackpool Corporation, on account of the lowering of the foreshore opposite the Blackpool Promenade at North Shore, have had some anxiety as to the safety of the Promenade works, as recent storms have shown that there is some danger of the "toe" of the slope in front of the sea wall being undermined. The highways committee have had the matter under consideration and have now decided that 3,000*l.* be spent in putting in a new "toe" and strengthening the sea defence works.

H.M. CONSUL-GENERAL at Antwerp (Sir C. Hertslet) is informed by the British Vice-Consul at Charleroi that a syndicate was recently formed in that town for the sale of window-glass ("fourths") to China. The syndicate, which all the window-glass makers have joined, is known by the name of Le Comptoir des Ventes des Verres à vitres pour la China." The Consul-General observes that only a somewhat inferior quality of glass is sold for shipment to China,

and that there is no immediate prospect of a syndicate being formed for the sale of all qualities and specialties of glass, the difficulties being too great to permit an agreement between the various manufacturers.

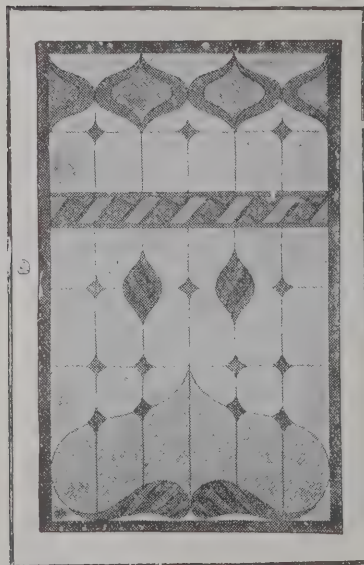
THE annual general meeting of the Master Builders' Association of Ireland was held in Dublin recently, when the following officers and committee were appointed for 1907:—President, Mr. James Beckett; vice-president, R. Denne Bolton; committee, Mr. James Kiernan, Mr. H. M'Laughlin, Mr. G. Goodfellow, Mr. H. Pemberton, Mr. B. W. Whyte, Mr. Thomas Conolly, Mr. James Martin; hon. treasurer, Mr. Samuel Roberts; hon. secretary, Mr. John Good, 55 Great Brunswick Street.

THE result of the poll of the burgesses of Tunbridge Wells on the proposal of the Corporation to promote a Bill in Parliament for the compulsory acquisition from the Lord of the Manor of the mineral springs and properties on the Pantiles at an estimated cost of 50,000*l.* was made known last week. The ratepayers have decided by seven to one in a poll of 4,000 against the proposal. The result was practically a foregone conclusion, popular opposition to the Bill being very pronounced.

THE Leeds Corporation proposed to promote a Bill in Parliament for waterworks purposes, and for a new scheme for sewage disposal on part of the Temple Newsam estate. The sewage scheme was opposed chiefly because of the proposal to pay 231,000*l.* for the land, which was considered to be an exorbitant sum, and a poll was demanded, which took place on the 31st ult. The result was that 4,751 ratepayers voted against the resolution, and 1,772 in its favour. There was thus a majority of 2,979 against the resolution, and the portion of the Bill referring to the sewage scheme is therefore withdrawn. There are over 70,000 ratepayers, but only 6,523 recorded their votes.

At the annual meeting of the Belfast Builders' Association the report submitted by the committee stated that there was no general improvement in the state of the building trade, but the marked improvement in the staple and other trades in the city should give an impetus to the building trade, and is a reasonable indication of more prosperity therein in the near future. The prices of building materials still show an upward tendency, but while the present unfavourable conditions continue the committee regret that

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keen competition for contracts is leading to under-estimating prices and risks, detrimental alike to the successful competitor as well as to the whole building trade. Labour continues in excess of the requirements, consequently the prevailing rate of wages and the regulations affecting labour have not been disturbed.

MR. WILLARD D. STRAIGHT, the United States Consul-General at Mukden, in a communication to the Washington Bureau of Manufactures, says it is reported in the Japanese press that plans have already been completed for the construction of a large steel bridge across the Yalu river, between Antung and New Wiju, and that the work will be commenced some time during April. The length of the bridge will be 3,239 feet, and the cost of construction more than 200,000/. Until the doubling of the Seoul-Wiju and Antung-Mukden lines it is proposed to use only one side of the bridge for railway purposes, the other side to be converted into a public thoroughfare. Large piers will be erected at intervals of from 200 feet to 300 feet, and their height, about 40 feet, will be such as to avoid any obstruction of river traffic.

THE special committee of the Manchester Corporation appointed to consider the question of sewer ventilation has reported on a number of experiments made by various firms for subsequent use in ventilating the Manchester sewers. They do not recommend the adoption of any of the methods, but suggest that a station be provided where bacteriological and chemical observations of a serial and continuous character can be carried out with the precautions necessary to insure accuracy, and Professor Delépine considers that the laboratory grounds which run along High Street and York Place might, at a small cost, be made the point of observation by connecting the sewers in those streets with the laboratory grounds by side entrances. If this were done the results obtained at the end of one year's regular observations would, it is thought, fully justify the expenditure of time. There is at present nothing absolutely clear as to the influence of sewer air upon health, the sources of variations in the contents of sewer air, or the nature of the oxidisable gaseous organic matter said to give to sewer air noxious properties. These and other matters could be determined by the systematic work now suggested.

EMPLOYERS' LIABILITY.

THE recent extension of the Employers' Liability Act has caused consternation in the majority of households. Care will have to be taken in making provision for all the contingencies which apparently can be sanctioned. Preference should be given to offices which have had experience in meeting similar risks.

The Law Guarantee and Trust Society, Ltd., having decided to extend the scope of its transactions, has recently acquired the United Legal Indemnity Insurance Society, Ltd., with a substantial premium income and large agency organisation. The United Legal transacts the following classes of insurance business:—(1) Employers' liability insurance, (2) third-party risks of all kinds, (3) motor-car insurance, (4) personal accident and sickness insurance, (5) plate-glass insurance, (6) burglary, housebreaking and larceny insurance, (7) registered post insurance.

The policies of the United Legal are all up to date, and reasonable premiums are charged. No one intending to insure under any of the above-mentioned headings should make up his mind without inquiring of the United Legal Society, all of whose policies are guaranteed by the Law Guarantee and Trust Society, Ltd., which has a fully subscribed capital held by wealthy shareholders of 2,000,000/., of which 200,000/., is paid up, and also a general reserve fund of 200,000/., in addition to other funds earmarked to provide for various contingencies. This guarantee makes the financial status of the United Legal very strong—placing it, in fact, in the front rank of its competitors.

Special attention will be paid to employers' liability insurance business, and a liberal policy protecting householders, landowners and others against legal liabilities under the Workmen's Compensation Act, 1906, is in preparation, and also another policy by which the assured, in addition to having this protection, will be in a position to recompense a servant in the event of his or her meeting with an accident which does not come under the Act. The premium for the former will be 3s. for each indoor servant, and for the latter policy 5s., but rather more will be charged for outdoor servants. Under the auspices of that well-known wealthy and progressive company the Law Guarantee and Trust Society, Ltd., the United Legal should obtain a large share of all classes of business for which it competes.

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AIDS TO NATIONAL DEFENCE.

The spirit of the time is suggested when it is found that constructional engineers having the standing of Messrs. Ralston, Goodwin & Co., of Glasgow, are applying their inventive powers to targets and other apparatus calculated to aid in making efficient soldiers. It is in its way as surprising as the creation of a rifle club among the members of the Architectural Association. The old-fashioned target resembled the old manner of fighting: it was mass against mass. But the patent targets of Messrs. Ralston, Goodwin & Co. are ingenious mechanical contrivances which exemplify dynamics rather than statics. They possess motion, and resemble an enemy who can find shelter as quickly as they fire. Yet the arrangement by which the targets are made to change their positions is simple and can be worked by men who are not trained mechanics. Fixed targets are an absurdity, for in modern war there is no likelihood of encountering troops who, like the French Household Guards at Fontenoy, will stand still and ask the English to do them the honour of firing at them. Among movable targets we have not seen any which have the advantages of the Ralston system. The firm also construct drill halls, range pavilions and much else for volunteer and army training. As iron roof and bridge builders they have special advantages for such extra work.

SITE PLANNING.

A COMPETITION for site planning in connection with the National Housing Reform Council was lately arranged. Nineteen designs were submitted. The judges were Mr. G. T. Brown and Mr. J. Walton Taylor, architects, with Messrs. Stephen Easton, F. H. Holford and W. Sewell. The awards were as follows:—

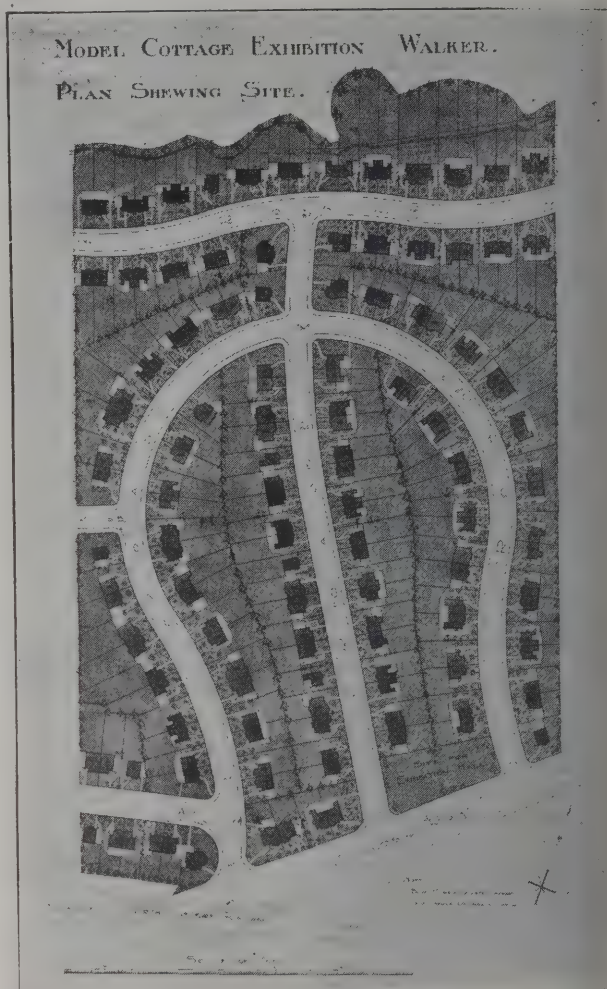
Gold Medal.—Messrs. Watson & Scott, Newcastle-upon-Tyne.

Silver Medal.—T. Myddelton Shallcross, Liverpool.

Bronze Medal.—Messrs. Watson & Scott, Newcastle-upon-Tyne.

The roads upon the design which obtained the gold medal have a total length of 3,540 feet, as follows:—
Road A, 202 feet; road B, 60 feet; road C, 913 feet;

road D, 865 feet; road E, 792 feet; road F, 708 feet; total 3,540 feet.



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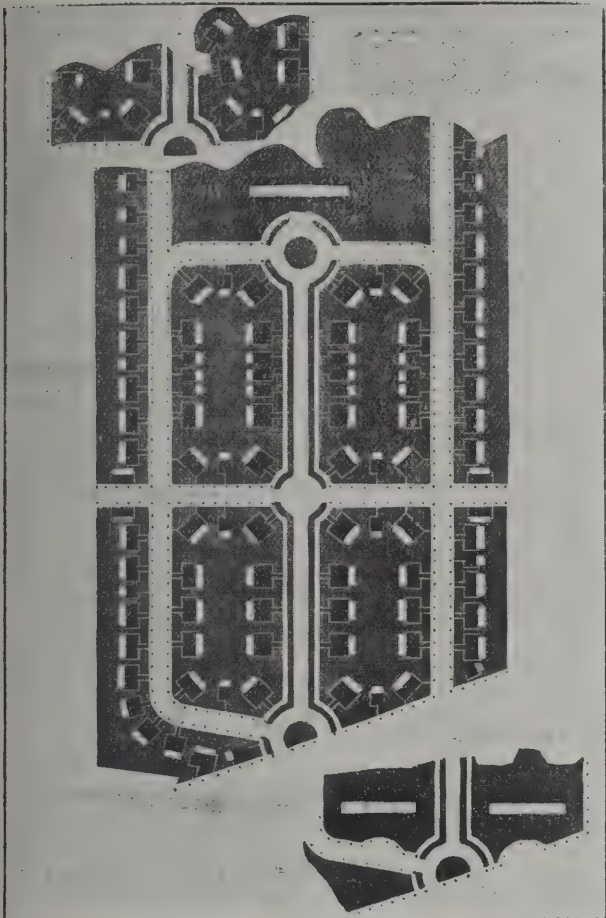
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Their total area is 3½ acres, the net area of the sites being 13½ acres. Except for the purpose of further opening out the lands on the west belonging to the Corporation,



road "B" is superfluous. It is deemed essential to avoid the formality of houses built in straight lines, and the roads here shown by varying the depths of the sites from front to back also provide for the separate classes of houses proposed to be built. These are thought to be better intermixed rather than built in separate groups. The roads as shown, consistent with economical development, give ready access between the different portions of the ground. This treatment also gives better views from within the houses as well as without. In conformity with the slope of the land the sewerage will have to be taken from north to south, down roads "C," "D" and "E," to Shields Road. A site for the exhibition building is reserved abutting upon the highway, and upon this part of the land, when a community has become settled upon the place, shops could with advantage be erected.

The length and widths of roads in the second design are as follows :—

Yards.	Widths.	Schedule.
310 lineal	63 feet	Road A, 310 yards
1,026 „	40 „	„ B, 332 „
		„ C, 379 „
		„ D, 128 „
		„ E, 187 „

In the construction of roads it is suggested that "Taafalt" or some other suitable dustless material should be used instead of the ordinary macadamised surface, and that the footpaths should have a gravel-finished surface with a strip of York stone flag (or cement manufactured flag), of less width than the complete footpath, laid down the centre thereof. The planting of trees on each side of the roads is indicated upon the drawing.

The awards in the site planning competition for the Sheffield competition have been made by the judges, and are as follows :—

Gold Medal.—Messrs. W. Alex. Harvey and Arthur McKewan, of Birmingham.

Silver Medal.—Messrs. Currey & Thompson, Derby.

Bronze Medal.—Mr. Claude Batley, Kettering and London.

There were twenty-six designs in all submitted.

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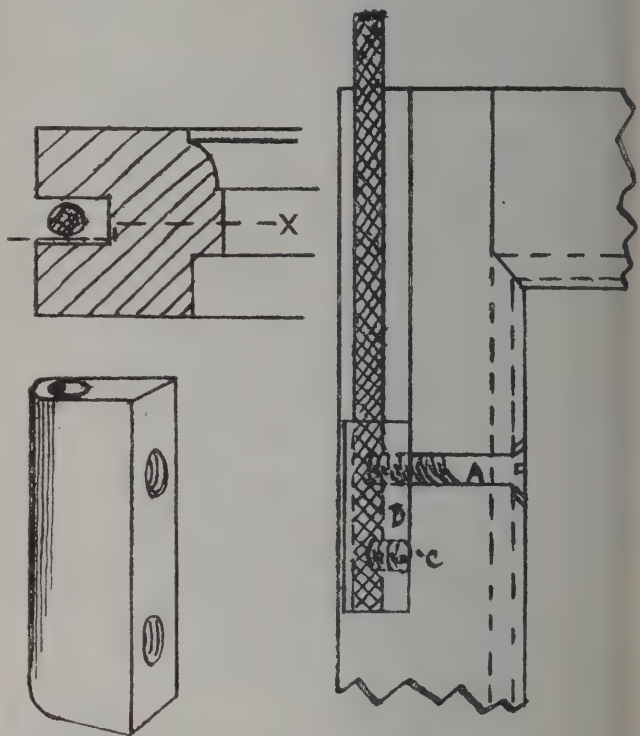
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THE "MANCHESTER" SASH-HOLDER.

THERE are few householders who have not had the paint on their windows damaged, and who have not been put to considerable expense in replacing broken sash cords. The beads are nailed to the sash frames, and can only be taken off by the use of force, which necessitates the employment of a skilled carpenter, and often causes damage to the woodwork. To obviate these inconveniences there has recently been introduced the "Manchester" patent sash-cord holder, by the aid of which a broken cord can be removed and a new cord inserted without taking off the beads or removing the sash. The operation can therefore be done by any handy man, or even by the householder himself. To enable a new sash cord to be easily fixed in a window it is, of course, necessary that both ends of the cord should be readily accessible. One of these is attached to the sash, and the other to the sash weight, which has fallen to the bottom of the pocket in which it slides. To enable them both to be got at, the portion of the parting bead crossing the pocket piece, in the method of construction we are about to describe, is cut and fastened to it. This pocket piece is undercut in the usual way at the top, and fixed with a small screw at the bottom. A novel means of securing the other end of the cord to the sash has been devised, and is illustrated in the annexed engravings. By reference to these it will be seen that the cord lies in the usual groove in the side of the sash, but that instead of being nailed into position, the end of it is secured by the grub screw c in a small brass holder or block, which can be slipped into place and then secured by the screw A, the head of which lies in a brass cup near the glass, and is readily accessible.

The method of operation of removing a broken cord and replacing it by a new one is as follows:—The sash is raised to expose the pocket piece, which is taken out. The sash weight is then lifted out of the pocket, together with the piece of cord attached to it. Next the screw A is withdrawn and the block B lifted out of the groove by the remaining piece of broken cord, which is then withdrawn from the block. The new cord is then reeved round the pulley in the sash frame and tied to the weight, which is put into the pocket, and the opening is then closed. The

block B is then put on to the other end of the cord, and the screw c forced home until it pinches the cord tight and also forces a portion into the countersink at the opposite side of the block. It is then easy to lower the block into the groove in the sash, as shown in the engraving, and to secure it by the screw A, and the work is complete. In old



work these alterations can be made either when a cord breaks or when the window frames are about to be repainted. Once the new fittings, which are being introduced by Mr. W. H. Southern, of 38 King Street West, Manchester, have been applied to a window, there will be no further need to take it to pieces again.

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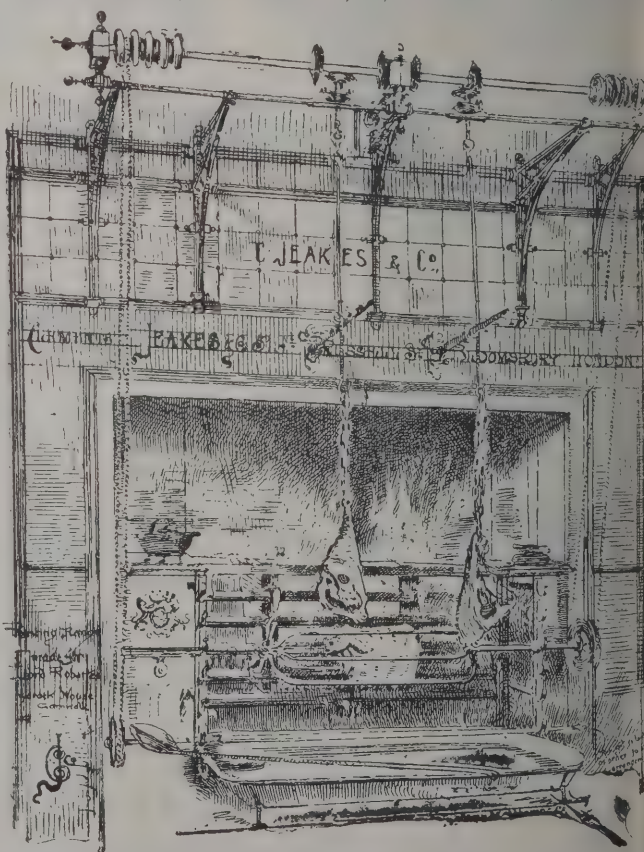
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THE HIGHEST CHIMNEY IN THE WORLD.

THE Alphons Custodis Chimney Construction Company, of New York, which is associated with the English company of the same name, whose offices are at 119 Victoria Street, Westminster, S.W., has just received a contract to build the tallest chimney in the world—in fact, the tallest structure of any sort save the Eiffel Tower and the Washington Monument—from the Boston and Montana Consolidated Copper and Silver Mining Company at Great Falls, Mont. The chimney will rise 506 feet above the top of the foundation and will have an internal diameter at the top of 50 feet. The size of the chimney has been stipulated to lead off 4,000,000 cubic feet of gases per minute, with a maximum temperature of 600 degs. Fahr. The gases consist mainly of SO₂ from the smelter furnaces, and will travel 2,000 feet through flue ducts before reaching the chimney. The chimney is designed so that an additional 60 feet may be put on at any time in case more draught is desired.

The point where the chimney is to be built is 3,535 feet above the sea-level, and on account of the exposed location and the strong gales in Montana, the stack has been designed to withstand a gale of 125 miles per hour velocity. Assuming a unit weight of 116 lbs. per cubic foot of brickwork, the maximum pressure at the foot of the chimney, due to the dead weight and the wind pressure, is computed at 21 tons per square foot. There will be four flue openings in the bottom of the chimney, each flue having 528 square feet of area.

The entire chimney is to be lined with Custodis sectional lining, laid in acid-proof mortar. The present common brick chimney at the smelter, which is 186 feet high by 20 feet diameter, has cracked very badly on account of the influence of the SO₂ gases on the cement mortar. In designing this new chimney special care has been taken to resist the influence of the sulphuric acid gases. The sectional lining will consist of a 4 inch acid-proof brick laid in acid-proof mortar and separated from the main wall by an air space of 2 inches. To prevent the flue dust from settling behind this lining, special form bricks will be employed and all spaces at the top of each section of lining, through which the dust might find its way, will be closed

with mineral wool. The top of the chimney will be protected by a terra-cotta cap with overlapping edges, laid in acid-proof mortar. As the heavy gases will fall in rainy weather alongside of the chimney, the upper part of the outside brickwork will be pointed up with acid-proof mortar, and the outside ladder and lightning-rod will be protected against the influence of the acids.

The foundation will rest on rock and consist of circular concrete walls 30 feet in height, with an outside diameter at the bottom of 90 feet. The pressure produced on the rock due to the dead weight and wind pressure is computed at 7 tons per square foot.

The total dead weight of the chimney is estimated at 17,000 tons, and if common brick were employed, it would require about 6,000,000 bricks to build the chimney.

To scaffold this chimney from the inside will be quite a feature, and four elevators run by electrical power will be employed to carry up men and material.

A new brickyard will be built especially for the purpose of manufacturing the required perforated radial brick, and the plant will be constructed so as to obtain an output of 100 tons per day. The entire brick plant will be run by electrical power derived from the waterfalls of the Missouri river. An aerial tramway will be constructed to transport the material from the brickyard to the chimney, as the brickyard will be at a much lower elevation than the stack.

The Custodis Company expect to finish the chimney in about one year's time. The contract price for the chimney, without foundation, is in the neighbourhood of 200,000 dols.

The tallest chimney in the world at present is the 460-feet chimney at Freiburg, Germany, so that this new chimney will beat the record by just 10 per cent.

"MANHATTAN Lights" is the title of a cleverly illustrated article in *Harper's Magazine* for this month on New York, a city which darkness invades only to a limited extent, in which night as well as day has its full quota of shining hours. Commander Peary also gives his report on the Arctic Club's latest expedition to the North Pole, while Captain Mahan deals with the state of the American navy fifty years ago.

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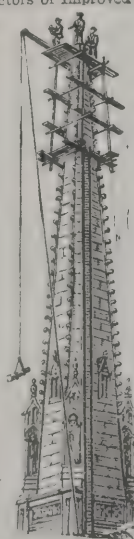
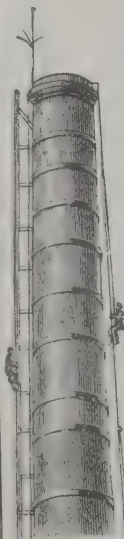
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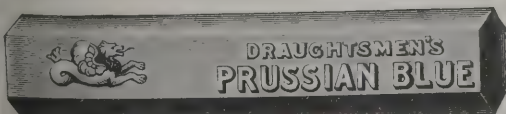
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THE ENGINEERING EXHIBITION.

In connection with the forthcoming Engineering and Machinery Exhibition at Olympia, from September 19 to October 19 next inclusive, we are informed that Mr. Edgar Worthington, B.Sc., has been elected chairman of the hon. advisory council. The list of patrons, it may be added, includes the names of a large number of leading men in every branch of engineering, and the representatives in this country of many foreign interests. Local committees are also to be formed at Glasgow, Newcastle, Manchester, Leeds, Birmingham, Cardiff, Ipswich and other districts. Various sub-committees will superintend departments dealing with educational matters, and lectures, loans, inventions, &c. We also gather that as a result of the last exhibition the sum of 500*l.* was granted to the various benevolent institutions connected with the industry, and it is anticipated that this sum will be largely augmented as a result of the forthcoming exhibition.

FINISH FOR CONCRETE SURFACES.*

THE ordinary concrete structure—whether of building blocks or monolithic masonry, and whether as left by the forms or as commonly finished for exposure to view—is anything but pleasing in appearance, and this fact seems to be the principal reason for the disfavour with which some architects and engineers regard concrete as a material for construction.

The blocks usually have a bubbly, artificial-appearing surface subject to a discoloration that is generally of a sickly or lifeless hue, which offends the eye quite apart from the unpleasant effect of the machine-like regularity of such blocks as are made in imitation of rock-face ashlar. Monolithic concrete is usually finished either by painting with a thin cement wash or by floating, and it is doubtful whether really satisfactory effects have ever been produced by either of these methods on work that was in the forms long enough to get quite hard. The material that ordinarily

* A paper read before the American National Association of Cement Users by Henry H. Quimby.

segregates against the mould forms a skin that seems to have the quality of making very uncertain the attachment to it of any coating, whether of neat cement, paint, or of plaster, and if no coating be applied to it and the skin be not removed the appearance of the work, particularly after a little ageing, can be adequately characterised only in language that is too picturesque for a serious paper. There is, therefore, an active demand for a means of putting a better front upon a concrete body without overloading it in cost.

It has been suggested that a stucco finish can probably be made to adhere permanently, and it is reported that a plaster coating mixture of lime, cement and sand has been tried with gratifying results. A very handsome appearance can undoubtedly be thus obtained, but it is generally unlikely that the coating will endure wholly intact, and certain that it will not unless the surface be first carefully prepared for it by some such method as treating with acid or by picking it rough, which altogether would make an expensive finish, and if portions should loosen and come off the condition would be shabbier than anything else that can be conceived.

The mere roughening, however, of the concrete surface to insure the adhesion of a coating of any sort will itself, if completely and uniformly done, produce a pleasing and ordinarily satisfactory finish—provided, of course, that the concrete has a complete face fully flushed against the forms.

It follows, then, that tooling the surface to the extent of removing the film is a practicable and always available method of finishing it, and the tooling can be done with a bush hammer or an axe, by hand or pneumatic power. The tool should be light, and the blows only heavy enough to "scalp" the work, heavy tools and blows being liable to "stun" the concrete, particularly at and near edges. This scalping partially exposes the material of the aggregate but does not clean it. The complete exposure and cleaning will come with time and exposure to the weather if the work be out of doors; or the action of the elements can be anticipated by washing the tooled surface with a half-and-half dilution of hydrochloric acid, which of course must be thoroughly rinsed off.

The cost of such tooling, without subsequent cleaning

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with acid, has been variously found to be from three to twelve cents per square foot, according to the character and extent of the work and the equipment.

Experiments upon small blocks have shown that a very expeditious method of removing the skin is grinding with a coarse-grained emery or carborundum wheel. The skin is cut about as quickly as the block can be well passed over the wheel, and although no actual comparison has been made and there is no knowledge of a trial of it on large work with a portable wheel, it would seem that with a compressed air or electric motor and a flexible shaft the emery wheel might be used on any work with about the same facility as a power bush hammer, and the rapidity with which the wheel cuts away the face indicates that such a method of tooling will prove to be no more expensive than bush hammering. The wheel might be small in size and therefore of light weight for convenience in handling, and could be fitted with small guide rollers to limit the depth of cutting and secure reasonable evenness in the dressed surface.

Building blocks have been treated, without the preliminary tooling, by immersion for a sufficient length of time in an acid bath strong enough to dissolve the skin and some of the cement mortar between the particles of the aggregate, exposing and cleaning the particles and even leaving them in relief. This process, which is said to have been patented, includes washing after the acid bath, then immersion in an alkali bath to neutralise any absorbed acid remaining, then final washing with water. It is presumably expensive, is of necessity limited in its application to portable work, and care must be taken to avoid using in the concrete any sand or stone that is liable to injury by the acid.

It thus appears that the removal of the film and exposure to view of the clean aggregate by whatever method obtained is the essential feature of the most certainly durable and generally satisfactory surface finish of concrete. Of course it should be understood that the surface must be fully flushed—must be without cavities or visible voids between the stones. This condition can only be secured, when pressure cannot be applied, by using wet concrete thoroughly padded or forked against practically watertight forms, or by using with stiffer concrete a separate mortar or fine con-

crete applied against the face form with a trowel just in advance of the body concrete. Stiff concrete will not completely flush against the forms by mere ramming, even if the ramming does work it to a liquid on the top of the layer. Care must be exercised with every portion of the face, or voids will occur and appear when the forms are removed, and will necessitate patching. Such repairs cannot be made slightly unless at the time they are made the body is still green—before hard set has taken place. If the surface is accessible while still friable, blemishes can easily be removed without leaving a scar.

This fact suggests the desirability of early removal of the forms, and their removal after the concrete has set sufficiently to maintain itself, but before hard set has taken place, furnishes the opportunity for applying a treatment that is very convenient and inexpensive, yet produces the most pleasing and in all respects most satisfactory finish which has yet become known.

This process consists wholly in scrubbing the fresh surface with a brush and water, thereby removing the film, and with it all impression of the forms, and exposing the clean stone and sand of the concrete. If it be done at the right time—that is, when the material is at the proper degree of set—merely a few rubs of an ordinary house scrubbing-brush, with a free flow of water to cut and to rinse clean, constitute all the work and apparatus required. A little additional rubbing will bring the larger particles into appreciable relief, which heightens the effect and, in the judgment of most observers, enhances the beauty of the face.

The practicability of removing the forms at the proper time for such treatment depends upon the character of the structure and the conditions under which the work must be done. The system cannot be applied to the soffit of an arch nor to the underside of a reinforced concrete floor, because the centring must be left as support so long that the surface against it is almost stone hard. If, however, the surface material there is the same as at the sides which have been scrubbed, the soffit can be brought to match the sides by tooling and then cleaning with acid and water as before described.

The texture and colour of the surface obtained by this process will vary with the character of the aggregate of

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the concrete, because in a mixture of cement, sand and stone the cement is in small proportionate volume and has but little influence on the colour of the ensemble. Some opportunity is thus afforded for the exercise of individual taste in texture and colour, and it is very easy to arrange a quiet colour scheme in any work that may be suited to it. Warm tones can be obtained by the use of crushed brick or red gravel. A dark coloured stone with light sand will produce a surface that resembles grey granite. Fine gravel gives an appearance so like sandstone that even close examination will not enable one to distinguish between them. In the construction of monolithic concrete masonry for bridges for the city of Philadelphia it is the practice to use a fine concrete or granolithic face composed of (1) cement, (2) bank sand, and (3) crushed and cleaned black slaty shale, of the size commonly used for tar roofing—say $\frac{1}{4}$ -inch to $\frac{3}{4}$ -inch. This mixture is placed against the face forms and the body concrete is placed against it and rammed into it immediately. In the three years since this process was adopted and during which it has been applied to twelve bridges, no case of separation of granolithic face has been observed, and not a single hair crack has been found, nor any kind of deterioration or tendency to discoloration noticed—indeed, the weathering seems to make the surface cleaner and more stone-like.

In general the washing is done on the day following that on which the concrete was deposited. Portland cement is used. When a quicker setting cement than usual is met, or through some other influence the surface is found upon removing the forms to be too hard for the scrubbing-brush, a wire brush is employed first, then a small block of wood or a brickbat with water and sand, which is found necessary to cut the film.

If the surface has hardened so as to require the grinding action of the sand and block, the aggregate will not be brought out into very decided relief and the face will therefore be comparatively smooth. In cold weather when crystallisation proceeds slowly the forms may require to remain two days before the washing can be done safely, and in very cold weather they have been left a whole week and the scrubbing was successful.

Consideration of the cost of the process may involve

the question of the design of the forms. When the work is such that not the whole height of it can be placed in one day it may be advisable to construct the form so that the planks can be removed without disturbing the uprights. This will add to the cost but may be compensated for by the saving in planks. In the case of a long or heavy wall where only one course can be laid in a day only one course of planks is required.

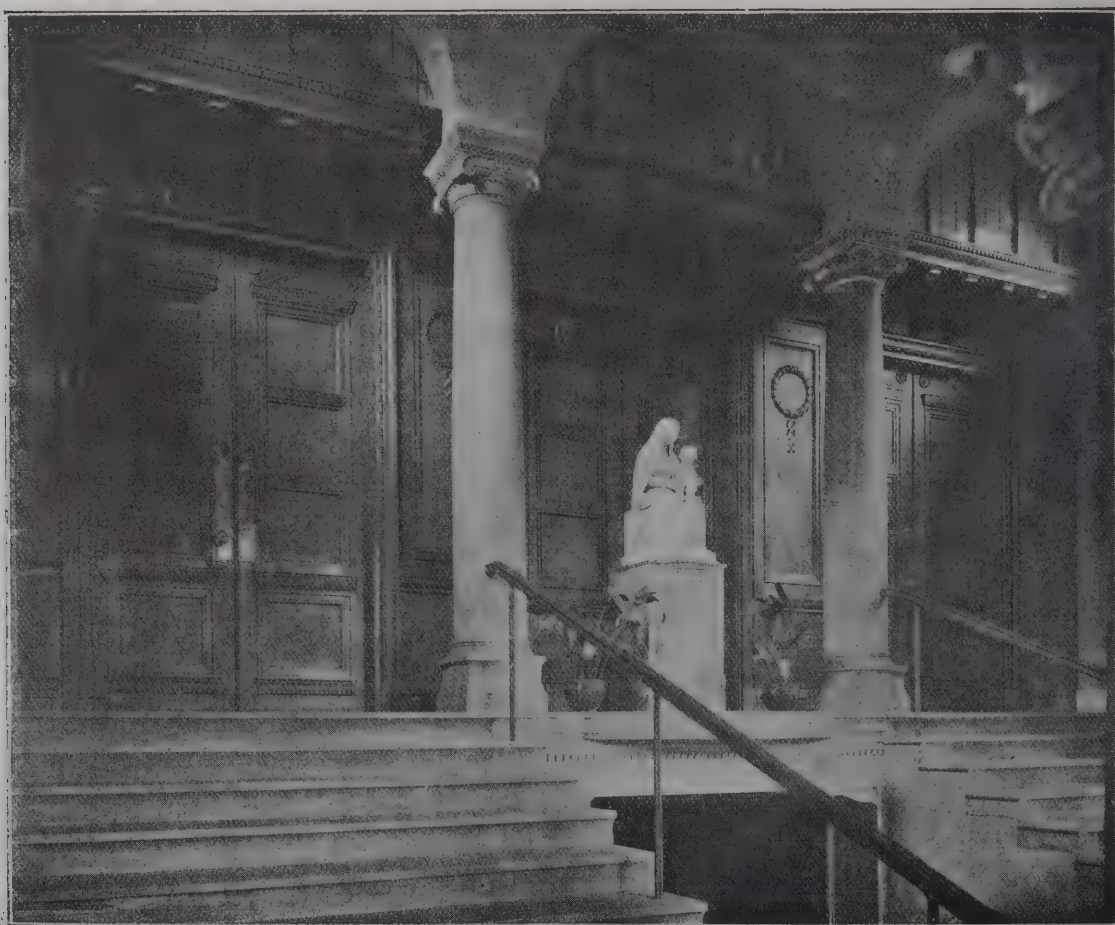
If indentations are made at the joints between courses the joints can easily be concealed. If the indentations are not desired great care must be taken to scrape thoroughly clean the top of each course quite to the face, and to use the same consistency of the new granolithic facing as that of the lower course. It is possible thus to make a joint that will not be very noticeable, but the vigilance of the inspector must not be relaxed at any point, and even then the joint will be at least distinguishable. The bead indentations are very convenient and useful in working, and in appearance they relieve what otherwise would be a large blank area.

When the planks are desired to be removable the studs are set some distance from the face, 8 to 12 inches, and the planks are braced against them by cleats nailed so as to be easily loosened. The planks are in one width the full depth of a course, either solid or made up of narrow plank battened together. A triangular bead strip is nailed to the face at each edge and the layer of concrete is finished at the middle of the top bead.

When a plank is taken off it is scraped clean of adhering cement, then oiled and reset with its bottom bead fitted into the half indentation just left by the top bead.

A couple of carpenters with perhaps a helper will take off and reset a course of plank 100 feet long in four to eight hours. The course may be whatever is desired for either convenience or architectural effect. The yardage of concrete accommodated will vary also with the thickness of the wall and the proportions of face to back. Thus the cost of changing forms will vary from 25 to 75 cents per cubic yard. In building work generally the ordinary forms can be used. Of course care must be taken not to load members too heavily while they are green and naked, but the same care should be exercised with members still in forms, because the forms, while preventing collapse, will not prevent injury to the concrete by undue pressure upon it.

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EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in
connection with the law, practice rules and procedure under
the Workmen's Compensation Act, we have added to our
staff A VERY EMINENT BARRISTER, who has
made the subject a special study, and will be glad to answer
in the columns of this paper any questions relating to the
complicated matters arising from the provisions of this
difficult Act. Our LEGAL ADVISER will further
answer any legal question that may be of interest to
our readers. All letters must be addressed "LEGAL
ADVISER," Office of "The Architect," Imperial Build-
ings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications
as brief as possible. The space we can devote to Corre-
spondence will not usually permit our inserting lengthy
communications.

The Editor will be glad to receive from Architects in London
and the Provinces results of Competitions and Tenders
and other particulars of Works in progress in which they
may be interested.

No communication can be inserted unless authenticated by the
name and address of the writer—not in every case for
publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must
necessarily be held responsible for their contents.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-
appearance of Contracts Open, Tenders, &c., it is par-
ticularly requested that information of this description be
forwarded to the Office, Imperial Buildings, Ludgate
Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

CASTLEFORD.—March 3.—The Governors of Castleford
Secondary schools invite designs from architects practising
in the West Riding of Yorkshire for a dual Secondary
school, &c., for 300 scholars. Premiums of 50l. and 25l. to
be awarded by Mr. W. H. Brierly, the assessor. Deposit
10s. 6d. Mr. A. Wilson, clerk to the Governors, Station
Road, Castleford.

DURHAM.—March 15.—The Durham County Education
Authority invite competitive plans for a Secondary school
at Bishop Auckland. Premiums of 20l. and 10l. will be
paid for the plans placed second and third respectively.
Mr. J. A. L. Robson, secretary for higher education, Shire
Hall, Durham.

SALFORD.—Feb. 16.—Architects are invited to submit
their names for appointment as architect for the erection of
public baths. Only those with previous experience will be
entertained. A limited number will be selected by the
committee for competition. Further particulars of Mr.
L. C. Evans, Town Clerk, Salford.

SUNDERLAND.—March 30.—New church and halls for the
Presbyterian Church of England in the Side Cliff Road,
Roker, Sunderland. Premiums of 25l. and 15l. respectively.
Lithographed plans of site, &c., on application to Mr. George
W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

ARMATHWAITE.—March 2.—For the erection of a stone
bridge of four arches across the river Eden, in the parishes
of Ainstable and Hesket-in-the-Forest, within half a mile of
Armathwaite station, Cumberland. Deposit 1l. 1s. Mr.
Geo. Jos. Bell, M.I.C.E., county surveyor and bridge-master
for Cumberland, The Courts, Carlisle.

BIRKENHEAD.—Feb. 26.—For alterations and additions
to the workhouse at Tranmere, for the Guardians. Mr.
Edmund Kirby, 3 Cook Street, Liverpool.

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BRIDGNORTH.—Feb. 21.—For the erection of a laundry and alterations at the workhouse, for the Guardians. Mr. E. Trevor, architect and surveyor, High Street, Bridgnorth.

BRADFORD.—Feb. 21.—For the reinstating of spinning-mill in Filey Street, Hammerton Street, after damage by fire. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

BRIGHTON.—Feb. 22.—For the erection of a water-tower in the asylum grounds, for the visiting committee of the Brighton County Borough asylum, Haywards Heath. Mr. J. G. Gibbins, of the firm of J. G. Gibbins & Son, architects and surveyors, 3 Palace Place, Brighton.

BRISTOL.—Feb. 19.—For the construction of retaining walls on the north side of Fox Lane, Stapelton Road. Deposit 2*l*. The City Engineer, 63 Queen Square.

BURNLEY.—Feb. 19.—For construction of a potato shed, weigh office, weigh-machine foundations and the covering over of colliery tramway at Danes House, for the Lancashire and Yorkshire Railway Co. The Engineer's Office, Hunt's Bank, Manchester.

CAMBORNE.—Feb. 16.—For the erection and completion of two houses in Trelowarren Street. Mr. Edwin H. Crispin, Trelawny Road, Camborne, Cornwall.

CHARING HEATH.—Feb. 28.—For renovating the interior of the school-house, for the managers of the Charing Heath school. Rev. J. W. Sothern, Charing Heath, Kent.

DUNDEE.—Feb. 18.—For the erection of boundary walls and other masonwork in connection with the Gaggie filters, for the Dundee water commissioners. Deposit 1*l*. 1*s*. Mr. George Baxter, C.E., M.I.C.E., engineer and manager, 93 Commercial Street, Dundee.

GLASGOW.—Feb. 18.—For the construction of an engine-shed, sand-kiln and water-tank at Yoker in connection with the Clydebank Dock branch, for the Caledonian Railway Company. Deposit 2*l*. 2*s*. Messrs. Formans & M'Call, C.E., 160 Hope Street, Glasgow.

GLASGOW.—Feb. 23.—For the work of constructing the substructure of machinery buildings, Shieldhall, for the Corporation. Mr. W. D. Hamilton, 59 Bath Street, Glasgow.

GREAT AMWELL.—Feb. 20.—For the construction of bays at Amwell Marsh pumping station, Great Amwell, Herts, for the Metropolitan Water Board. The Clerk of the Board, Metropolitan Water Board, Savoy Strand, W.C.

GLOSSOP.—Feb. 23.—For the construction of a convalescent and nurses' home. Deposit 1*l*. 1*s*. Messrs. Bulman & Vinycomb, architects, 67 and 69 Chancery Lane, London, W.C.

GRAVESEND.—Feb. 19.—For alterations and additions to Victoria House. The Borough Surveyor's Office, Gravesend, Kent.

HALIFAX.—Feb. 18.—For the mason, joiner, carpenter, plasterer, slater, painter, plumber's heating and steelwork required in the taking-down of the old school at All Saints, Salterhebble, and erection of a new school on the adjoining site. Messrs. Joseph F. Walsh & G. H. Nicholas, architects, Museum Chambers, Halifax.

HUNSTANTON.—Feb. 23.—For alterations and additions and the erection of two shop-fronts in Westgate. Mr. H. Guy, Hunstanton.

IRELAND.—Feb. 22.—For the erection of seating for the Second Presbyterian church, Ballywalter. Messrs. J. & Mackenzie, architects, Scottish Provident Buildings, Belfast.

KEIGHLEY.—Feb. 21.—For the erection of a warehouse at Holme Mill. Messrs. John Haggas & Sons, architects, North Street, Keighley.

KINGSTON-ON-THAMES.—Feb. 19.—For pulling-down and erecting a three-span iron roof with skylights, gutters, stanchions, covering an area of about 6,580 feet at The Old House, Esher, Surrey, carting to and re-erecting same at North Common farm, New Malden, Surrey, repairing the structure and providing new foundations and sides, for the Guardians of Kingston Union. The large kitchen at the club to be removed. Mr. Jas. Edgell, clerk, Union Club, Coombe Lane, Kingston-on-Thames.

KIRBYMOORSIDE.—March 1.—For reseating and renovating Rudland Primitive Methodist chapel, near Kirbymoorside. Mr. Wm. Atkinson, Sleightholmedale.

LITHERLAND.—Feb. 25.—For the construction of a school and female conveniences, children's shelter, &c., in the

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LANDAFF.—Feb. 22.—For the erection of nine pairs of detached freehold cottages in Hawthorn Road, off Station, Cardiff. Mr. W. H. Dashwood Caple, 10 Church Street, Cardiff.

LANELLY.—Feb. 26.—For the erection of an additional room, &c., to Bigyn Boys' Council school, Llanelly, for Llanelly education committee. Mr. Ifor W. Watkins, of committee, education committee, Education Office, Llanelly.

LONDON.—Feb. 26.—For the erection of a public elementary school on a site in Merton Road, Wandsworth, for the London County Council. Mr. G. L. Gomme, County Hall, Spring Gardens, S.W.

LONDON.—Feb. 27.—For repairing, maintaining and erecting police stations, police courts, houses, buildings, within four miles of Charing Cross, for three years from April 1, 1907. Deposit 1*l*. 1*s*. The Police Surveyor, Scotland Yard, S.W.

LONDON.—March 11.—For additions and alterations to West Ham and East London Hospital, Stratford, E. Deposit 1*l*. Apply by March 2 to Mr. H. Percy Adams, architect, 28 Woburn Place, Russell Square, London.

MANCHESTER.—Feb. 16.—For the erection of engine and houses, offices, workshops, &c., for a hydraulic pump-station in Water Street. Deposit 1*l*. 1*s*. The City Engineer, Town Hall, Manchester.

MATTERDALE.—Feb. 23.—For the erection of elementary school and master's house at Matterdale, Cumberland. Mr. Joseph Forster, architect, 13 Earl Street, Carlisle.

MINTLYN.—Feb. 16.—For the erection and completion of semi-detached cottages at Mintlyn, Lynn, Norfolk. Mr. T. Tilson, architect, Railway Road, Lynn.

NELSON.—Feb. 23.—For the erection of a fire station at Nelson:—(1) Excavator, mason and bricklayer; (2) carpenter and joiner; (3) plumber and glazier; (4) slater; (5) painter. Mr. B. Ball, A.M.I.C.E., borough engineer and surveyor, Town Hall, Nelson, Lancs.

NEWCASTLE-ON-TYNE.—Feb. 27.—For the erection of new buildings, platform, roofing, &c., New Bridge Street,

for the North-Eastern Railway Co. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

NOTTINGHAM.—Feb. 21.—For the enlargement of the post office at Nottingham, for the Commissioners of H.M. Works and Public Buildings. The Secretary, H.M. Office of Works, &c., Storey's Gate, London.

POOLE.—Feb. 19.—For work required to be done at the workhouse laundry, Longfleet. The Workhouse Master, Longfleet, Poole.

PRESTON.—Feb. 19.—For the construction and completely finishing manual instruction-room, at the Grammar School, Cross Street, for the Corporation. Deposit 1*l*. 1*s*. The Borough Surveyor, Town Hall, Preston.

REDRUTH.—Feb. 20.—For the erection of a pair of cottages at Sinns Barton Farm, near Redruth. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

SCOTLAND.—Feb. 16.—For the erection of schoolmaster's house at Westruther. Mr. T. R. Atkinson, architect, Earlston.

SHILDON.—March 19.—For the erection of a school at Shildon for about 1,100 scholars:—(1) Below ground-floor levels; (2) above ground levels (including latrines, play-sheds, playgrounds, boundary-walls, &c.). The County Education Committee's Architect, Shire Hall, Durham.

TANTOBIE.—Feb. 16.—For the erection and completion of cart-shed, stables, &c., at Tantobie, Durham. Mr. Geo. Thos. Wilson, architect, 22 Durham Road, Blackhill.

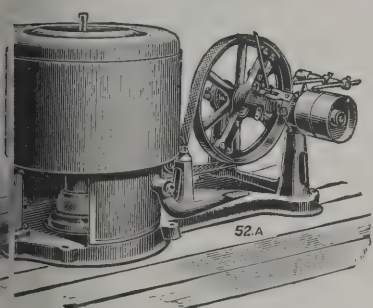
ULVERSTON.—Feb. 22.—For alterations and additions to the old Masonic Hall, Theatre Street, Ulverston, for Messrs. James Thompson & Co. Messrs. J. W. Grundy & Son, architects and surveyors, Central Buildings, Ulverston.

WAKEFIELD.—Feb. 25.—For the erection of a chronic block at the West Riding asylum to accommodate 120 cases. Deposit 1*l*. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—Feb. 16.—For the erection of a minister's house for Salem (C.M.) chapel, Llanllyfni. Messrs. Richard Davies & Son, architects, Bangor.

WALES.—Feb. 16.—For erection of a reading-room, caretaker's cottage, &c., on site at Coedpenmaen, near Pontypridd. Mr. Philip John Jones, architect, Cilfynydd, near Pontypridd, and Tonyrefail.

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PRICES AND SAMPLES ON APPLICATION.

WALES.—Feb. 21.—For the construction of a swimming-bath and gymnasium-room, the erection of billiard-room, entrance hall, lavatories, &c., to the Workmen's Hall and Institute, Blaengarw. Deposit 3*l*. 3*s*. Mr. J. Morris-Williams, architect and surveyor, Blackmill, near Bridgend.

WALES.—Feb. 23.—For alterations and additions to Lockwood, Marshfield, Michaelston-y-Vedw. Deposit 1*l*. 1*s*. Mr. W. H. Dashwood Capel, architect, 2 Church Street, Cardiff.

WALES.—March 6.—For alterations and additions to Morfa Calvinistic Methodist chapel, Kidwelly. Deposit 1*l*. 1*s*. Messrs. W. Jones & W. D. Morgan, M.S.A., joint architects, Pentre, Rhondda Valley.

WATCHET.—Feb. 18.—For the works required in erection and completion of a new school at Watchet, for the Somerset County education committee. Messrs. Hawkes & Andrew, Williton.

WEST BOLDON.—Feb. 19.—For alterations to the mixed school and cookery centre at West Boldon, Durham. Mr. W. Rushworth, architect, Shire Hall, Durham.

WEST KIRBY (CHESHIRE).—Feb. 18.—For the erection of a new school at West Kirby, for the administrative sub-committee for the Hoylake and West Kirby district. Mr. H. Beswick, county architect, Newgate Street, Chester.

WINSFORD.—Feb. 20.—For the erection of two shelters, one on the Over and the other on the Wharton recreation grounds, Cheshire. Mr. James Wilkinson, surveyor to the Council, Market Place, Winsford.

WORKINGTON.—Feb. 19.—For the construction of boundary walls, built in rubble, near Derwent House, Bareport, for the Corporation. Mr. W. L. Eaglesfield, borough surveyor, Town Hall, Workington.

WREXHAM.—Feb. 26.—For the erection of waiting-room, footbridge, &c., at Wrexham station, for the Great Western Railway Co. The Engineer at Wolverhampton station.

THE Westminster City Council have agreed to the appointment of a special officer for the inspection of restaurants. His duty will be to make systematic examination as to the sanitary condition of restaurants and other places where food is cooked for sale.

TENDERS.

CATFORD.

For enlargement of sorting-office.

Bishop	£1,493	c
Blay	1,228	c
Roberts	1,199	c
Martin, Wells & Co.	1,199	c
Perry Bros.	1,139	c
Mills	1,117	c
Leng	1,082	c
Lonsdale	1,059	c
Barker & Co.	1,053	c
Pasterfield & English	1,028	c
Loasby & Salmon	1,016	c
F. & G. FOSTER (accepted)	968	c

CRESWELL.

For erecting five shops and two dwelling-houses. Mr.

STOCKTON JUDD, architect, Shirebrook, Mansfield.

Haycock	£2,958	10
F. H. & J. W. Moore	2,870	0
Eastwood & Son	2,864	0
Lee & Kirk	2,856	0
Key	2,830	0
Beckett	2,750	0
Layton	2,680	0
Antill	2,652	13
Streets	2,680	0
Houfton	2,653	0
Hill Bros.	2,558	18
THOMASON, Whitwell (accepted)	2,530	0

EMBLETON.

For works required in the erection of villa. Messrs. STON

& NICHOLSON, architects, Workington.

Accepted tenders.

Hyde, builder	£200	0
Grave & Sons, joiner	85	0
Maudle, tiler	51	3
Strickland, plasterer	46	10
Anderson, plumber	29	15
Hodgson, painter	24	10

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LANGLEY MOOR.

For roadmaking, kerbing, flagging, &c., in Whitwell Terrace. Mr. GEO. G. DONKIN, surveyor.			
Starkey & Co.	£615	15	4
Manners.	532	0	0
Walton.	452	16	6
Edge & Co.	407	12	8
Walton Bros.	402	7	0
REEVELL, West Hartlepool (accepted)	331	0	8

LETCHWORTH.

For cottage, Baldock Road, Garden City. Messrs. STONEBRIDGE & FOLL, architects, Woburn Sands.			
Foster & Co.	£553	0	0
Jeffs & Edwards	553	0	0
Beckley & Turpie	543	0	0
COLLINS (accepted)	475	0	0

LLANBERIS.

For alterations and repairs to the old post-office. Mr. LLEWELYN LLOYD JONES, architect, Carnarvon.			
Jones Bros.	£393	0	0
Jones	381	17	0
MORRIS & SON, Carnarvon (accepted)	321	0	0

LLANSAIN.

For the erection of Council school for 120 scholars. Mr. W. D. JENKINS, county education architect, Carmarthen.			
Mercer.	£2,595	0	0
Jones	1,789	0	0
R. Davies	1,750	0	0
D. Davies	1,749	0	0
Howells & Son	1,729	9	0
PHILLIPS, Trimsarau (accepted)	1,695	0	0
Architect's estimate	1,700	0	0

LONDON.

For reconstructing drains at No. 60 Lincoln's Inn Fields, for London County Council.			
Kerry & Son	£148	0	0
Lapthorne & Co., Lambeth (recommended)	100	0	0
Valuer's estimate	100	0	0

LONDON—continued.

For the construction of an 18-inch sewer in Mardale Street, Hammersmith.			
Paterson, Ltd.	£1,748		
Rogers & Co.	1,367		
Perry & Co.	1,100		
Jackson	899		
Wimpey & Co., Hammersmith (recommended)	812		
For making-up footways, &c., at Prince Consort Road.			
British Granite and Paving Co.	£2,084		
Ewart	1,992		
Griffith & Co.	1,940		
Killingback & Co.	1,899		
Muirhead & Co.	1,797		
Mowlem & Co.	1,736		
Paterson, Ltd. (recommended)	1,726		
For construction of the drain from the Morning premises to deep-level sewer.			
Kennedy	£2,524		
Tilbury Contracting and Barging Co.	2,090		
Pedrette & Co.	1,867		
Mowlem & Co.	1,417		
Muirhead & Co.	1,357		
A. J. Neave	1,345		
W. Neave & Son	1,335		
Paterson, Ltd.	1,216		
Ewart	1,215		
Killingback & Co. (recommended)	1,155		
For the erection of six houses and shops in Landor Road, S.W.			
Stockwell. Mr. V. VAGNOLINI, architect, 33 Strand, S.W.			
Faulds	£6,897		
Marsland & Sons	6,860		
Rice & Son	6,464		
WHITEHEAD & Co., LTD. (accepted)	6,445		
For rebuilding 10 Eagle Court, E.C. Mr. V. VAGNOLINI, architect.			
Faulds	£630		
Edwards & Medway	599		
Hunt & Sons	575		
RICE & SON (accepted)	539		

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Harland	£26 5 0	5
Allison & Co.	25 5 0	5
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Brinsmead & Sons	23 0 0	—
Hillier Piano and Organ Co.	23 0 0	5
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Pull & Field	22 0 0	5
Spencer & Co.	21 10 0	2½
Munt Bros.	21 10 0	5
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Lyon	20 10 0	2½
Broadwood, White & Co.	20 10 0	2½
Mornington & Weston	20 10 0	5
Smith & Dawson	20 0 0	2½
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Sames	19 10 0	2½
Gilbert	19 0 0	2½
Woods	18 19 0	—
Wright	18 18 0	5
Barratt & Robinson	18 15 0	2½
Grover & Grover	18 15 0	3¾
Robertson & Co.	18 15 0	5
Witton, Witton & Co.	18 10 0	2½
Squire & Son	18 4 0	5
Harper	17 10 0	5
Vaney	17 0 0	2½
Jarrett & Goudge (recommended)	17 0 0	5

For the supply and erection of new heating boilers and circulating pipes for use in the greenhouses at Ruskin Park.

Wilson & Smith	£101 0 0
Richmond & Co.	90 0 0
G. & E. BRADLEY, 68-80 Elfort Road, High-bury, N. (accepted)	71 10 0

LONDON—continued.

For the erection of a refreshment house and shelter at Avery Hill.

Iles & Co.	£3,525 10 0
Boulton & Paul	1,469 0 0
Smith & Son	1,201 19 0
Harding & Son	1,189 9 7
Pollock	1,146 8 5
J. & C. Bowyer	1,112 0 0
Hawkins & Co.	1,112 0 0
Griggs & Son	1,072 10 0
Harbrow	1,064 10 0
Roberts	1,036 4 0
Thomas & Edge	999 0 0
Blay	998 17 5
Miskin	991 1 1
Barker & Co.	975 0 0
F. & G. Foster	948 0 0
Knight, Sidcup (recommended)	929 0 0
Loasby & Salmon	909 14 6
Architect's estimate	975 0 0

For supplying and delivering 500 notice boards to London County Council schools, the prices given being for the supply of fifty boards at a time.

Hammer & Co.	£120 0 0
Waring & Gillow	112 10 0
Bouneau	105 0 0
Spencer & Co.	93 0 0
Martin	93 0 0
Cruwys	92 10 0
Lascelles & Co.	76 0 0
Marchant & Hirst, 136 Highgate Road (recommended)	70 0 0

For alterations at 261 West Green Road, Tottenham, N., for the London and Provincial Bank. Mr. V. VAGNOLINI, architect.

Lawrence & Son	£1,244 0 0
Pollard & Brand	1,200 0 0
Hart	1,120 0 0
Rowley	1,024 0 0
Edwards & Medway	1,014 0 0
STEWART (accepted)	958 0 0


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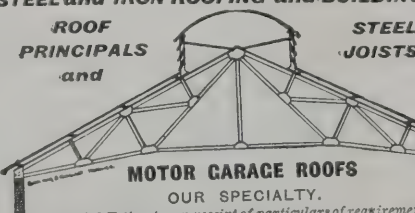
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LONDON—continued.

For providing and fixing two independent boilers and low-pressure hot-water apparatus at the Walnut Tree Walk school, Lambeth.

Esson & Son	£977	0	0
Price, Lea & Co.	845	0	0
Wippell Bros. & Row	786	18	6
Cannon & Sons	780	10	0
Stevens & Sons	780	0	0
Gray	775	0	0
Turner & Co.	734	0	0
Cash & Co.	697	0	0
Christie	630	0	0
Harlow & Son, Macclesfield (<i>recommended</i>)	590	0	0
Architect's estimate	750	0	0

For erecting the first instalment of fifty-two cottages on Section B of the Norbury estate, for the London County Council, viz. twenty first-class or five-roomed cottages, sixteen second-class or four-roomed cottages and sixteen fourth-class or three-roomed cottages.

Lovatt	£16,277	0	0
Kirk & Randall	14,980	0	0
Wall	14,404	0	0
Hawkins & Co.	13,964	0	0
Gathercole Bros.	13,900	0	0
Holliday & Greenwood	13,735	0	0
Leslie & Co.	13,619	0	0
Smith & Sons	13,544	0	0
F. & H. F. Higgs	13,448	0	0
F. & T. Thorne (<i>recommended</i>)	12,794	0	0
Architect's estimate	13,676	0	0

For rebuilding No. 22 Denman Street, W., for Mr. W. S. Shepherd. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. £1,500 0 0

For alterations at the St. James's tavern, Bevis Marks, E.C., for the Licenses Insurance Corporation, Ltd. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. KIRBY (*accepted*) £960 0 0

For fittings at No. 48 Mark Lane, E.C. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. PERRY & Co. (*accepted*) £1,387 0 0

LONDON—continued.

For alterations at No. 59 Bishopsgate Street, E.C., for Messrs. W. Hill & Son. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. STAINES (*accepted*) £200 0

For alterations and dilapidations at Nos. 60 and 61 Bishopsgate Street, E.C., for Messrs. W. Hill & Son. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. STAINES (*accepted*) £809 0

NEW BRIGHTON.

For erecting new school for Wallasey Urban District Council. Mr. E. KIRBY, architect, 5 Cook Street, Liverpool. GERRARD & SONS, Manchester (*accepted*) £15,974 0

ROMFORD.

For making-up Catherine, Margaret and Hamilton Roads. Mr. H. T. RIDGE, assistant surveyor.

Wood & Son	£2,050	9	0
Wilson	1,984	17	0
Fry Bros.	1,969	1	0
Griffiths & Co.	1,883	8	0
Wilson, Border & Co.	1,849	10	0
Jackson	1,749	0	0
Free & Sons	1,698	0	0
Westgate	1,688	5	0
PARSONS & PARSONS, Ilford (<i>accepted</i>)	1,576	7	0

SALTBURN-BY-SEA.

For tar macadamising Station Square with annealed slag. Mr. G. S. L. BAINS, surveyor.

Ridley & Sons	£473	2	0
Reevell	355	11	5
ELLISON, Cleckheaton (<i>accepted</i>)	339	17	6
South Bank Tar Macadam Co. (<i>ordinary slag</i>)	306	11	8

For the erection of a pavilion on the lower promenade. Mr. G. S. L. BAINS, surveyor.

Iron and steelwork.

Macfarlane & Co.	£523	10	0
Law & Co.	482	10	0
Lion Foundry Co.	464	3	0
LOCKERBIE & WILKINSON, Tipton, Staffs. (<i>accepted</i>)	411	16	8

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EMMETT, Saltburn (<i>accepted</i>)	251	0	0
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SCOTLAND.

or additions to Monifieth public school. Mr. JAMES MUNRO, architect.

Accepted tenders.
A. Ramsay, mason.
J. B. Hay, joiner.
A. M'Ritchie, plasterer.
G. Stenhouse, plumber.
Mayer & Winton, painter.
Hogg & Sons, slater.
Donald & Sons, ventilating engineer.

SLEAFORD.

or the erection of the Sleaford County school, for the Kesteven County Council.
WRIGHT & SON, Lincoln (*accepted*). . . . £744 0 0

SWALLOWFIELD.

or the erection of school for 250 scholars.

Smallbone	£4,428	14	5
Newbery	4,017	1	1
Mussellwhite & Sapp	3,976	0	0
Holden & Co.	3,994	10	6
Jenkins & Sons	3,974	0	0
Bosher & Sons	3,943	17	10
Page & Sons	3,936	0	0
Martin, Wells & Co.	3,894	0	0
Pilgrim	3,871	0	0
Colborne	3,832	6	2
F. & G. Foster	3,797	0	0
Hughes	3,794	0	0
Davis & Lawrence	3,785	0	0
Fitt	3,767	0	0
Faulks	3,763	0	0
Chick, Carden & Co.	3,720	0	0
Cox	3,663	0	0
Cox & Sons	3,645	0	0
Godwin	3,644	0	0
Lewis Bros.	3,567	0	0
Wheeler	3,528	6	6
Fisher Bros.	3,478	15	0
HARRIS & SON, Marlow-on-Thames (<i>accepted</i>)	3,250	0	0

STOURPORT.

For carrying-out sewage scheme. Messrs. WILLCOX & RAIKES, engineers, Birmingham.

Law £13,800 0 0
Osenton 13,440 0 0
VALE & SONS, LTD., Stourport (*accepted*) 13,150 0 0
Beighton & Berry (*withdrawn*) 12,017 0 0

SURREY.

For alterations at Wingham, Claygate. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C.

STOKES & SONS (*accepted*) £350 0 0

For three detached villas, The Avenue, Claygate, for Messrs. Barnes & Co. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. £1,650 0 0

For four detached villas, at Hare Lane, Claygate, for Mr. Charles Higby. Mr. HERBERT KNIGHT, architect, 75 Aldermanbury, E.C. £2,000 0 0

TERRINGTON.

For alterations and additions to Westfield House. Messrs. WALKER & WALKER, architects, Wisbech and Terrington.

Bateman & Son £467 0 0
J. J. Bone 439 0 0
Flood 425 0 0
P. Bone 413 0 0
Johnson & Son 401 15 0
Rands & Son 398 0 0
Green 391 10 0
Wilkinson 390 0 0
Tash & Langley 374 10 0

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Tutt 620 0 0
Tranfield 600 0 0
Sinfild 597 0 0

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TRADE NOTES.

ALTERATIONS and additions are being carried out at Cleeve House, Seend, by Messrs. Dove Bros., Ltd., under Mr. W. B. Medlicott, of London. The dressings are of Doultling stone from the Chelynch quarries.

THE payment of the "London and Lancashire" to its San Francisco policyholders will amount to 1,750,000*l.* This is the largest sum which has ever been paid by a British company for a single fire. The claimants numbered 2,995, and twenty-five special adjusters were occupied continuously for over four months.

At the Builders' Exchange, High Street, Birmingham, in future will be found club accommodation. This will be no doubt popular with the members. The opening will be on the 28th of this month, and the secretary of the Builders' Exchange has arranged for one of the popular lectures, at which there will be several demonstrations of use and value to those engaged in building operations.

MESSRS. GEORGE MILLS & Co, hydraulic engineers, of Radcliffe, who are proprietors of the "Titan" sprinkler, have received the following satisfactory communication from the secretary of the Ruby Mill Company, Ltd., Water Sheddings, Oldham, dated February 9:—"We have pleasure in testifying to the prompt action of your 'Titan' sprinkler. We had a slight fire in our cotton room, but the sprinkler went off immediately, and was very effective in preventing a serious fire."

THE Local Government Board have written to the Brighton Town Council sanctioning the borrowing by the Council of 21,200*l.* for various purposes in connection with the electricity undertaking.

ELECTRIC NOTES.

MR. A. A. G. MALET, Local Government Board inspector, held a recent inquiry at the Guildhall, Worcester, into the application of the Corporation for sanction to borrow 6,500*l.* for the purposes of the electricity undertaking, viz. the extension of the Hylton Road station to accommodate the whole of the steam production plant, provision of new plant, and the repayment of upwards of 4,000*l.* of the original loss in respect of plant which is about to be "scrapped." It is estimated that the rearrangement of the works will effect a saving of 1,200*l.* per annum.

THE Edinburgh Town Council have rejected a motion expressing disapproval of the decision of the recent special meeting of the Corporation to cable the Gilmore Place round of tramways. The Council subsequently adopted a recommendation by the tramway committee that the tramway lines authorised by the Act of last year from Leith Street to Canon Mills and along East Claremont Street to Pilrig Street be cabled. It was agreed to appoint Sir Alexander Kennedy as cabling engineer, conjointly with the burgess engineer.

THE Salford Town Council have confirmed the appointment of Mr. M'Cowen as electrical engineer at a salary of 800*l.*, rising to 1,000*l.*, and defeated the proposal that the commencing salary should be 700*l.* On the previous day at a special meeting of the Belfast Corporation in committee it was resolved by the casting vote of the Lord Mayor—nineteen having voted for and nineteen against—to increase the maximum salary of Mr. M'Cowen from 800*l.* to 1,000*l.* with a view of inducing him to continue to hold his position of electrical engineer in Belfast, and reject the Salford appointment.

WITH the object of reducing the number of accidents in factories the Association of Italian Manufacturers, whose headquarters are in Milan, announce an international competition for prizes. A gold medal and 8,000 lire are offered for a system to eliminate the danger of a contact (of whatever resistance) between the primary and secondary circuit of alternate current transformers and their respective lines, and a gold medal and 10,000 lire for a hand crane or winch so constructed that without sensible reduction of lowering

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eed, any danger due to the rotation of the handles by the ascending load is avoided.

THE contract for the additional steam dynamos at the Belfast Corporation electric station has given rise to considerable diversity of opinion amongst engineers in that city, the principle at issue being the relative merits of the turbine engine as against the reciprocating engine. The question of further plant has been rendered necessary in order to meet the increased demand for electrical energy in the winter of 1907. There are at present 255,000 candle-power lamps connected, and applications for a further 20,000. The rate of increase for the last few years has been very considerable, and it is anticipated that this increase will continue owing to the reduced price for energy. At a recent meeting of the Corporation in committee there was discussed the report from the tramways and electricity committee on the question, referred back to them last monthly meeting, of accepting the tender for two 500 kw. turbo dynamos, at 14,956*l.*, from Messrs. Willans & Robinson. Eventually the matter was adjourned for a week pending the course that events will take concerning the office of electrical engineer.

THE agenda paper of the Woolwich Borough Council contains a report from the electricity committee on the subject of the electricity undertaking. The committee print for the first time the comments of Sir A. B. W. Kennedy, who states that upon the two generating stations the Council have spent 253,732*l.*; that the erection of the Plumstead station was a serious mistake, and largely responsible for the unfortunate position in which the undertaking now finds itself. In these circumstances the electricity committee recommend the closing of the wiring department from March 31, pointing out that the district auditor stated, in his report in reference to the electricity department, "I must very fully endorse the financial conclusions on which the consulting engineer bases his advice to discontinue this department with the least possible delay." Only one member of the finance electricity committee dissented from the recommendation that the wiring department should be closed, by which means many members of the Council hope to save 2,000*l.* a year.

VARIETIES.

THE annual meeting of the National Provident Institution will be held on Friday next. The report shows the continued prosperity of the business. The accumulated fund amounted on November 20 to 6,428,820*l.* 11*s.* 3*d.* The sum paid in claims since 1835 has reached the large amount of 13,022,191*l.* 19*s.*

MESSRS. M'KENZIE BROS., builders, Darlington, have received the contract for the new Darlington Theatre and Hippodrome, at a total cost of 10,000*l.*

THE Linlithgow Town Council are considering the desirability of erecting billposting and municipal hoardings within the burgh.

A LARGE clock has just been erected in the church of St. Cross, Winchester, which shows time on two 6-foot dials, and is fitted with all the latest improvements and generally to the designs of the late Lord Grimthorpe. The work has been carried out by Messrs. John Smith & Sons, Ltd., Midland Clock Works, Derby.

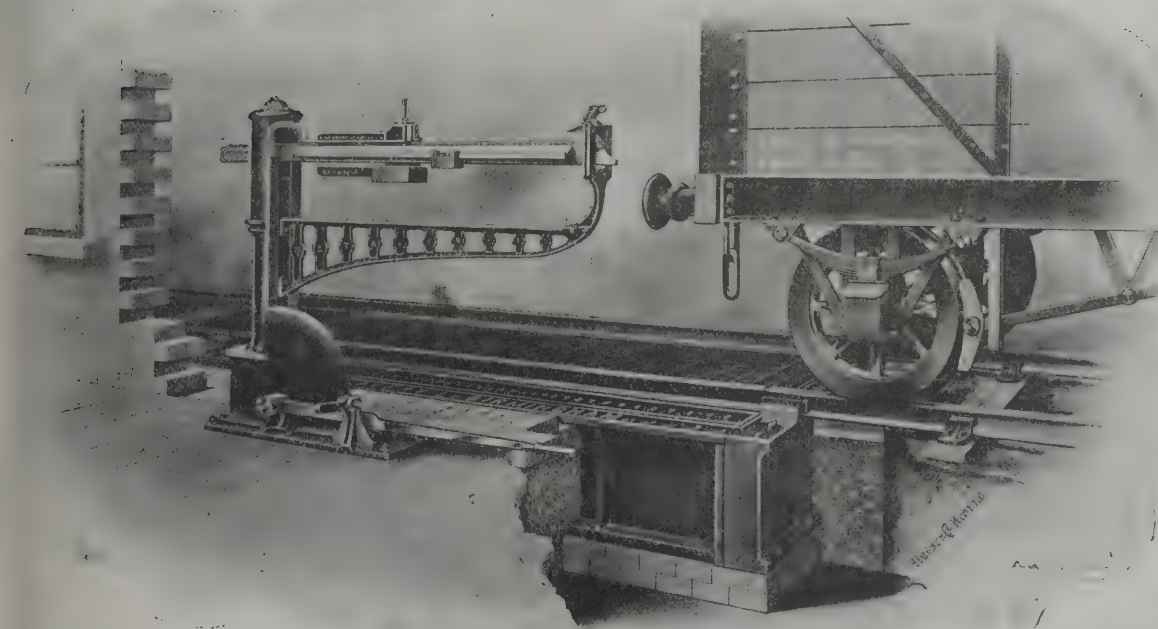
THE Rochdale Town Council discussed last week the question of emission of black smoke from mill chimneys. The health committee recommended that it was not advisable that a time limit should be adopted, but an amendment was moved that a time limit be fixed of three minutes per half hour for one, two or three boilers, and four minutes per half hour for four or more boilers, and this was carried.

AT Cincinnati, Ohio, a Catholic cathedral to cost 1,000,000 dols. is to be erected. On a 10-acre tract of land given for the purpose north of Norwood it is proposed to erect the new cathedral, a seminary building costing about 175,000 dols., a cathedral home for the archbishop costing 50,000 dols., a parish priest's house, a school and a teachers' house. It is planned to have the buildings face a boulevard 100 feet wide. The site is known as Norwood Heights.

THE Agent-General for New South Wales is advised by his Government that labour is so scarce that it is impossible to get a number of important contracts carried out. A large number of able-bodied men used to manual labour are urgently required. Wages vary from 7*s.* to 8*s.* a day, according to the class of work. The Government will contribute liberally towards the passage money of such men.



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THE Bradford City Council on Tuesday reconsidered the Esholt scheme for dealing with the sewage of the city. The cost of the scheme is estimated at 1,250,000*l.*, and a month ago it was referred back to the committee to see if the cost could be cut down. The sewage committee brought their proposals forward unchanged, saying that they could not modify them, and they were adopted by thirty votes to twenty-five. Application will now be made for borrowing powers.

MAJOR J. STEWART, R.E., Local Government Board inspector, concluded on Saturday a three-day inquiry into an application by the Sunderland Rural District Council for sanction to borrow 21,500*l.* for the purpose of erecting dwellings for the mining population of Ryhope and Tunstall, so as to put a stop to the serious overcrowding, with which the authorities are powerless to deal owing to the lack of accommodation. There was a strong opposition on the part of property-owners and the railway company.

A REPORT showing the individual salaries of subordinate officials, clerks, &c., in the employment of Dundee Corporation has been issued. In the burgh engineer's office the servants number thirteen, and the payments in salaries total 1,222*l.* 13*s.* The water engineer's office staff of nine costs 915*l.*, including one at 250*l.* The gas works office takes in salaries 456*l.* 6*s.*, divided amongst six individuals. A staff of equal size in the electrical engineer's office costs 421*l.* 4*s.*, and clerical work in the tramway manager's department involves a salaries bill of 556*l.* 8*s.*, divided amongst nine clerks.

THE Corporation of Croydon decided recently to provide and fix washers to leaking taps free of charge, in the hope of preventing the waste of water. The local plumbers have held a meeting to protest against this action. The Chairman said he estimated that there were 96,000 cold-water taps in the borough, and that about 3,692 needed attention every week. These figures, he declared, showed the absolute ridiculousness of the estimate furnished to the Borough Council that the innovation would only cost 15*l.* per annum. A resolution was carried asking the Council to reconsider the matter, and it was decided that a deputation should explain the views of the plumbers, who regard the change as totally unfair to their interests.

THE new dock works of the Swansea Harbour Trust are being vigorously carried on. The works are of large extent, 400 acres are enclosed by a sea wall of a mile and three quarters. Of this, 68 acres are devoted to the King's Dock, with the usual adjuncts for timber floats, &c. The contract entered into was for 796,000*l.*, and there are to be put in the new dock 440,000 cubic yards of stone hearth, 105,000 cubic yards of sand backing, 270,000 cubic feet of granite ashlar, 30,000 cubic feet of local dressed stone, 75,000 tons of Portland cement, 280,000 cubic feet of timber for permanent work, and 4,300,000 bricks. The work of excavation is expected to reach 3,000,000 cubic yards, and the length of the dock will be 875 feet.

MR. A. A. G. MALET, inspector of the Local Government Board, held an inquiry on the 12th inst. at the town hall, Cheltenham, into an application by the Corporation for sanction to a loan of 45,195*l.* for works of sewerage and sewage disposal. The chief portion of the loan, viz. 34,000*l.*, is required for the outfall sewer and works on Haydon farm, and 10,310*l.* for the Arle bank outfall sewer. The scheme has been put forward to remedy complaints made by some of the parishes below the town of nuisance arising from the pollution of the Chelt and of the Hatherly brook. The scheme provides ample means for dealing with six times the dry weather flow, and as to the disposal of the sewage, a really up-to-date system of septic and sedimentation tanks is to be introduced on the Haydon farm.

THE Lancashire County Council have by a majority of two adopted the following resolution:—"Contractors tendering for or executing work under the Council must be paying to the whole of their workpeople the standard rate of wages in the several districts where their people are actually engaged in the execution of work, and must also be observing the hours and conditions of labour as well as the aforesaid rate of wages recognised by the association of employers and the local organised bodies of workers in the various trades in the several districts where the work is being done, and must not prohibit their workpeople from joining trade societies or continuing members of such societies. In no case shall the aforesaid wages be lower than the hours higher than the minimum and maximum respectively recognised by employers and an organised body of workers in Great Britain."

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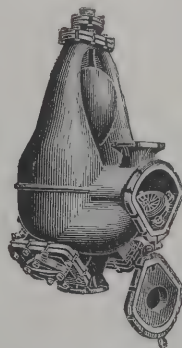
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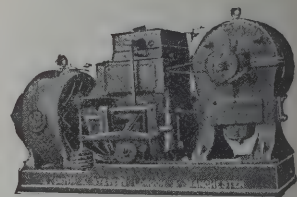
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THE Burslem Town Council on Monday considered a report received from the United Society of Stone Dressers, stating that the members of the society in the Macclesfield and Bollington districts had struck work on account of continued reductions in wages and oppressive working conditions, and requesting the Council to withhold orders from the society mentioned, pending a settlement of the dispute. The Council clerk was instructed to reply, stating that the fair-wage clause was inserted in all contracts with the Council, and that the borough surveyor was instructed to see that it was strictly adhered to.

THE Shrewsbury Town Council recently applied to the Local Government Board for sanction to borrow 5,000*l.* for erecting and improving the supply of drinking water to the borough. The Local Government Board declined to sanction the proposal unless the Council would give an undertaking to proceed with a scheme for the general supply of water to the town, and the Board urged that Mr. G. R. Strachan's scheme, which was estimated to cost 88,000*l.*, should be proceeded with without the consent of the ratepayers. A deputation, consisting of three members of the committee, were appointed to wait upon the Local Government Board to explain the urgency and importance of the question.

MESSRS. HARVEY & McEWEN, of Birmingham, architects of the Bournville estate, have been successful in a competition organised by the Sheffield Corporation for the purpose of obtaining plans for the development of 25 acres remaining on their estate at High Wincobank. The Local Government Board is to be asked to authorise the borrowing of 500*l.* for the cost of constructing the roads and sewers, and the city surveyor is to engage the services of the prize-winners to assist him, as far as he may think it advisable, in the preparation of the necessary sections. The whole of the area will not be laid out at once, but as soon as powers are obtained, progress will be made with that portion which is necessary for the purposes of the model-cottage exhibition to be held there shortly.

It is anticipated that the Royal Agricultural Society's show to be held this year at Lincoln will prove most successful. Apart from the fact that the condition of the soil will have an important bearing on the issue, the picturesque and interesting city will of itself contribute

largely in attracting visitors from all parts. The development of Lincoln's traffic has of late been very great, and to meet the requirements the Great Central Company decided some time ago to erect a new goods warehouse, and install a large yard complete with the latest appointments for the special class of goods dealt with at Lincoln. The heavy goods and live stock traffic the company will handle in connection with the Royal Show will be dealt with in the new goods yard, and we understand that special facilities will be announced in due course in favour of exhibitors and the general public attending the Show.

A CIRCULAR has been addressed to county, borough and district councils by the Local Government Board stating that on several occasions they had had before them the question whether, when a local authority themselves carried out works by means of borrowed money, the wages of workmen permanently employed by the local authority could properly be defrayed out of the loan if the men were engaged in the work. The Board had reason to believe that the view which they had taken with regard to this matter had not been clearly understood in some instances, and in order to remove any misapprehension with regard to it they forwarded a copy of questions put to the President on the subject in the House of Commons last session (May 2 and December 20), together with a copy of his replies.

THE Manchester water committee of the Town Council find that in comparison with the corresponding period of last year the consumption of water has increased by three million gallons a day. Should the increased consumption proceed at the rate now recorded, they may within ten years find they have reached the limits of their supply unless they should adopt means for restricting the area which they supply. The committee are of opinion that the abnormal increase in water consumption pointed to some degree of waste, although industrial concerns are increasing the use of water, and that the spread of the water-closet system has a like effect. Nevertheless, the reported increase is on so large a scale it has been referred to a sub-committee to inquire into the matter, with directions to do all that is possible to prevent waste. They intimated at the same time that the public might do much individually by greater care in preventing waste of water.



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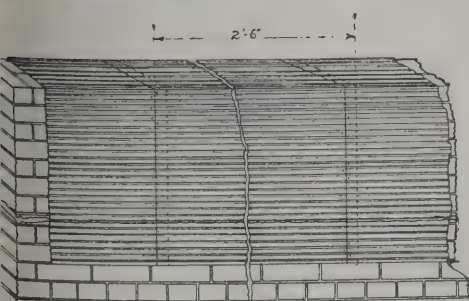
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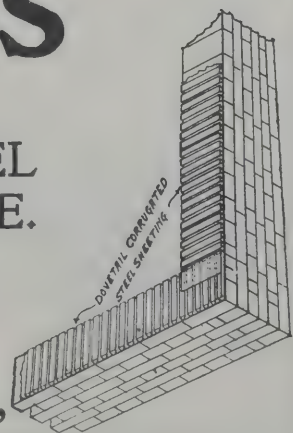
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THE Royal Hotel, Manchester, one of the most important commercial houses in the North of England, the lease of which expires on June 24, was offered for sale by auction at the Albion Hotel, Manchester, on Monday. It was described as the "most conspicuous building site in Manchester." The plot was freehold, and contained 1,325 superficial square yards of net building land, in addition to which there were valuable cellar areas fronting Market Street, Mosley Street, Meal Street and West Mosley Street, with buildings thereon, comprising the Royal Hotel, two shops and offices, and a warehouse. The bidding started at 50,000*l.*, and with bids of 10,000*l.* the price was run up to 117,000*l.* Then it stopped, and there was no further bid. The property was withdrawn at that figure. When the sum of 110,000*l.* was reached the auctioneer said that double that amount would be required for the property. Not having been sold in one lot, the property was afterwards offered in two lots. The first was withdrawn at 72,000*l.*, and for the second no bid was received.

THE Roads Improvement Association have been officially informed that the Local Government Board will appoint one of their engineering inspectors to attend the trials of the tar-spreading machines. His Majesty's Office of Works have also deputed an officer to watch the experiments and report to the Board. The chief engineering inspector of the Irish Local Government Board, Mr. P. C. Cowan, has been appointed one of the judges in the competitions with the approval of his Board. There are two competitions which are quite distinct. One is for the best machine for spreading tar over existing road surfaces, which will be judged entirely by the results of the operation, and the other is for the best preparation of tar for road purposes. Full particulars can be obtained on application to the hon. secretary of the Roads Improvement Association, 1 Albemarle Street, Piccadilly.

THE medical officer of health for the Port (Dr. H. Williams) makes special reference in his latest report, issued on Monday, to the pollution of the river Thames. He states that water passing over Teddington Weir shows evidence of considerable pollution, a fact not to be wondered at when it is considered that the sewage effluent from the houses at Kingston and Surbiton is discharged into the

river above that point. The evidence of pollution increases as the river reaches London Bridge. In this part of the river there are several storm outfalls from the main sewer of the London County Council, especially at Hammersmith and Blackfriars. At Greenhithe there is a great increase of pollution due to the discharge of some 200 millions of gallons per day of sewage effluent at Barking and Crossness from the London County Council sewers. There is an increase in the pollution below Southend Pier. The medical officer further reports that the pollution from Barking and Crossness is brought up on the flood tide as far as London Bridge.

MR. J. W. HIRST, secretary of the Manchester Council for the National Registration of Plumbers, writes:—"At a lecture given in the Royal Technical Institute, Salford, on Thursday night it was pointed out that in several towns registration was a condition of authorisation to do plumbing work. Recently at St. Helens an applicant was refused authorisation on the ground that he was not registered. He complained to the Corporation. The registration authorities were asked why they had refused registration. The Corporation confirmed their decision, and insisted on registration as necessary to authorisation. But reference to the official list issued by the Manchester water committee shows that it contains the names of men as authorised to carry out plumbing work who have no connection even with the building trade, not to mention the plumbing trade. The importance of good plumbing work in the interest of public health is such as demands the exercise of great care before applicants are added to the list of authorised persons."

THE executive of the British Fire Prevention Committee have formed among the members of the committee representatives of the public authorities subscribing to the committee a special commission to "report upon and define the aggregates suitable for concrete floors intended to be fire-resisting, having due regard to questions of strength, expansion and the chemical constituents and changes of the aggregates." In forming the commission it has been considered of importance that the various technical interests should as far as possible be represented. Sir William Preece will act as chairman and Mr. Matt. Garbutt will act as hon. secretary. The commission will include representatives of the Admiralty, the War Office, the Metro-

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politan Asylums Board and the Norwich Corporation. The services of Mr. Cecil H. Desch have been retained by the British Fire Prevention Committee for any chemical research work required during the inquiry.

MR. PATRICK GORMAN, the United States Vice-Consul General at Montreal, in a report to the Washington Bureau of Manufactures, says that a company has been formed for the express purpose of constructing a canal between St. Johns and Montreal. It is said that three miles from Longueuil, which is on the opposite side of the St. Lawrence river from Montreal, near the Little Montreal river, there is a fall of 74 feet. With the assistance of this the engineers say that it is possible to obtain for manufacturing purposes 100,000 horse-power, which would enable manufacturers to place their plant alongside the canal. If this canal project goes through, then the waterway between St. Johns and Montreal will be reduced to 21 miles instead of 94, as at present vessels have to go down the St. Lawrence 45 miles to Sorel, the entrance of the Richelieu river, which connects with Lake Champlain. The company estimate that they can complete the work in two years at a probable cost of 2,400,000l.

THE *Board of Trade Journal* says that a despatch has been received at the Foreign Office from the British Legation at Santiago, forwarding a copy, with translation, of the law for the reconstruction of Valparaiso, passed by Congress and approved by the Council of State. The despatch states that the question of a law for the admission free of duty of building materials, required for the work of reconstruction, has not yet come before the chambers. The Director of Customs at Valparaiso has written a report strongly urging that no such measure should be passed, giving as his reasons that labour in Chile would be deprived of the protection it enjoys at present, and that the two years during which it is proposed to admit building materials free of duty would be employed in collecting a stock of materials sufficient for building requirements not only for Valparaiso, but for the whole of Chile for several years to come. He considers, however, that an exception might be made in favour of ready-made houses such as could be imported in sections.

A new gasholder has been opened at the municipal gas-works of Widnes. The new holder has a capacity of

1,000,000 cubic feet. It is the first instance existing in which the "spiral-guided" principle has been applied to a telescopic gasholder of four lifts. In holders working on the spiral-guided system no external guide-framing is necessary, the whole of the guiding and lateral stress of wind-pressure being taken up by the spiral guide-rails attached to the side sheets of the holder. When the four lifts of this new holder are extended to their full height the top of the fourth is 100 feet above the water level. No holder has previously been carried to this height without external guide-framing. There are under 300,000 people in the town, but the annual consumption of gas is 284,000,000 cubic feet. There are 4,240 penny-slot consumers, and even the poorest houses are equipped with cooking stoves, which are fitted free and loaned for a penny a week. The selling price of the gas is 1s. 3d. and 1s. 1d. per 1,000 feet, and for motive-power 11d. per 1,000 feet. This is the lowest charged by any gas authorities in the world.

THE Board of Trade have issued the annual return of capital and traffic for 1905-6 of the tramways and light railways (street and road) of the United Kingdom. Since the year 1878 the route length of line open for traffic has increased from 269 miles to 2,240 miles, the capital expenditure from 4,207,350l. to 58,177,832l., the number of passengers carried from 146 millions to 2,236 millions, and the net receipts from 230,956l. to 3,807,415l. Of the total of 1,491 miles of line owned by local authorities, 1,276 miles are worked by those authorities themselves, and the remaining 215 miles by leasing companies. Last year the route mileage open of electric line was 1,780 miles out of a total of 2,117; this year it is 1,994 miles out of 2,240. The mileage not worked by electric traction has further diminished from 337 miles to 246 miles. The number of undertakings belonging to local authorities (175 out of 312) has increased since last year by one, and the number belonging to other parties has diminished from 146 to 137. Local authorities who work as well as own their tramway undertakings have made a net profit of 2,529,752l. on the year's traffic, out of which they have applied 663,336l. towards the reduction of tramway debt and 205,981l. in relief of rates, while carrying 623,617l. to reserve and renewals funds.

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THE docks and pilotage committee of Aberdeen Harbour Board have under consideration a scheme for the improvement of Provost Blaikie's Quay for a distance of 1,500 feet from Regent Bridge eastwards. It is proposed to construct a timber wharf, 22 feet wide, in front of the present quay wall, increasing the width from 61 feet to 83 feet, thus enabling a double line of rails to be laid. The cost is estimated at 29,500*l*.

RUSKIN PARK, DENMARK HILL.

THIS new park which is now open to the public is beautifully timbered and has an area of over 24 acres, with a frontage of about 1,050 feet to Denmark Hill, nearly opposite to the house, 163 Denmark Hill, where John Ruskin spent about twenty-five years of his life. Until about 1845 he resided at 28 Herne Hill, but his father then determined to secure the ampler accommodation afforded at 163 Denmark Hill, which is but a short distance off. This house was John Ruskin's home, with the exception of a short interval following his marriage, until his mother's death in 1871 (his father having died in 1864), and in 1872 he removed to Brantwood, Coniston Lake. It was at 163 Denmark Hill that Ruskin wrote vol. ii. of "Modern Painters," "The Seven Lamps of Architecture," "Stones of Venice," "Unto this Last," "Sesame and Lilies," "The Crown of Wild Olives," and other works.

The cost of the park, which forms part of the old Sanders Estate, it may be added, was 2,000*l*. an acre, and the L.C.C. contributed 25,000*l*., the Camberwell Borough Council 10,000*l*., the Lambeth Borough Council 5,000*l*. and the Southwark Borough Council 2,500*l*.

WORKS IN SHEFFIELD.

THE Sheffield City Council have several schemes under discussion, including the following:—The health committee want the surplus land between Cavendish Street and Victoria Street for the enlargement of the Glossop Road baths, but the improvement committee has decided to build shop property of three-storey elevation. It is proposed to build a church and a school on the Corporation's model estate at High Wincobank. Thirty-five more houses are to be erected. To lay out about 25 acres of land at

High Wincobank for the model cottage exhibition the City Council is seeking power to borrow 11,500*l*. The tramways committee have decided to double the tramway track in Barnsley Road from Norwood Road to Osgathorpe Road at a cost of 1,520*l*. The city hospital committee recommend an expenditure of 7,000*l*. for extensions of the isolation block at Lodge Moor hospital. The proposed reconstruction of Attercliffe bridges has been considered by the improvement committee. The City Surveyor's estimate of the cost is Staniforth Road bridge 7,000*l*., Broughton Lane Canal bridge 5,000*l*. and Broughton Lane railway bridge 11,000*l*. The improvement committee think that the present time is inopportune for the expenditure of so large a sum as 23,000*l*. The markets committee have again been considering the question of the rearrangement of the markets, and they recommend the City Council to remove Fitzalan Market to a site between the new street which will run from Waingate to Furnival Road and the river Don. They suggest that on the site shall be erected a new retail fish and meat market and central abattoirs and wholesale meat market. The approximate cost is 50,000*l*.

WATER SUPPLY.

SOME large and important water supplies have been recently completed by Mr. R. D. Batchelor, of 73 Queen Victoria Street, London, and Chatham, for the Sutton District Water Company. Under Mr. W. Vaux Grahams, M.I.C.E., he has made two wells of 8 feet diameter each, with 3 feet diameter borings to a depth of 450 feet each. Each of these wells when tested yielded the enormous average yield of 1,500,000 gallons of water per day. The borings are lined for a depth of 100 feet with heavy cast-iron liners, with water-tight joints, to prevent the possibility of surface contamination. Gas-engines and suction plants have been put down, so that the Sutton District Water Company have made every provision for the ever-increasing demand for water in their district.

Mr. Batchelor has also recently completed the following contracts:—Another boring for the Sheppey Gas Company at Sheerness, with a total depth of 450 feet. Enlarging and deepening the old boring at the Watford Union to 12 inches diameter and to a depth of 342 feet. The result

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of this work is highly satisfactory; the old pumping machinery has been removed and a complete new installation is being put in. The consulting engineer is Mr. John Blackburn, of Bushey, Herts. Another well and boring (making the fourth contract) at the Thames Paper Mills, Purfleet, Essex, which has been tested to over 600,000 gallons of water per day. Although this is a large quantity, another well and boring put down some fifteen years ago yielded the abnormal quantity of 2,422,224 gallons per day.

Mr. Batchelor has also the following large and important contracts at present in hand:—A 20-inch boring for the *Daily Telegraph* paper mills at Dartford, which will be carried down to between 300 feet and 400 feet from the surface, and from which it is expected 1,000 gallons per minute will be obtained. Another interesting work is at the water supply for Dr. Barnardo's Home for Girls at Barking, Ilford, Essex. Two electric motors are already fixed, one of which is now driving the laundry machinery and the other is for driving the deep borehole pump which is to be put down as soon as the large boring which is now in hand is completed.

NEW CATALOGUE.

It would be difficult to determine when wood panelling first became the favourite decoration of English buildings. Having the advantage of real utility, as well as a pleasing appearance, it suited all tastes. There is no doubt of its use in Mediæval times, and it was apparently considered as essential in the mansion-houses which were erected in the sixteenth century. In truth it can be said of panelling that it never was entirely out of fashion in England. It is satisfactory to find that Messrs. Liberty & Co., who have done so much for the decoration of houses, have arranged for the supply and fixing of oak panelling in Elizabethan, Georgian and other styles. They are able to panel a room measuring 18 feet by 12 feet from as low a price as 25/. Their catalogue shows about twenty varieties, and suggestions are also given about the treatment of the walls above the panelling. Prices are given, and the plates will be useful to many people who wish to introduce in their houses a superior kind of decoration which is no less expressive of homely comfort.

"LAXTON."

This year "Laxton" has attained its ninetieth edition. We suppose there is no practising architect in England who has used the first edition. But, judging by early copies which have survived, the Price Book was originally very slim if compared with its latest descendant. "Laxton" is now a portly volume of over 800 pages, if we include the index and the advertisements. The remarkable development is to be credited to Messrs. Kelly, Ltd., who have not only given no less than 73,000 prices, but have taken care to have them as correct as possible. The multiplex character of a builder's business is nowhere better exemplified than in the pages. The supplementary information is also varied, and has an official character. "Laxton" is now a comprehensive representative of the building trade, and the publishers have merited success.

TORSION TESTING.

THE Woolwich Polytechnic have just had delivered to their order one of the latest makes of torsion-testing machines, which has been specially designed by W. & T. Avery, Ltd., of Birmingham and London, for the use of technical schools, polytechnics and universities. We are informed that this is an exact replica of a machine supplied to the Birmingham University. It has a capacity of 10,000-in.-lb. The machine consists of a substantial base plate, to which are bolted two strong cast iron standards. One standard encloses the two indicating levers and the other the straining gear. The levers are of wrought-iron and fitted with hardened steel knife-edges, the connection between the levers being by wrought-iron links having hardened steel bearings. The main lever has a fulcrum consisting of hardened steel cones and cups bearing upon rings of hardened steel balls. The second lever has two knife-edges, either of which can be made to act as a fulcrum by the movement of a hand lever according to whether the strain applied is likely to be light or heavy—i.e. in one position of the hand lever the machine is 10,000-in.-lb. capacity, and in the other 5,000-in.-lb. capacity.

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gearing controlled by a hand-wheel. The connection between the hand-wheel, which is on a fixed portion of the framing, and the gearing upon the steelyard is made at the point of no motion, *i.e.* at the fulcrum; consequently any pressure of the hand upon the hand-wheel is not communicated to the steelyard, thus obviating any possibility of the specimen being prematurely broken. The steelyard is graduated from zero up to 1,000-in.-lb. single power (2,000-in.-lb. for double power) by divisions of 10-in.-lb., and a vernier scale upon the poise subdivides this again into divisions of 1-lb. (single power). A graduated scale at the end of the steelyard in the view of a microscope having a divided line upon its lens enables indications of 1-10th-lb. to be taken. The remainder of the capacity of the machine is provided for by the use of four loose proportional weights suspended from the end of the steelyard, each representing 1,000-in.-lb. single power, or 2,000-in.-lb. double power.

The straining-gear consists of a worm-wheel rotated by a hand-wheel. The worm-wheel and worm-shafts are turned and are carried in brasses fitted into the cast-iron standards.

THE SCOTTISH PROVIDENT INSTITUTION.

On the important site known as Nos. 1 to 4 Lombard Street, adjoining the Mansion House, there has been erected, within the period of ten months and at a cost of from 80,000*l.* to 90,000*l.*, a building of the first rank, which replaces the stucco fronted brick one erected from the designs of Sir Robert Smirke, R.A., about 1830.

The new building, which was opened a few days ago, is of a very substantial character in Portland stone, erected from the designs of Messrs. Dunn & Watson, of Lincoln's Inn Fields, by Messrs. W. Cubitt & Co., and it is of a Classic type. The main entrance is in the form of an open loggia, separated into three bays by two great stone pillars. Under this open porch or loggia there are three doors. That to the left, forming No. 2 Lombard Street, is the main door of the Canadian Bank of Commerce. The central door is No. 3 Lombard Street, and the great opening is filled with two pairs of massive mahogany doors, with bronze grilles protecting the openings in the upper part of them. The hall is oblong in form, built in Portland stone, with an

elliptical stone dome supported on columns, and having a beautifully carved wreath in the upper part. The floor of the loggia, which is external, is of stone in diamond-shaped forms; in the hall harmonious coloured marbles have been laid in a star-shaped pattern under the dome, and in semi-hexagonal forms on the staircase.

In the centre of the semicircular part of the staircase is the entrance to the offices of the Scottish Provident Institution, the parent company, to whose enterprise the whole scheme is due.

That part of the building known as No. 1 Lombard Street, the site formerly occupied by Smith Payne's Banking House, and again leased to the company with which their business has amalgamated—the Union of London and Smith's Bank—comprises all that corner next the Mansion House, extending back to George Street.

Throughout the building there are gas and electric mains on every floor, as well as the main telephone calls; while in addition to the fireplaces, there is a complete installation of hot-water heating throughout. On the top floor the sanitary conveniences are grouped together, and there are three blocks of lavatories, besides a barber's shop and the housekeeper's rooms adjacent.

The whole construction is fire resisting, the walls being in brick and stone and the floors in steel and concrete. There are also fire-escape doors and staircases in accordance with the requirements of the London County Council, and fire hydrants on all floors.

THE CHALKWELL PARK ESTATE, WESTCLIFF-ON-SEA, ESSEX.

This house is about to be erected on the Chalkwell Hall Park Estate, Westcliff-on-Sea. The lower part will be faced with red bricks, and the upper portions finished with stucco and half-timber work in the gables and the roofs covered with red tiles. The hall, staircase and reception-rooms are to be panelled in oak, and with deep friezes level with the top of architraves over doors. The hall will be laid with red tiles and the reception-rooms with oak wood-block flooring. Messrs. Cabuche & Hayward, M.M.S.A., of Westcliff-on-Sea, are the architects.

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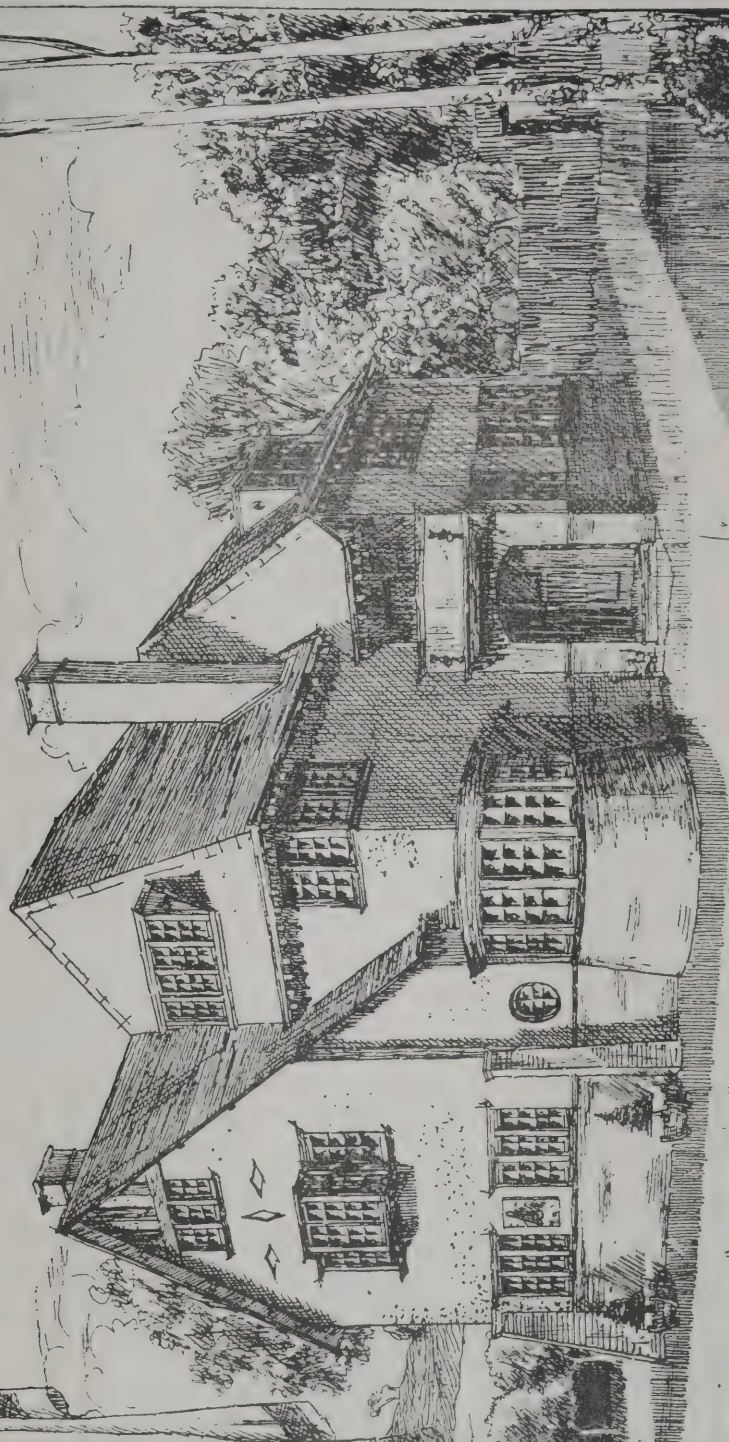
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BRICKMAKING ON THE NORBURY ESTATE.

THE finance committee of the London County Council report that they have accepted an offer from the contractor for the erection of blocks Nos. 26 and 27 of the cottages on section A of the Tottenham Fields estate for the purchase of 167,000 bricks manufactured on the Norbury estate. The bricks will be used in the construction of the cottages, and the price offered is sufficient to cover the cost of production, inclusive of the cost of cartage from Norbury to the site.

The total number of bricks manufactured on the Norbury estate is about eleven millions, of which 1,980,000 have been used in the erection of cottages on section A. A further 1,012,000 are now required for fifty-two cottages on section B. The development of the Norbury estate has been retarded owing to difficulties which could not have been foreseen and over which the Council had no control, and the production of bricks has, therefore, exceeded the present needs of the estate. For this reason it was decided in June 1906 to discontinue temporarily the manufacture of stock bricks, and on July 31, 1906, the Council authorised the committee to dispose of the surplus bricks in the event of a favourable offer being received. One sale of 82,000 place and grizzle bricks has been completed, and an agreement has been entered into for the sale, at a price satisfactory to the Council, of two complete clamps of about 900,000 bricks. Several other offers have been received from builders in the neighbourhood, but they have not been accepted as the prices offered have been slightly below the market value.

The quality of the stock bricks recently manufactured is excellent. The tests which have been made of the various classes of building bricks show a high resistance to crushing power, and the results of the tests generally are quite satisfactory. As is the case on every brickfield, bricks of varying grades of quality have been produced, but only bricks which are satisfactory for building purposes are allowed to be used in the erection of cottages, the casing bricks and burn-overs being employed only for those operations for which they are suitable.

When the Norbury estate was purchased a brickfield occupied a portion of the site, and one of the conditions of sale was that the brickmaking plant should be taken over at a valuation. One section of the estate comprises a rising

mound of clay, a portion of which has to be removed before the estate can be properly developed, and when recommending the Council to acquire the estate the committee expressed the opinion that the brickmaking operations should be continued. The conversion of the surplus clay into bricks and burnt ballast obviates the necessity for its being dug and carted away from the estate at a cost which would not be less than 3s. 6d. a cubic yard.

THE CEMENT INDUSTRY.

THE United States Consul at Pretoria, in a report to the Washington Bureau of Manufactures, says that since the British occupation South Africa has presented one of the very best markets in the world for cement, because of the new life infused in the country through the public works departments of the various colonies, including harbour extensions, railway building, sanitary projects, cold storage concerns and the like. During the past few years the importations of the product have not fallen much below 200,000t.; in fact, 1903 records 500,000t. worth, while 1904 was but little behind that record. In 1903 America shipped to the Transvaal less than 80t. worth, and about double that amount the following year, while Germany's contribution during the same period was 68,375t. and 105,960t. respectively, England following with 43,545t. and 50,465t. Before 1898 the United Kingdom furnished the bulk of the cement imported, but with the subsidising of steamship lines and cheap rates to seaports in the Fatherland, Germany entered the South African field that year, and captured 16 per cent. of the total imports. Four years later Belgium and Denmark entered the lists, when the position of the principal competitors stood as follows:—United Kingdom, 43.4 per cent.; Germany, 37.2 per cent.; Belgium, 18 per cent. In 1903 Austria, France, Italy, Holland and Sweden captured part of the trade of Germany, but from that time the United Kingdom has been gradually increasing its hold, and advanced from 70 per cent. in 1904 to approximately 90 per cent. last year of the total imports, while Germany decreased nearly to its standing of 1898.

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THE
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FRIDAY, FEBRUARY 22, 1907.

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As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50l. and 25l. to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

FAILSWORTH.—March 28.—The District Council invite designs for a library (cost not to exceed 3,000l.) in Oldham Road. Premiums of 20l. and 10l. Deposit one guinea. Mr. H. C. Broome, clerk, Council Offices, Failsworth.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

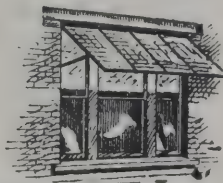
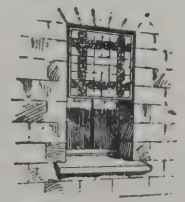
ABERDEEN.—Feb. 27.—For the construction of through platforms and sidings to the west of the existing station. Deposit 1l. 1s. Mr. James A. Parker, C.E., 80 Guild Street, Aberdeen.

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ADLINGTON.—March 5.—For the erection of an elementary Council school at Adlington, Cheshire, to accommodate about 180 children. Deposit 2*l*. Mr. Arthur Brocklehurst, architect, Adelphi Chambers, 30 Brown Street, Manchester.

ARMATHWAITE.—March 2.—For the erection of a stone bridge of four arches across the river Eden, in the parishes of Ainstable and Hesket-in-the-Forest, within half a mile of Armathwaite station, Cumberland. Deposit 1*l*. 1*s*. Mr. Geo. Jos. Bell, M.I.C.E., county surveyor and bridge-master for Cumberland, The Courts, Carlisle.

BIRKENHEAD.—Feb. 26.—For alterations and additions to the workhouse at Tranmere, for the Guardians. Mr. Edmund Kirby, 3 Cook Street, Liverpool.

BOTTALLACK.—March 2.—For the erection of a pair of residences at Bottallack Mine, St. Just, Cornwall. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

BURNTWOOD.—March 2.—For alterations and improvements to the Burntwood and Chase Terrace Council schools, Staffordshire. Deposit 1*l*. 1*s*. Mr. Graham Balfour, director of education, County Education Office, Stafford.

BUSHBURY.—Feb. 28.—For the erection of a public mortuary at Bushbury. Deposit 1*l*. 1*s*. Mr. Herbert M. Whitehead, engineer, Penkridge, Stafford.

CARDIFF.—Feb. 27.—For the erection and completion of a joint stores at Trade Street depôt. Mr. W. Harpur, city engineer, City Hall, Cardiff.

CHARING HEATH.—Feb. 28.—For renovating the interior of the school-house, for the managers of the Charing Heath school. Rev. J. W. Sothern, Charing Heath, Kent.

GLASGOW.—Feb. 23.—For the work of constructing the substructure of machinery buildings, Shieldhall, for the Corporation. Mr. W. D. Hamilton, 59 Bath Street, Glasgow.

GLOSSOP.—Feb. 23.—For the construction of a convalescent and nurses' home. Deposit 1*l*. 1*s*. Messrs. Bulman & Vinycomb, architects, 67 and 69 Chancery Lane, London, W.C.

COVENTRY.—March 9.—For the erection of eight labourers' cottages and additions to farm buildings at the Corporation sewage farm, Baginton, near Coventry. De-

posit 1*l*. 1*s*. Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

DEWSBURY.—Feb. 27.—For the erection of two dwelling-houses in Bath Street. Messrs. Kirk & Sons, architects, Dewsbury.

HEAGE.—March 4.—For the extension of the Heage Endowed Council school, Derbyshire, to accommodate about 150 children. Deposit 1*l*. 1*s*. Mr. George H. Widdows, A.R.I.B.A., architect to the committee, County Education Offices, St. Mary's Gate, Derby.

HEREFORD.—March 1.—For the interior decoration of St. Martin's Church. The Vicarage.

HULL.—Feb. 27.—For the erection of customs offices, waiting-room, &c., Albert Dock, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, at York.

HULL.—Feb. 28.—For alterations and additions to the Constable Street school. Deposit 2*l*. 2*s*. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

HUNSTANTON.—Feb. 23.—For alterations and additions and the erection of two shop-fronts in Westgate. Mr. Thos. Guy, Hunstanton.

IRELAND.—Feb. 22.—For the erection of seating for choir at Second Presbyterian church, Ballywalter. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

IRELAND.—March 6.—For the erection of fourteen labourers' dwellings for the Rural District Council of North Dublin. Mr. J. O'Neill, clerk, Board-room, North Brunswick Street, Dublin.

KEIGHLEY.—For the erection of a warehouse at Holme Mill. Messrs. John Haggas & Sons, architects, North Street, Keighley.

KINGSTON-ON-THAMES.—For pulling-down a three-span iron roof with skylights, gutters, stanchions, &c., covering an area of about 6,580 feet at The Old House Club, Esher, Surrey, carting to and re-erecting same at Norbiton Common farm, New Malden, Surrey, repairing the structure and providing new foundations and sides, for the Guardians of Kingston Union. The large kitchen at the club is also to be removed. Mr. Jas. Edgell, clerk, Union Offices, Coombe Lane, Kingston-on-Thames.

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KIRBYMOORSIDE.—March 1.—For reseating and renovating Rudland Primitive Methodist chapel, near Kirbymoorside. Mr. Wm. Atkinson, Sleightholmedale.

LEEDS.—March 2.—For the whole or any of the several trades, namely, bricklayer, mason, carpenter and joiner, plumber, plasterer, slater, painter, ironfounder and concrete's work required in the erection of shops and hotel premises in Commercial Street; also for taking-down, removing and re-erecting of the present Mitre hotel premises upon a site in Brudenell Road. Send names to Messrs. Thomas Winn & Sons, architects and surveyors, Carlton Chambers, 84 Albion Street, Leeds.

LITHERLAND.—Feb. 25.—For the construction of male and female conveniences, children's shelter, &c., in the public gardens, Sefton Road, Litherland, Lancs. Deposit 1*l*. Mr. A. H. Carter, surveyor to the Council.

LLANELLY.—Feb. 26.—For the erection of an additional classroom, &c., to Bigyn Boys' Council school, Llanelly, for the Llanelly education committee. Mr. Ifor W. Watkins, clerk of committee, education committee, Education Office, Llanelly.

LOCK'S HEATH.—March 4.—For the erection of a Council school at Lock's Heath, Hants. Deposit 2*l*. 2*s*. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

LONDON.—Feb. 26.—For the erection of a public elementary school on a site in Merton Road, Wandsworth, S.W., for the London County Council. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

LONDON.—Feb. 27.—For repairing, maintaining and decorating police stations, police courts, houses, buildings, &c., within four miles of Charing Cross, for three years from April 1, 1907. Deposit 1*l*. 1*s*. The Police Surveyor, New Scotland Yard, S.W.

LONDON.—March 11.—For additions and alterations to the West Ham and East London Hospital, Stratford, E. Deposit 10*l*. Apply by March 2 to Mr. H. Percy Adams, architect, 28 Woburn Place, Russell Square, London.

MACCLESFIELD.—Feb. 25.—For alterations at the small plunge bath at the public baths. The Borough Surveyor's Office, Town Hall.

MARGATE.—March 5.—For the construction of a bridge over Newgate Gapway. Mr. E. A. Borg, C.E., borough surveyor, Town Hall, Margate.

MATTERDALE.—Feb. 23.—For the erection of elementary school and master's house at Matterdale, Cumberland. Mr. Joseph Forster, architect, 13 Earl Street, Carlisle.

MILFORD HAVEN.—March 5.—For erection of cookery and laundry-rooms at the County school. Messrs. D. E. Thomas & Son, architects, Victoria Place, Haverfordwest.

MORECAMBE.—Feb. 25.—For new stables. Messrs. Austin & Paley, architects, Lancaster.

MOTTRAM ST. ANDREW.—March 5.—For the erection of an elementary Council school to accommodate about 150 children, for the Cheshire County Council. Deposit 2*l*. Mr. John Cubbon, architect, 4 Chapel Walks, Manchester.

NELSON.—Feb. 23.—For the erection of a fire station at Bradley:—(1) Excavator, mason and bricklayer; (2) carpenter and joiner; (3) plumber and glazier; (4) slater; (5) painter. Mr. B. Ball, A.M.I.C.E., borough engineer and surveyor, Town Hall, Nelson, Lancs.

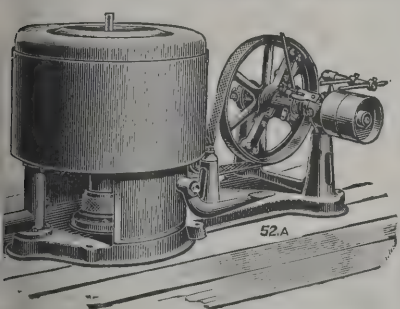
NEWCASTLE-ON-TYNE.—Feb. 27.—For the erection of station buildings, platform, roofing, &c., New Bridge Street, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

PENZANCE.—Feb. 23.—For the erection of a residence. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

RADCLIFFE.—Feb. 26.—For the execution of the following works, viz.:—(1) Alterations to premises at Hunt Hill, Ainsworth Road, for street improvement; (2) construction of store shed. Mr. W. L. Rothwell, engineer and surveyor, Council Offices, Radcliffe, Lancashire.

SCOTLAND.—March 5.—For the construction of the following bridges, for the Brechin district committee:—Justinhaugh bridge—taking-down the existing bridge over the river Southesk at Justinhaugh and erecting a new steel girder bridge; Westwater bridge—constructing a widening of the existing masonry bridge of three spans carrying the Brechin and Edzell highway over the Westwater; Powmouth bridge—taking-down the existing bridge near Bridge of Dun and erecting a new bridge. Deposit 1*l*. 1*s*. each. Messrs. Crouch & Hogg, engineers, 14 Blythswood Square, Glasgow.

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SHEFFIELD.—March 5.—For work to be done in the erection of annexe at Fulwood, for the Sheffield Royal hospital :—(Contract 1) for excavation, forming grounds, roadmaking and laying-out of grounds ; (2) for buildings ; (3) for heating apparatus. Messrs Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SHILDON.—March 19.—For the erection of a school at Shildon for about 1,100 scholars :—(1) Below ground-floor levels ; (2) above ground levels (including latrines, play-sheds, playgrounds, boundary-walls, &c.). The County Education Committee's Architect, Shire Hall, Durham.

STOCKTON-ON-TEES.—Feb. 25.—For alterations to the free library. The Borough Engineer's Office, Town Hall, Stockton-on-Tees.

STROUD.—Feb. 28.—For the necessary excavating, setting-back the boundary walls and other work in connection with the improvement at Merry Walks. The Surveyor's Office, Town Hall, Stroud.

STROUD.—Feb. 28.—For lining the swimming-baths with glazed brick sides and tiled bottom, with callendrite to be inserted behind such lining. The Town Surveyor, Town Hall, Stroud.

SURBITON.—Feb. 26.—For the construction of two public conveniences at the Victoria recreation ground in the Balaclava Road. Mr. Henry T. Mather, surveyor, Council's Offices.

URMSTON.—March 2.—For benches and general fittings for the new chemical laboratory at the Manchester sewage works, Davyhulme, Urmston. The Manager of the Sewage Works.

WAKEFIELD.—Feb. 25.—For the erection of a chronic block at the West Riding asylum to accommodate 120 cases. Deposit 1*l*. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—Feb. 23.—For alterations and additions to Lockwood, Marshfield, Michaelston-y-Vedw. Deposit 1*l*. 1*s*. Mr. W. H. Dashwood Caple, architect, 2 Church Street, Cardiff.

WALES.—Feb. 25.—For the erection of a mission-room on Blaengwynfi. Deposit 1*l*. 1*s*. Rev. B. V. Davies, 2 Margaret Terrace, Blaengwynfi.

WALES.—March 2.—For the erection of a house at Pontfadog. Mr. E. Green-Davies, architect, Plas-yn-Llan, Gobowen.

WALES.—March 6.—For alterations and additions to Morfa Calvinistic Methodist chapel, Kidwelly. Deposit 1*l*. 1*s*. Messrs. W. Jones & W. D. Morgan, M.S.A., joint architects, Pentre, Rhondda Valley.

WALES.—March 9.—For enlargement and renovation of Saron C.M. chapel, Furnace, Llanelly. Mr. William Harries, 2 Ynys-y-cwm Road, Furnace.

WALES.—March 9.—For proposed additions to Pen-pentre, Llandaff. Deposit 1*l*. 1*s*. Mr. W. H. Dashwood Caple, architect, 2 Church Street, Cardiff.

WALES.—March 18.—For the following works, for the Pontypridd Urban District Council :—(1) Supply and erection of steelwork in connection with the construction of a bridge over the river Taff at the Berw, Pontypridd ; (2) masonry abutments, fence walls and other works in connection with above bridge ; (3) supply and erection of steelwork in connection with the construction of a bridge at Factory Lane, Graig, Pontypridd ; (4) masonry abutments, fence walls and other works in connection with above bridge. Deposit 1*l*. 1*s*. each contract. Mr. P. R. A. Willoughby, engineer and surveyor, Municipal Buildings, Pontypridd.

WOKINGHAM.—March 11.—For the construction of the brick abutments, &c., in connection with the erection of a bridge over the Emm Brook in the Barkham Road. Deposit 1*l*. Mr. O. W. Marks, borough engineer and surveyor, Town Hall, Wokingham.

WREXHAM.—Feb. 28.—For taking-down and rebuilding the Royal Oak hotel, High Street, together with new offices in Temple Row. Deposit 2*l*. 2*s*. Mr. F. A. Bevan, architect and surveyor, Wrexham.

MESSRS. GEORGE CORDEROY, CHARLES FREDERIC SELBY & ATHELSTANE CORDEROY, surveyors, of 21 Queen Anne's Gate, Westminster, have dissolved partnership so far as regards Charles Frederic Selby.

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Corry	180	0	0
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No. 3.—Footpaths, &c.

Corry	233	0	0
McRoberts & Armstrong	226	0	0
Keith	206	0	0
Geddis	195	12	9
Ross & Son	193	14	4
R. & J. Pearce	180	5	0
Stafford	179	0	0
WORKMAN, LTD. (accepted)	171	11	0

No. 4.—Drainage.

McRoberts & Armstrong	250	0	0
Ross & Sons	248	12	11
Stafford	224	0	0
Workman	211	2	8
Keith	209	0	0
Corry	205	0	0
GEDDIS (accepted)	190	3	1

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For drainage works (Contract No. 1). Messrs. J. TAYLOR, SONS & SANTO CRIMP, engineers.
NUNN, Finsbury House, E.C. (accepted) £21,478 0 0

CLANDON.

For the erection of a small-pox hospital. Mr. F. C. HOWELL, architect.
HUNT & SON, High Wycombe (accepted) £10,987 0 0

BRISTOL.

For alterations to 22 Cotham New Road. Messrs. LA TROBE & WESTON, architects, Bristol.

Harvey	£569	7	0
Woodward	555	0	0
Hodges	549	4	6
Foster	549	0	0
Preece	546	0	0
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For the erection of covered stand to accommodate about 3,500 persons and other work in connection, for the Pageant. Mr. WALTER D. HARDING, town engineer.

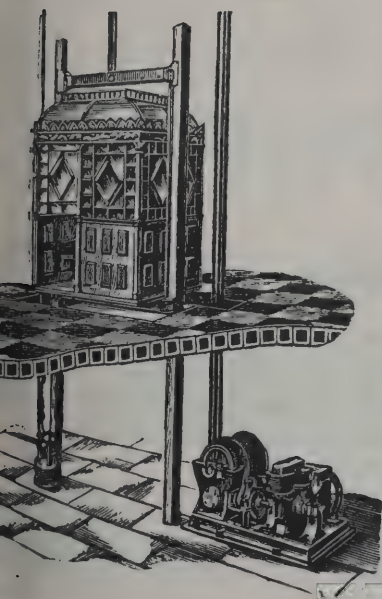
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Yelf	1,050	0	0
HINNELS & SON, Bury St. Edmunds (accepted)	1,050	0	0

DARTMOUTH.

For reconstructing the Britannia inn, Clarence Street. Mr. R. M. LUKE, architect, Plymouth.

Yeo & Sons	£628	17	0
Blake	575	0	0
Badcock	572	6	10
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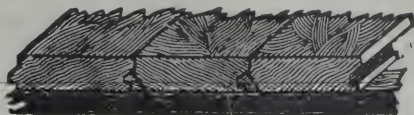
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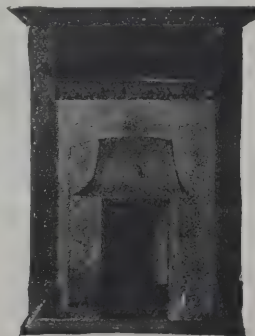
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ENFIELD.

For the erection of five shops at Enfield Highway. Mr. S. C. HART, architect, 22 Philpot Lane, E.C.

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For erection of school for 700 children in Ladysmith Road. Mr. P. MORRIS, architect, Exeter. Quantities by Mr. S. W. HAUGHTON, Plymouth.

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Stephens, Bastow & Co.	9,097	0	0
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Setter	7,853	12	0
Davis & Sons	7,790	0	0
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Blake	7,771	0	0
Spiller & Son	7,654	0	0
Pethick Bros.	7,644	0	0
Pulman	7,614	0	0
Woodman & Son	7,546	7	0
WESTCOTT, AUSTIN & WHITE, Exeter (accepted)	7,435	0	0

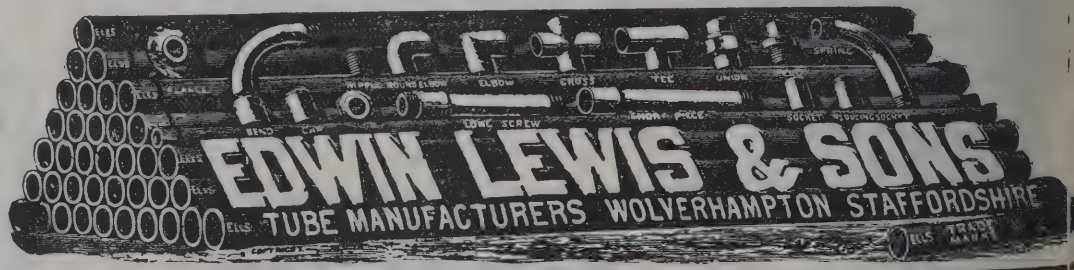
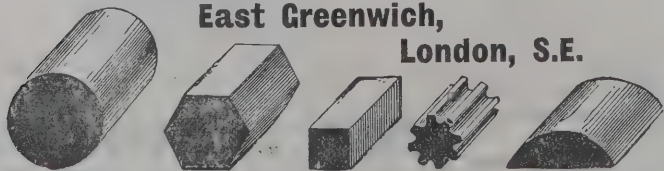
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For extensions of electricity station, Widemarsh Street. Mr. J. PARKER, city engineer.

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[2]

In BRASS, BRONZE, and other Alloys

HORWICH.

For construction of main sewers. Mr. T. GREEN, surveyor.		
Dean & Co.	£2,292	12 0
Slater	2,030	8 0
Etheridge & Clark	1,995	11 0
Cook & Flannery	1,975	8 8
Totty	1,925	4 9
Jowett Bros.	1,668	18 6
Pollett & Co.	1,568	16 3
Yates	1,559	1 8
Barrich	1,504	7 6
Macdonald	1,485	2 6
HORROCKS, Westthoughton (accepted)	1,257	3 4

ISLEWORTH.

For constructing roadways on the sites of workhouse and infirmary. Mr. W. H. WARD, architect, Birmingham.		
Thacker & Co.	£2,166	0 0
Watson, jun.	1,952	0 0
Kavanagh & Co.	1,857	10 0
Swaker	1,847	10 0
Wheeler	1,775	0 0
Hoffman	1,671	5 6
Aitkins & Co.	1,670	0 0
Moss & Sons	1,350	0 0
Trueman	1,279	0 0
Balls	1,088	0 0
Wall	1,050	0 0
CHAPMAN, Hounslow (accepted)	936	0 0

KENDAL.

For about 24,000 cubic yards of excavation at sewage-disposal works and reconstruction of sewer at Longpool. Mr. F. W. OXBERRY, C.E., borough engineer.		
Carradice	£2,863	1 8
Pennington	2,130	5 10
Rainey Bros.	2,018	12 9
Brassington Bros. & Corney	1,801	19 6
Mackay & Son	1,760	2 2
JOHNSON & SON, Salford (accepted)	1,611	17 0

LLANDAFF.

For erection of a gymnasium, library and other additions to school buildings. Mr. G. E. HALLIDAY, architect, Cardiff.		
Williams	£2,090	0 0
Gibbon & Sons	2,000	0 0
Knox & Wells	2,000	0 0
Cox	1,997	10 0
Bond	1,994	0 0
Gibson & Sons	1,890	0 0
Beams	1,887	0 0
Allen & Sons	1,884	16 4
Davies & Sons	1,880	0 0
Dunn	1,863	7 4
Cox & Bardo	1,812	14 2
Hallet	1,800	0 0
Blacker Bros.	1,799	14 6
Turner & Sons	1,798	0 0

LONDON.

For the erection of one-storey school for 330 junior mixed children in Rushmore Road, South Hackney.		
Gregar & Son	£8,159	0 0
Leslie & Co.	7,917	0 0
Richards & Co.	7,671	0 0
Todd & Newman	7,610	0 0
Soole & Son	7,580	10 0
Appleby & Sons	7,558	0 0
Killby & Gayford	7,392	0 0
Greenwood	7,201	0 0
Grover & Son	7,175	0 0
Perry & Co.	7,117	0 0
McCormick & Sons	7,071	0 0
Kearley	7,053	0 0
Triggs	7,044	0 0
L. H. & R. Roberts	7,017	0 0
Shurmur & Sons	6,993	0 0
Godson & Sons	6,992	0 0
Lawrance & Sons	6,898	0 0
Lascelles & Co.	6,873	0 0
Treasure & Son (recommended)	6,707	0 0
Architect's estimate	6,259	0 0

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Faithfully yours, (Signed) POOL & POOL.

PARNALL & SONS, Ltd.,

LONDON, 10 Rood Lane.

BRISTOL, Narrow Wine Street.

LONDON—continued.

For installation of telephones and electric bells at the North-Eastern fever hospital, Tottenham. Mr. W. T. HATCH, engineer.

Glover & Co.	£959	0	0
Jackson Bros.	859	0	0
Hiscock	820	0	0
Weston & Sons	789	10	0
Barton	783	0	0
Vaughan & Cook	720	0	0
Electrical Installations	698	0	0
Pullan	693	0	0
Sweet Bros.	689	0	0
Shalders & Davis	670	0	0
Cowtan & Sons	655	0	0
Private Wire and Telephone Installation Co.	650	0	0
Cox-Walkers	650	0	0
Bromley, Batstone & Kirk	640	19	0
Grant & Taylor	635	0	0
Potter & Sons	633	0	0
British Home and Office Telephone Co.	628	16	0
Bryden & Sons	620	10	0
Cross & Cross	616	0	0
Electrical Engineering and Maintenance Co.	610	0	0
National Telephone Co.	609	2	5
Furse & Co.	599	10	0
Boulting & Sons	596	10	0
Fryer & Co.	590	0	0
Bell Telephone and Electric Co.	581	10	0
Speedy, Eynon & Co.	580	0	0
Baxter & Impey	520	0	0
Lea & Warren	515	0	0
GLENDINNING, Brixton, S.W. (accepted)	400	0	0

For the erection of seven shops and houses at Shepherd's Bush, for the Home Counties Land Co., Ltd., Chancery Lane, W.C. Mr. J. H. RICHARDSON, architect, King Street, Hammersmith.

Spencer, Santo & Co.	£11,557	0	0
Barker & Co.	11,408	0	0
Leslie & Co.	11,018	0	0
Dearing & Son	10,981	0	0
Kingerlee & Co.	9,159	0	0

LONDON—continued.

For the manufacture, delivery and erection of inductive motor generators, &c., required for the tramway sub-stations at Shoreditch, Islington, Holloway, Stockwell and Tooting.

Johnson & Phillips	£34,191	0
Dick, Kerr & Co.	31,162	10
Mather & Platt	30,945	0
Siemens Brothers	30,402	5
British Thomson-Houston Co.	28,991	0
British Westinghouse Electric and Manufacturing Co.	26,990	8
Electric Construction Co.	26,306	0
British Electric Plant Co.	25,178	5
Holmes & Co.	24,972	15
General Electric Co., Birmingham (recommended)	23,352	0

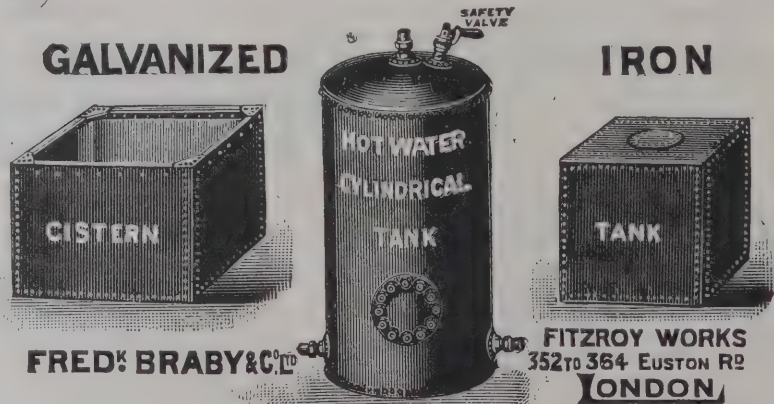
For the erection of secondary school to accommodate 51 girls in Hortensia Road, Chelsea.

Martin, Wells & Co.	£28,491	0
Garrett & Son	28,460	0
J. & C. Bowyer	27,378	0
Allen & Sons	26,997	0
Johnson & Co.	26,839	0
Coles	26,706	15
Wallis & Sons	26,687	0
J. & M. Patrick	26,389	0
F. & E. Davey	26,375	7
Holliday & Greenwood	26,297	0
Clayton	25,791	8
Wall	24,520	4
Nightingale (recommended)	24,334	0
Architect's estimate	26,517	0

For alterations to 143 and 145 Cromwell Road. Messrs THORN, TREHEARNE & NORMAN, architects.

Millman & Son	£1,128	0
Heath & Co.	1,058	0
Simmonds Bros.	1,025	0
Christie	950	0
SOUTHERN BUILDING Co. (accepted)	925	0

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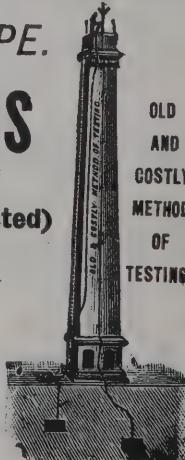
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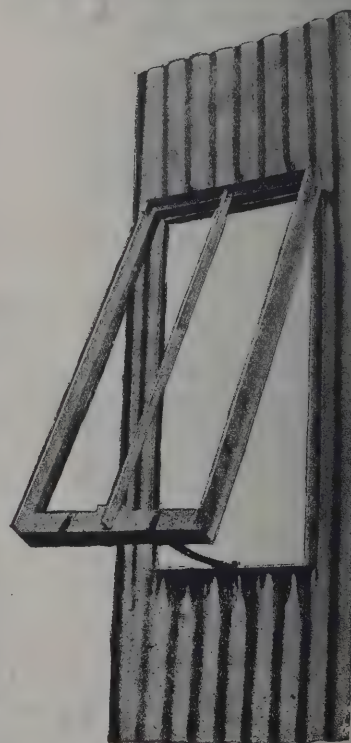
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GUARANTEED WATERTIGHT.

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LONDON—continued.

cells and alterations at police station, Edmonton. Mr. J. DIXON BUTLER, architect.			
Piers & Son	£2,490	0	0
iggs & Hill	2,374	0	0
rover & Son	2,346	0	0
olloway Bros.	2,319	0	0
apleton & Son	2,239	0	0
yre	2,235	0	0
ussell	2,217	0	0
Willmott & Sons	2,191	0	0
athey Bros.	2,190	0	0
awrance & Sons	2,184	0	0
airhead & Son	2,179	0	0
ascelles & Co.	2,165	0	0
onk	2,072	0	0

LUTTON.

erection of shop, stores, bakery, stabling, &c., for the Cornwood and District Co-operative Society. Mr. W. HARVEY, architect, Cornwood.			
ashman	£850	0	0
akeman	790	0	0
absly	786	0	0
REVENSON, Plymouth (accepted)	745	0	0

MORTLAKE.

the erection of Council schools. Messrs. JARVIS & RICHARDS, architects, Westminster.			
elland	£8,414	0	0
& M. Patrick	8,025	0	0
ove Bros.	8,005	0	0
ole & Son	8,000	0	0
owe	7,940	0	0
akeham Bros.	7,874	0	0
emp	7,724	0	0
erry Bros.	7,724	0	0
unt & Son	7,686	0	0
awkins & Co.	7,206	0	0
artin, Wells & Co.	7,151	0	0
ughes	6,665	0	0

SCOTLAND.

For the erection of the Blackness district library, Dundee.			
Accepted tenders.			
Bennet, masonwork	£3,829	0	0
Pollock, joinerwork	816	0	0
Reoch, plasterwork	244	14	0
Dow & Co., ironwork	209	4	0
Dewar, plumberwork	175	0	0
Fyffe & Co., slaterwork	59	10	0

SEATON.

For construction of waterworks. Messrs. BEESLEY, SON & NICHOLS, engineers, 11 Victoria Street, S.W.			
Page & Co.	£6,801	0	0
Ellis & Son	4,390	0	0
Smith & Co.	4,001	2	8
Jenkins & Son	3,974	0	0
Powell	3,859	6	3
Mitchell & Co.	3,832	12	0
Duhenson	3,778	2	6
Berry	3,740	0	0
Jesty & Baker	3,702	9	11
Neal & Co., Ltd.	3,668	18	0
Diment & Richards	3,663	0	0
Dunn	3,657	16	0
Ashley	3,549	0	0
Ladnor	3,482	14	3
Ruther & Sons	3,336	1	4
Harris	3,319	3	0
Pollard & Co.	3,215	0	0
Steer & Pearce	3,191	4	6
Dean	3,156	0	0
Macdonald	3,100	0	0

SLEAFORD.

For laying pipes in connection with a new district water supply.			
GODDARD & MASSEY, Nottingham (accepted).	£4,700	0	0

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and PRESERVING BUILDING MATERIALS.

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SILLOTH.

For sewage-disposal works with cast-iron outfall drains at the Cumberland and Westmorland Convalescent Institution: Mr. JOHN LITTLE, engineer, Carlisle.

Jackson & Sons	£507	3	1
A. & D. Thomson	489	15	8
Beaty Bros.	465	0	0
Baty	406	16	8
Laing & Son	384	5	5
McKay	368	13	0
Hill	350	11	9
Hetherington	322	2	6
J. & R. BELL, Carlisle (accepted)	352	18	9

SWINTON.

For sinking well. Mr. R. FOWLER, C.E., engineer.

Rollinson & Son	£564	0	0
Sangwin.	416	8	0
Woodhead	322	11	0
Danson	293	10	0
Badsey	273	18	9
Dean	221	11	9
CROSSLAND, Padiham, Burnley (accepted)	213	10	4

TORPOINT.

For the construction of roads, drains, sewers, manholes and other works, on the Antony and Carbeile building estates. Messrs. W. J. CARDER & R. MONTAGUE LUKE, surveyors, Plymouth.

Doney	£1,116	0	0
Cook Bros.	1,078	5	0
Bennett	998	0	0
W. Shaddock	993	3	0
Pearce Bros.	991	0	0
T. Shaddock	971	17	7
Turpin	964	0	0
Smale	938	8	9
Budge	915	3	5
Jefford & Sons	882	11	5
Stephens	882	0	0
W C. SHADDOCK, Plymouth (accepted)	852	4	3

TUNBRIDGE WELLS.

For improvement works, St. John's Road. Mr. W. MAXWELL, borough engineer.

FREE & SONS, Maidenhead (accepted) . . . £4,391 3

WILLESDEN.

For the erection of receiving home for children, Acton Lane. Mr. A. SAXON SNELL, F.R.I.B.A., architect. Quantities by Mr. H. BUSHELL.

Treasure & Son	£3,755	0
Abbot & Charlton.	2,935	0
Holliday & Greenwood	2,819	0
Roberts & Co.	2,790	0
Webster & Son	2,649	0
Hyde & Co.	2,639	0
Patman & Fotheringham	2,639	0
Spencer, Santo & Co.	2,580	0
Cowley & Drake	2,537	0
F. & E. Davey	2,537	0
Lawrence & Sons	2,424	0
Cook	2,387	0
Clayton	2,365	0
WISDOM BROS., Isleworth (accepted)	2,330	0

WHYTELEAFE.

For erecting chauffeur's lodge at Wolviston. Mr. W. H. BURT, architect, 14 Southampton Street, Strand.

Honour	£628	0
Shopland	597	0
Smith & Sons.	576	0
RISBY & MITCHELL (accepted)	519	13

The general purposes committee of the Croydon Corporation presented a report at the meeting of the Council on Monday, in which was shown the result of an examination of the London County Council bricks at Norbury. The passage in the report was as follows:—"The borough engineer reported that the bricks used in the erection of the Norbury cottages of the London County Council were of good quality, suitable for the work and of the class usually used by builders of cottage property."

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FEDERAL SERIES.—CARLISLE: VIEW OF CHOIR, LOOKING EAST.

THE NEW WAR OFFICE, WHITEHALL.—ENTRANCE HALL, FROM QUADRANGLE.

LEYTON LIBRARY.

BRIGHTON FRONT.

The following report from the Borough Surveyor of Brighton has been prepared for the works committee:—

In pursuance of your instructions, I beg to report to the committee the portion of the sea-wall on the Madeira Road. I understand the portion of the wall suggested to be commenced is that above the terrace, commencing at the New Steps and continuing eastwards to the eastern end of the Mound.

The wall, which was erected some seventy years since, is constructed of lime concrete, the face of which, with the action of time and weather, has in places become furrowed and indented. The wall, however, is in no danger, and will last for years without any heavy expenditure in the way of repairs, if the roughness referred to be not objected to. The concrete forming the wall having toned down with age, together with the brown tint of the shingle which has been exposed, in my opinion gives the old wall a somewhat pleasing appearance.

To prepare the face of the wall by dubbing out for and to compare with Portland cement the portion referred to will, I estimate, cost about 2,280*l*. I do not, however, consider it at the present time any more is necessary to be done in the filling up of the worst hollows, and this should be done in such a manner as not to give the wall a patched appearance. Further, I think the compoing of the wall would produce a very objectionable glare during the summer, and the action of the falling rain would doubtless in time

produce a series of streaks down the face. If the wall is re-faced it should be done in rough-cast, but the best effect would be caused by ivy or euonymus being trained up to the top.

The proposals have been referred to a sub-committee to consult with the borough surveyor and the superintendent of parks and gardens.

The Council of the University of Birmingham state in their annual report that during the year satisfactory progress has been made with the erection of the new buildings on the Bournbrook site and with their equipment. Blocks A, B and C have been completed, and the great hall and main entrance will be ready for use early in the ensuing summer. After numerous consultations with the architects the Council has approved of plans of additional buildings to be erected on the Bournbrook site fronting to University Road, to include the Harding Memorial library, the department of physics, the department of chemistry, and a central tower which will rise from the court to a height of about 325 feet. The foundations are already in progress.

GERMAN manufacturers of electro-motors have again decided to increase their prices by 10 per cent., thus making the total advance 25 per cent. in a single year. The step has been rendered necessary by the advance in the cost of certain raw materials, especially copper and brass. The German electrical engineering trade has, in spite of these advances in manufacturing costs, had a good year, if we may judge from the reports published by the Siemens-Schuckert group of companies, which show a distinct improvement over the previous year's workings in all cases. The firm of Siemens & Halske has a net profit of 7,964,000 marks (against 6,988,000 marks), and a dividend of 10 per cent. (against 9 per cent.) will be paid. The net profits of the Siemens-Schuckertwerke are 8,988,000 marks, which is about equal to 10 per cent. on the capital. The Electrical Works, formerly Schuckert & Co., report a profit of 3,204,134 marks (against 2,676,553 marks), and a dividend of 5 per cent. (against 4 per cent.) will be paid. It has been decided to raise the capital of this company from 42,000,000 marks to 50,000,000 marks.

KAHN SYSTEM REINFORCED CONCRETE

THE KAHN TRUSSED BAR IS A SCIENTIFIC & ECONOMICAL REINFORCEMENT.

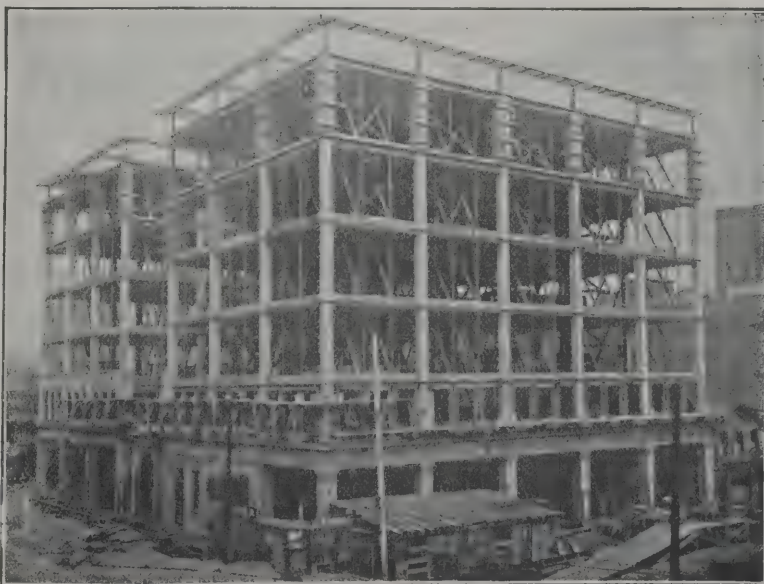
MARK THE FIXED SHEAR MEMBERS. THEY MEAN—TO THE CONTRACTOR, RAPIDITY AND ECONOMY OF ERECTION—TO THE OWNER THEY MEAN EFFICIENCY AS WELL.

NO LOOSE MEMBERS TO FIX.

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THE UIHLEIN BUILDING.—KIRCHOFF & ROSE, ARCHITECTS.

We want your enquiries for Foundation Rafts, Footings, Beams, Floors, Landings, Staircases, Roofs, &c.



TRUSSED CONCRETE STEEL CO.,
CAXTON HOUSE, WESTMINSTER.

LITHONITE.

WE lately called attention to the new application of asphalt in the form of sheets which is being introduced by Messrs. Engert & Rolfe, Ltd. A pamphlet has now been issued by them which explains by means of large-sized diagrams the method of laying lithonite under several conditions, both for flat and mansard roofs and for other purposes. A form of specification is also given which will facilitate operations. Lithonite complies with by-laws, and it is recognised as an excellent fire-resisting roof on account of the outer layer of sand and gravel or concrete. The manufacturers claim that it is sufficiently elastic to yield to any expansion or contraction in iron or concrete, settlement of building, warping of timber, vibration from heavy machinery, passing traction engines, trains, &c., without deterioration.

The system is simple and adapts itself readily to the most complicated ground plan. On account of the non-conducting properties of lithonite, the underside of the boarding upon which it is laid may be used as a ceiling, and dwelling-rooms arranged underneath. It deadens the sound of rain, hail, wind, &c., a fact which is of prime importance when the rooms immediately below are used for domestic or business purposes. Lithonite is absolutely impermeable to all atmospheric influences, dust, smoke, &c., and is not affected in the slightest degree by the extremes of heat and cold. Flat roofs are found to have so many advantages in some buildings their use is likely to be extended, owing to the existence of the light and economical covering which Messrs. Engert & Rolfe have produced.

TRADE NOTES.

MESSRS. E. H. SHORLAND & BROTHER, of Manchester, have recently supplied some of their patent Manchester stoves with descending smoke flues to the hospital, Weston-super-Mare.

THE Ruberoid Company, Ltd., have introduced a protection for damp walls under the title of "Hercules Sheeting." This is made from first-class stock, impregnated with a waterproof compound. It contains no tar and will not deteriorate with age. It is applied to the wall by

means of Ruberoid solution, which in itself is an absolutely sure preventive of damp. It is claimed that this sheeting is not only waterproof but moistureproof, and that no damp or moisture can possibly pass it. It is supplied in rolls 36 inches wide containing 112 square yards. A sample yard will be sent on application.

A PARTICULARLY nice pen is that manufactured by Messrs John Heath & Co., of Birmingham, and known as The Postal Telegraph, 1880. It is a gold pen which will not easily corrode, has a broad point, and is well suited for a flowing handwriting. John Heath's pens can be obtained from any stationer.

WE are informed that Mr. Edmond Coignēt, through his licensees, Messrs. Peacock Brothers, of Brixton, has obtained the contract for the floors, posts and roofing of a new warehouse for Messrs. J. Grossmith, Sons & Co., wholesale perfumers, Newgate Street, E.C. The architect for the work is Mr. Henry A. Saul, A.R.I.B.A., of London. There will be altogether seven floors, calculated for a superload varying from $1\frac{1}{2}$ to 2 cwt. per square foot. The outer walls of the building and the foundations are to be made in brickwork. A noticeable feature will be the introduction of some large lintel beams. This building will be situated at the corner of Duke's Head Passage and Ivy Lane, Newgate Street, E.C.

MESSRS. THOMAS HENRY BAKER & EDWARD ERNEST MAY, architects, of 5 Headgate Court, Colchester, have dissolved partnership.

THE Archbishop of the West Indies, chairman of the local relief committee at Kingston, Jamaica, has sent to the Lord Mayor of London a synopsis of careful approximate reports made by experienced business men, from which he has deducted 15 per cent., which shows the total loss of buildings in the burnt area at 500,000l.; loss on private buildings in the city of Kingston and the suburbs which are in the parish of St. Andrew, 900,000l.; ecclesiastical buildings in Kingston, 60,000l.; Government and municipal buildings, 10,000l.; merchandise and personal property in burnt area, 500,000l.; ecclesiastical buildings out of Kingston, 30,000l.; other large buildings in other parishes, 20,000l.; total, 2,070,000l.

Awarded Diploma at Cheap Cottages Exhibition, Garden City, Letchworth.

GOLD MEDAL.



Kitchen Side of Fitting: Copper and Bath at back.

COMBINED RANGE, COPPER, AND BATH WITH HOT-WATER SUPPLY, FOR MODEL DWELLINGS, COTTAGES, &c.

Adopted by the . . .

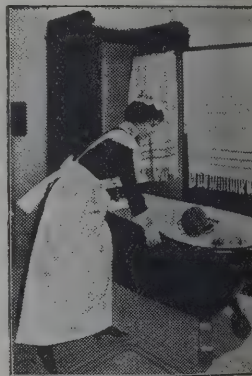
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Yours very faithfully,

(Signed) JESSE SMITH & SON.

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ELECTRIC NOTES.

electric supply committee of the Birmingham City Council had under consideration at their last meeting the report of a report to be presented to the Council. This report contains a recommendation that the committee should be authorised to borrow a further sum of 70,000*l.* or 100,000*l.* for various purposes, and principally for the laying of additional service mains.

The Islington Borough Council have been informed by London County Council that as they continue to refuse to the electrification of the tramways by the overhead system between Finsbury Park and Pentonville Road, Camden Road, the London County Council will apply to Board of Trade for approval of the overhead installation. They point out that this could be completed in half the time necessary for the installation of the conduit system and would effect a saving of 40,000*l.*

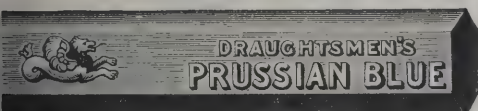
The Woolwich Borough Council began their ordinary meeting on Thursday, the 14th inst., at 7 P.M., and discussed several hours Sir Alexander Kennedy's report upon the Woolwich electricity undertaking, the management of which has been strongly condemned by Sir Alexander, who expressed the opinion that no profit could be looked for for years. The Council, which now has a Municipal Reform majority, decided to close the wiring department on March 31 and to sell the wiring stores which they have accumulated. It was stated that the loss on the electricity undertaking would be responsible for a rate of 5*d.* in the pound.

The electric-lighting committee of the Bath Corporation considered on Monday the report of the select committee in consultation with Mr. Schenck, who, on behalf of the Somerset and District Power Company, had made an offer for the Bath electrical undertaking. The committee unanimously resolved that the works be sold, and a special meeting of the City Council will be held on Tuesday next to confirm the decision. The concern has been a failure since the Corporation purchased it from a company in 1896. The shareholders will refund all the Corporation have spent (100,000*l.*) and pay 2,000*l.* original expenses, in addition to a bonus of 20,000*l.*, if the Board of Trade or Parliament will permit the undertaking to be sold in perpetuity. They anticipated an immediate reduction in the cost of lighting the

streets of 800*l.*, and there are other advantages. Including the release of capital, it is calculated that the sale will reduce the rates by at least 2½*d.* in the pound.

Mr. J. SNELL, consulting engineer to the London County Council, has issued a report on proposals which are before Dundee Town Council at the present time for extending their electrical undertaking:—(1) The extension of the existing station at a capital expenditure of 75,618*l.*; (2) a new station, with the use of the existing station in the winter months, at a capital expenditure of 93,000*l.*; and (3) a new station costing 119,633*l.*, abolishing the present station. Mr. Snell recommends the adoption of the second scheme, and he also advises the adoption of the high-tension system as more economical. His report says:—"On all points, therefore, and without exception, the case is clear for the adoption of high-pressure for all future transmission. To meet the future demands of the city from one station by low-pressure is, as I have already said, economically impossible; the three-phase high-tension system will be much more flexible, and enable any part of the city to be reached both now and, however reasonably extended, hereafter, and will permit of easy connection at minimum cost of even the most outlying factories. I therefore unhesitatingly recommend the adoption of the high-tension system." He further proposes that the Council should adopt a low, though financially sound, scale of charges, in order to encourage the demand for electrical energy.

THROUGH the liberality of the Misses Ward, Bottom Field House, Ossett, daughters of the late Alderman Joseph Ward, ex-mayor of Ossett, the Mayor and Corporation of Ossett have placed the order for new clock, chimes and bells with Messrs. Wm. Potts & Sons, of Leeds, the makers of Ossett parish church clock and chimes, Ossett railway station and Ossett co-operative stores clocks, as a memorial to their father. Messrs. Potts & Sons are also making a new illuminated clock, with four 6-foot dials and bell, for Messrs. Shaw & Shaw, Milnsbridge, Huddersfield. Both of the above clocks are in progress, and from the designs and plans of the late Lord Grimthorpe.



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For Index of Advertisers, see page x.

VARIETIES.

A NEW theatre is to be erected at Westcliff-on-Sea, Essex, from plans prepared by Messrs. Cabuche & Hayward, MM.S.A., of Westcliff.

A LARGE firm of chair manufacturers at High Wycombe state that since the preference of 33½ per cent. given to British goods by the Canadian tariff, their trade with Canada has increased with leaps and bounds.

THE Earl of Plymouth has presented Whitmore Bay, with its fine promenade and sands, to the Barry District Council. They intend to spend a considerable sum in making it one of the most attractive resorts in South Wales.

It has been decided to build a cotton-weaving shed at Pemberton, near Wigan, to hold 400 looms. A company called the Pemberton Manufacturing Company has been formed, with a capital of 20,000*l.*, and it is the intention of the promoters to begin building at once.

THE Johnstone Town Council have appointed Mr. M. Ratcliff Barnett to advise and report to the Council as to the best site for purification works, and the best system to adopt for the purification of the town's sewage in view of restrictory action by the Clyde Commissioners.

DURING a service at St. John's Church, Wolverhampton, a huge stone urn smashed through the roof and embedded itself in the floor of the church. The urn, weighing 4 cwt., had been part of the ornamentation of the spire 70 feet from the ground. No one was injured, though several persons had passed the spot only a few minutes previously.

AT Portsmouth on the 14th inst. Mr. Fred. James Willis, one of the inspectors of the Local Government Board, opened an inquiry with reference to the proposal that the Corporation should be empowered by a provisional order to charge the borough fund and rates as security for the sum of 70,000*l.* in connection with the municipalisation of the South Parade Pier, Southsea.

THE Baptist church at Consett, co. Durham, was opened on the 6th inst. It is designed in a late period of Gothic, faced with pressed red bricks with white dressings. The church, with tower and quaint spirelet and vestries, seating about 450 persons, has been erected by Messrs. J. Guthrie & Son, of Darlington, and Messrs. George Baines & Son,

5 Clement's Inn, Strand, London, W.C., are the architects. Schools are to be erected later.

THE Southampton Town Council have agreed to cede several acres of submerged land on the river Test shore to the South-Western Railway Company to enable them to carry out their dock extension scheme. In addition to the nominal monetary payment of 500*l.*, the company must undertake to reclaim a big stretch of mud land on the western shore by depositing spoil from the dock excavations thereon.

THE Aberdeen Harbour engineer has prepared for consideration of the Commissioners a report on improvement schemes which will have to be carried out during the next few years at a total cost of 556,380*l.* The docks and pilotage committee recommend the Board to proceed at once with the improvement of Provost Blaikie's Quay to provide deep-water berths and improved railway facilities at a cost of 30,000*l.*

AN extensive scheme of additions and alterations will be begun at the General Post Office, Edinburgh. At the Edinburgh Dean of Guild Court on the 14th inst. H.M. Commissioner of Public Works and Buildings was granted warrant for the removal of buildings and laying foundations for the proposed extensions, which, it is estimated, will cost at least 62,000*l.* and occupy over three years. It is expected that the extensions and alterations from the Low Calton side will be completed in eighteen months, when the work of adding the top storey will be begun.

A SYNDICATE is in negotiation with the Southport Corporation with a view to forming a lagoon on the south side of the marine lake. In the event of terms being arranged, the Corporation are to construct the sea-wall for the lagoon and roughly to make the island, for which work the estimate is 12,000*l.* On this expenditure a payment of 5 per cent. is offered to the Corporation, and the latter would in addition derive the benefit of the rating of the lagoon, the value of the advertising, besides the possible income from the supply of electricity. The Council are asked to give up control of the site for fifty years.

THE London, Brighton and South Coast Railway Company are maturing a scheme for extensive alterations to be carried out at the Eastbourne station at a cost of 50,000*l.*

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first work to be undertaken will be the enclosing of railway premises on the Terminus Road side, the purpose being at some future time to extend the station over ground now appropriated as cab-ranks. The booking office, &c., will be reconstructed on the opposite side, and it is proposed to erect another platform alongside the northern one. A new engine-shed is required, and will be constructed in close proximity to the waterworks.

The *Pioneer Mail* (Allahabad) publishes information in Rangoon with reference to the Burma Oil Company's scheme for laying a pipe line from the oilfields to the railways. The length of the proposed new line is about 275 miles, and there will be four pumping stations en route. A pumping station will be in telegraphic communication with the oilfields. The transport of such a large amount of oil will entail considerable but not insurmountable difficulties. In view of the network of similar pipe lines in America and the experiments concluded by the Burma Oil Company, the success of their latest venture seems to be assured.

The Metropolitan Asylums Board at the meeting on the 15th inst. accepted the following tenders:—Messrs. J. Wrightson & Co., at the sum of 200*l.*, for the reconstruction of Gas House Bridge, Hoddesdon; Messrs. S. E. & Son, of Croydon, of 1,369*l.*, for the erection of an engine and boiler-house or chimney-shaft at Westerham; F. J. Minter, of Putney, of 3,186*l.* for the construction of an engine and producer-house, &c., at Selhurst; the Stanton Works Co., Ltd., of Nottingham, of 5,911*l.* 9*s.* 2*d.* for the supply of cast-iron pipes and other castings required in connection with the filter beds at Ditton.

A LOCAL GOVERNMENT BOARD inquiry was held on Tuesday at the Wallasey Council offices for the issue of a provisional order under section 303 of the Public Health Act, 1875, to partially repeal, alter or amend the Wallasey Improvement Act, 1872, so as to enable the Council to borrow 3,000*l.* for the erection of ferry workshops and 100*l.* for the purpose of deepening the approaches at the New Brighton ferry. The proposal to dredge at Egremont has for the present been dropped, and the present quotations represent the initial cost of dredging at New Brighton 7,700*l.*, altering the dredger *Tulip* 175*l.*, and new pump for same 600*l.*; total 8,475*l.*

THE new public baths which have been erected at Handsworth, at a cost to the ratepayers of about 23,000*l.*, were formally opened last week. The general building is situated in Grove Lane, at the corner of Hinstock Road, near the park. There are two swimming-baths. The Turkish bath consists of three hot rooms, shampooing-rooms, with needle bath and plunge, and a cooling-room. The whole of the baths are fitted throughout with electric light and electric bells, and are warmed by steam. The designs were prepared by Mr. J. P. Osborne.

THE Government have appointed a Royal Commission to inquire into the general sanitary condition of Belfast. The step has been taken as the result of representations made to the Irish Local Government Board by the Belfast Citizens' Association, which complained of the high death-rate due, it was alleged, to the unsatisfactory state of parts of the city. The Commission will consist of a number of gentlemen who have been or who are connected with municipal administration in England or Scotland as mayors, several prominent English medical officers of health and the chief inspector of the Irish Local Government Board.

A LOCAL GOVERNMENT BOARD inquiry was held at St. Ann's on the 18th inst. in respect of the application of the Council to borrow 3,500*l.* for the extension of the promenade from East Bank Road to Fairhaven Road. The surveyor gave details of the proposed extension, showing how it was proposed to preserve the sandhills as far as possible in their natural condition, to erect a sunken bandstand, provide shelters, a lake 1,320 square yards in area, crossed by a rustic bridge, and also to make a children's corner. The inspector, after going through the items, feared that the surveyor had underestimated the cost if the Council desired to make a first-class job of it. Even after allowing for the striking out of the lighthouse, which meant 150*l.*, he had only allowed 100*l.* for contingencies.

MR. J. R. CLYNES, M.P. for North-East Manchester, asked the Secretary of State for War on Tuesday whether he was aware of complaints made that Messrs. Arundle, builders and contractors, of Bradford, had not observed the rules and conditions of work and wages in the building trade in connection with military barracks works at Preston and Manchester, and whether this firm undertook to conform to any established provisions regarding work and wages.

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Mr. Buchanan replied that the contracts with Messrs. Arundle contained the usual fair wages clause providing for the payment of the standard rate of wages in the district. Special inquiries had been made with regard to the work of the Preston and Manchester barracks, and carried on by the firm, and it appeared that the provisions of their contract had been duly observed by them.

THE Coventry City Council have instructed Mr. Frederic Foster, of Coventry, to prepare a new set of sketch plans for a school on the Leicester Causeway site, to accommodate 1,200 children at a cost estimated at the rate of 13½ pence per head. Subject to the plans being approved by the Council and the Board of Education, and to the sanction of the Local Government Board being obtained to the necessary loan, the education committee were authorised to appoint Mr. Foster as architect for the work at a fee of 650l.

In a report to the Washington Bureau of Manufactures, Mr. E. A. Wakefield, the United States Consul at Orillia, says that an estimate of the quantity of timber which will be cut in the forests of the province during the winter of 1906-7 has been made by the officials of the department of lands, forests and mines, and it is believed that more lumber will be taken out this spring than was taken out last season. It is said that the lumbermen will fell 7,000,000,000 feet b.m. of pine this year, 70,000,000 feet b.m. of hemlock, 1,500,000 feet b.m. of spruce, 1,250,000 cubic feet of square timber, 100,000 cords of pulpwood and 4,500,000 railway ties. The activity in railway construction throughout the country has created a great demand for ties, and the production in Ontario will in consequence increase this year.

THE Department of Public Works, Ottawa, Canada, invite competitive plans for the new Departmental and Justice Buildings. The cost of the Justice Building is not to exceed 35 cents per cubic foot, and the cost of the Departmental Building 30 cents per cubic foot. The building is not to exceed five storeys in height above the basement, and the offices are to be set off in units suitable for subdivision. The Justice Building may be three or more storeys in height. Quarters are to be furnished for the Supreme and Exchequer Courts, Railway Commission and Department of Justice. Prizes will be awarded as fol-

lows:—Best design, 8,000 dols.; second, 4,000 dols.; third, 2,000 dols.; fourth, 1,000 dols. The competition closes on April 14.

MR. W. O. E. MEADE-KING, Local Government Board inspector, on the 14th inst. held an inquiry at the Guildhall, Lincoln, relative to the application of the City Council to borrow sums amounting to 11,082½ for purposes of the water undertaking. Mr. R. McK. Barron, the waterworks engineer, said the work in respect of which it was proposed to borrow the money comprised:—(1) New filter-beds, (2) alteration to existing filter-bed, (3) renewal of the aqueduct to Hartsholme Lake and the Ballast Pits, together with two new tanks and one low-level tank for all water tanked at the pumping station; also connections from the last-named tank to the engine. The waterworks engineer stated that the depth of the Boultham bore was now 2,035 feet, and had now reached the pebble beds, and the total depth was to be 2,200 feet. The capacity of the new tank was 45,000 gallons, and it would be all concretework. The contractor had claimed 2,000l. on the ground of interference with his work by that carried out by the Corporation on the same ground as the contract work.

LONDON COUNTY COUNCIL SCHOOLS.

THE report lately prepared on planning of schools by the education committee was published in this Journal. The proposals are that no classroom in the senior departments shall be planned to accommodate more than 40 scholars, and no classroom in the infants' departments more than 30 scholars. The reason for the proposed reduction in the number of scholars to be accommodated in each classroom under the proposed new system of planning is that the education committee are of opinion that 40 is the maximum number of senior children that should be taught at any one time by any teacher of average capacity. The finance committee, after consideration of the subject, say:—As to the number of teachers which the Council requires is practically governed by the total number of classrooms in the various schools, the increased cost of teaching involved in the proposals is determinable by the difference between the number of classrooms necessary under the present system of planning to accommodate a given number of scholars.

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the number of classrooms which would be necessary under the proposed system. It has been calculated that the average increase under the proposed system in the number of rooms required to accommodate each 1,000 children is $3\frac{1}{2}$. As an additional room will be required for each extra room, the increase in expenditure, taking the average salary of a teacher (male) at 120*l.* a year, will be 450*l.* a year for each 1,000 children, or at the rate of 9*s.* a year for each child. As regards each child for salaries of teachers in all schools under the present system is estimated for the financial year 1907-8 at 3*l.* 12*s.* 4*d.* Applying these rates to the 28 new schools which it is proposed to erect in the next five years to provide aggregate accommodation for 14,600 children, the additional number of classrooms consequently of teachers would be 88, and the maximum additional expenditure in respect of the 28 schools for salaries of teachers would be 10,560*l.* a year. Any of the existing schools are planned on this principle but as it is possible that it may be extended in some cases to such of the existing schools as have large classes, the finance committee think it right to point out to the Council that the foregoing estimated additional expenditure applies only to the new schools in immediate contemplation, and that if the principle of smaller classes is applied to existing schools, the additional expenditure for teachers' salaries will of course be much larger than the above-mentioned sum.

OLD AND NEW LONDON BRIDGE.

The first of the present series of lectures at Carpenters' Hall, London Wall, was delivered on Thursday evening, 14th inst., by Mr. C. Welch, F.S.A., who took for his text "Old and New London Bridge," which was very ably dealt with and listened to with wrapt attention by the large audience that completely filled the magnificent hall. The lecture was illustrated by a considerable number of fine lantern photographs, and Mr. Welch, who was introduced by the Right Hon. Viscount Dillon, the chairman of the occasion, commenced by stating that of all the famous landmarks of which the City of London can boast, not one can boast of a more perceptive equal in interest, the world-famed

London Bridge. The old one, which was removed within living memory, existed for over 650 years, having been built in the reign of King Henry II., and lasted to the reign of King William IV.

The earliest London Bridge was a wooden structure, built soon after 993, partly destroyed by Olaf in 1008, and wholly destroyed by storm in 1091. It was then rebuilt by national contributions, largely consumed by fire in 1136, and finally rebuilt in stone in 1176. The havoc caused by war, flood and fire, disheartened the citizens from entrusting their safety any longer to a bridge of wood, and now a worthy priest arose who has richly deserved the gratitude of his own and each succeeding generation of Londoners. Peter of Colechurch, the founder, architect and liberal supporter of London Bridge, was a priest and chaplain or curate of St. Mary Colechurch, famous as the place where St. Thomas à Becket was baptized. The dedication of the bridge chapel to St. Thomas was a wise step in the interests of the bridge, and must have proved a great help in procuring the contributions of many devout and wealthy benefactors. Becket, who was murdered in 1170 and canonised in 1173, only three years before the foundation of the bridge, was enthusiastically adopted by the citizens as their patron saint, and on the reverse of the old City seal he is represented seated above London Bridge with a view of London and its walls below. The seal of the bridge, which bears the effigy of St. Thomas and a representation of his martyrdom, is preserved among the deeds relating to the bridge estates. To defray the charges of the new bridge of Peter of Colechurch, liberal contributors came forward, among them being Richard, Archbishop of Canterbury (Becket's successor) in 1174, and the worthy priest himself, besides designing and carrying out the entire work, is said to have built the chapel from crypt to roof at his own costs and charges. Henry II. also assisted the work by the imposition of a tax on wool, which gave rise to the popular tradition that London Bridge was built on wool-packs. In 1201, four years before the death of Peter of Colechurch, a letter was received by the mayor and citizens of London from King John, recommending Isenbert of Xaintes as a new architect to finish the work. The king's letter also provided that the rents and profits of the houses to be built on the bridge should be devoted to its repair and maintenance.

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King John contributed in 1213 to the repair of London Bridge by appropriating to its use the "God's pence" taken of foreign merchants. In 1212, not long after the erection of the houses on the bridge, which were intended as a means of its support, they were swept away by a disastrous fire, which even threatened the destruction of the bridge itself, and threw a further burden upon its revenues.

The bridge took thirty-three years in building. It consisted of a stone platform, erected somewhat westward of the former wooden bridge, and was 926 feet long and 40 feet in width, standing about 60 feet above the level of the water. It contained a drawbridge and nineteen broad pointed arches, with massive piers varying from 25 feet to 34 feet in breadth raised upon strong elm piles covered by thick planks bolted together. It is possible that the immense wooden starlings attached to the piers did not form part of the original structure, but were added afterwards to keep the foundations of the bridge from being undermined. The obstruction caused by these huge barriers and the large number of piers reduced the entire channel of the river from its normal breadth of 900 feet to a total waterway of 194 feet, or less than a fourth of the whole. Peter of Colechurch's work has, however, not been without defenders (even as regards these points) among architects in more recent times, who have urged that the narrowness of the arches tended to preserve the navigation of the river above the bridge.

Between the sixth and seventh piers, counting from the southern end, an aperture allowed the passage of large high-masted vessels. The opening was crossed by a wooden bascule, which was raised to admit ships or to prevent the inroad of a hostile force upon the bridge. This drawbridge was from the first a source of great trouble, being constantly in need of repair or rebuilding. The bridge gate which guarded the entrance to the City from the south stood over the first arches of the Surrey end. "This gate," Stow informs us, "with the tower thereupon and two arches of the bridge, fell down, and no man perished by the fall thereof, in the year 1436, towards the new building whereof divers charitable citizens gave large sums of money." In 1471 the Bastard Falconbridge and his Kentish mariners assaulted this restored entrance gate and burned both it and thirteen houses on the bridge.

Norden's view shows the traitors' heads fixed over the gate. This first happened in 1577, when the stone tower which they were previously placed was removed. A great fire in 1725 destroyed many houses at the Southwark end of the bridge, and severely damaged the gate, which had then formed a very inconvenient approach to the City, as it was only 13 feet wide. After this fire the gate was reconstructed, the roadway widened to 18 feet, and two posterns added for foot passengers. This was completed in 1728 and duly recorded in an inscription placed above the gate. Not long afterwards, in 1731, it was demolished with the rest of the City gate. The next important structure was the strong tower known as the Great or Stone Gate. Upon its battlements the heads of traitors were at first placed, and it formed a second line of defence from invaders attacking the City from the south. In 1426 the tower adjoining the drawbridge was rebuilt. On the removal of the tower in 1577 a new structure, consisting of a gate and a tower, was set up on its site, and this was finished in 1577. It was a beautiful building having all its fabric above the bridge formed of timber. But the glory of the gate of 1577 was quite outshone by the magnificence of a wooden palace which spanned the bridge on the City side of the chapel, and was proudly called Nonsuch House. It is said to have been constructed in Holland entirely of wood and brought over in pieces, being erected on the bridge with wooden pegs only, not a single nail being used in the whole fabric. Built on the seventh and eighth arches of London Bridge from the Southwark end, it overhung the parapet on either side, leaving a clear passage 20 feet wide underneath the structure in the centre. This magnificent building was crowned with carved gables, cupolas and gilded vanes, and two sun-dials were placed on the top of its southern side. The date of its erection cannot be fixed with certainty, and its building and decoration probably occupied many years. The celebrated mansion was repaired in 1632, the entry of that year specifying it by the name of "Nonsuch." In the same year, and in 1649, the workmen were busy rebuilding the houses which had lain in ruins since the fire of 1632. Even then the gaps were not completely filled, and to that circumstance was probably owing the

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that the Great Fire of 1666 did not inflict much damage on the bridge thoroughfare. Among the celebrated persons who resided on London Bridge is said to have been John Wren, and it is a well-established fact that Hans Holbein, Court painter, lived on the bridge, as did also Peter Willems and Dominic Serres, marine painters, and Laguerre, engraver.

The singular picturesqueness and animation were lent to the bridge by the houses which lined its thoroughfare, though they seriously interfered with the comfort and the safety of passengers. These houses were first built in the reign of John, not long after the death of Peter Colechurch, in 1205, the object being to provide a reliable source of revenue for the bridge. The London tradesmen recognised the excellent trading possibilities of the bridge thoroughfare, and next to the famous Goldsmiths' in West Chepe, it became the most coveted business in the old City. In a rental of the year 1358 the number of shops on the bridge is 138, and the amount of rents 160*l.* 4*s.* Next in interest to the bridge itself is the chapel dedicated to St. Thomas of Canterbury, familiarly called St. Thomas of the Bridge. This was erected on the tenth or centre pier, which measured 35 feet in breadth and 115 feet from point to point. The building was 60 feet in length by 20 feet broad, stood over the parapet on the eastern side of the bridge. The chapel was built by Peter of Colechurch, and formed the nucleus of his design for the erection of the bridge. His remains were buried under the staircase in the middle of the building, which was the most beautiful on the bridge, either brass plate nor any inscription marked the site of his tomb. In 1549 "it is agreed," runs a City minute, "that Mr. Wylford and Mr. Judde, surveyours of the workes of the brydges, shall to-morrowe begyn to cause the chapel of the same brydge to be defaced, and to be translated into a dwelling-house, with as moche speede as they conveniently maye." For a year or two, nevertheless, the aged remnant of the once beautiful edifice lingered on, and in 1553 the agents of destruction appeared on the scene. The centre of administration of the affairs of the bridge was the Bridge House. This house, in Stow's opinion, is said to have beginning with the first founding of the

bridge, either of stone or timber." It had two frontages, one on the river and the other at Tooley Street, then known as Barns Street. It occupied with its wharves and storehouses a great space of ground, and lay east of St. Olave's Church, and separated from it by a great stone house belonging to the Abbot of St. Augustine of Canterbury. The house served not only as the headquarters of the workmen at the bridge, but also as an office for the wardens, and was accordingly provided with a well-appointed suite of apartments for purposes of official business and entertainment.

The history of London Bridge during the eighteenth century chiefly consists of doubts whether the bridge would stand, surveys of its buildings, repairs, reports of architects, schemes for its alteration, and controversies concerning the erection of a new bridge, and, notwithstanding the expenditure of 100,000*l.* on the reconstruction about forty years previously, the nineteenth century opened with renewed agitation for better bridge accommodation. Designs for a new bridge were obtained, and finally in July 1823 an Act was passed "for rebuilding London Bridge, and for improving and making suitable approaches thereto." The design of John Rennie was adopted, and the contract was given to Messrs. Jolliffe & Banks, who undertook to construct the bridge within six years, about 100 feet to the westward of the old bridge, for the sum of 426,000*l.* The old bridge was to remain until the new one was completed. The first pile was driven on March 15, 1824, and the new London Bridge was opened by King William IV. and Queen Adelaide on August 1, 1831. The old bridge was not entirely removed until 1832, when the bones of the builder, Peter of Colechurch, were found beneath the masonry of the chapel.

The bridge, as all know, has quite recently been widened, and this has furnished a sensible relief to its ever-increasing traffic. For more than 760 years no second bridge spanned the river within the limits of the Metropolis, for it was not till the middle of the eighteenth century that Westminster and Blackfriars bridges were built. But the old approach to the City still attracts thronging crowds of passengers, and London Bridge to-day, with its myriads of travellers, is still one of the greatest sights of the world.

A hearty vote of thanks was accorded to Mr. Welch for his instructive lecture, of which we have given but a brief résumé.

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INDUSTRIAL ART.

THE prizes obtained by students of the Municipal School of Art, Birmingham, were distributed last week by Mr. George Clausen, A.R.A., who delivered the customary address. He pointed out that formerly all instruction was of a workshop character, but with the exception of sculpture that kind of instruction had died out, and the very meaning of the word "art" had become so hazy that instead of it comprising the whole manufacture of any beautiful thing it was now restricted to a kind of embellishment or ornament. In the old days of the workshop there was very little talk about art, but now there was a great deal. Art was in danger of becoming a pleasing excrescence, not something vital and useful, but sometimes regarded even as a thing which might be plastered over some one else's work to make it beautiful. One could not too strongly insist on the fact that the first element of beauty was that of fitness, whether in painting, sculpture, the making of furniture, the erection of buildings or the production of anything else. People had been making beautiful things since the beginning of the world in obedience to a want for those things. Beautiful things had been made because they were useful.

Birmingham was to be congratulated on possessing a school which was solving most successfully the difficult problem of joining theory with practice. He had that day been through their schools and had seen their work, and its excellence was remarkable. The examples of work—not paper models, but actual things designed and made—were, it seemed to him, in some cases as fine as it was possible to make them. He was particularly struck with the metal-work and jewellery, with the writing, the needlework and bookbinding, the best works in which were as fine as the examples of old times treasured in our museums. There was in them that union of the heart and hand found in all true art. These objects of daily use made beautiful should command from all who loved art ready appreciation. If he had to give a wedding present there was nothing he should like better than to choose some of the many things which he had admired at their exhibition. These things should be sought and treasured like a fine picture or a statue. He

thought it was a very healthy sign for the artistic life of a country that the energy of so many students should be devoted to this work of making beautiful things which people were likely to want. Unfortunately he had to see a great many pictures which probably no one would ever want and it seemed to him so much better that artistic energy should be turned into necessary and useful channels and be allowed to wander over the vague field of picture making.

All work should be vital. What made so much of what was called ornamental work a thing to be avoided was that it was matter in the wrong place. If a thing fulfilled its purpose without a line of adornment it was at least ugly, and might be even beautiful in proportion. Decoration should grow naturally from it and should be thought, have some meaning, or at least some relation to beautiful things. Nothing was new. People had been making houses, statues, pictures and furniture from the earliest times, and therefore it was very necessary for them to study precedent. This was the advantage of the museum. Too often a student started designing an object as if he felt himself to be the first one who had ever made such a thing to do, but if they studied the history of things made in obedience to the same needs as their own, they could learn a great deal. They should study, always having in mind the child's questions "how" and "why." Then, if they had the sense they might do something original. A childish attitude of mind was a most necessary thing for an artist to keep as long as ever he could. There was in Birmingham a distinct school of painters, founded largely on the pre-Raphaelites and also partly on the work of Burne-Jones. The Birmingham school was the one school they had still working on those traditions, and he wondered whether it would be possible to develop this school in the way others had been developed by entrusting the decoration of some of the Birmingham buildings to able young artists whom they had trained. The competition for the decoration of the Houses of Parliament which took place in the middle forties marked a distinct epoch, a time of awakening in English art, and it was possible they might do a similar thing in Birmingham. They would then not only find a use for their local artists, but would also add to the glory of their city.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

CASTLEFORD.—March 3.—The Governors of Castleford Secondary schools invite designs from architects practising in the West Riding of Yorkshire for a dual Secondary school, &c., for 300 scholars. Premiums of 50l. and 25l. to be awarded by Mr. W. H. Brierly, the assessor. Deposit 10s. 6d. Mr. A. Wilson, clerk to the Governors, Station Road, Castleford.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

FAILSWORTH.—March 28.—The District Council invite designs for a library (cost not to exceed 3,000l.) in Oldham Road. Premiums of 20l. and 10l. Deposit one guinea. Mr. H. C. Broome, clerk, Council Offices, Failsworth.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

WIMBLEDON.—March 9.—For an elementary school in Pelham Road to accommodate 1,000 children. Premiums of 150l. (to merge in the commission) for the first design, and of 100l. and 50l. Mr. J. W. Simpson, assessor. Send in name with qualifications to Mr. A. Steele Sheldon, clerk, Education Office, 12 Queen's Road, Wimbledon.

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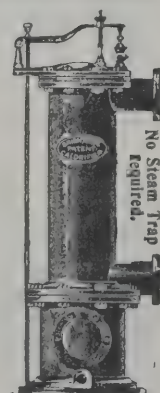
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CONTRACTS OPEN.

ADLINGTON.—March 5.—For the erection of an elementary Council school at Adlington, Cheshire, to accommodate about 180 children. Deposit 2*l*. Mr. Arthur Brocklehurst, architect, Adelphi Chambers, 30 Brown Street, Manchester.

ALNWICK.—March 2.—For proposed alterations and additions to Messrs. Barclay & Co.'s branch bank. Messrs. Hicks & Charlewood, architects, 67 Westgate Road, Newcastle-on-Tyne.

ARMATHWAITE.—March 2.—For the erection of a stone bridge of four arches across the river Eden, in the parishes of Ainstable and Hesket-in-the-Forest, within half a mile of Armathwaite station, Cumberland. Deposit 1*l* 1*s*. Mr. Geo. Jos. Bell, M.I.C.E., county surveyor and bridge-master for Cumberland, The Courts, Carlisle.

BARNET.—March 13.—For the erection of nurses' home at the workhouse at Barnet. Messrs. White, Son & Pill, 13 and 15 High Street, Barnet.

BARNLEY.—March 5.—For additions to the Cooper nurses' home, Beckett hospital. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

BARROW-IN-FURNESS.—March 12.—For the erection of a balcony at the North Lonsdale hospital. Deposit 10*s* 6*d*. Mr. E. F. Norris, 9 Coniston Road.

BOTTALLACK.—March 2.—For the erection of a pair of residences at Bottallack Mine, St. Just, Cornwall. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

BOURNBROOK.—March 20.—For a tower 300 feet high at the new university buildings at Bournbrook, Birmingham. Deposit 2*l* 2*s*. Sir Aston Webb, R.A., and Mr. E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BURNTWOOD.—March 2.—For alterations and improvements to the Burntwood and Chase Terrace Council schools, Staffordshire. Deposit 1*l* 1*s*. Mr. Graham Balfour, director of education, County Education Office, Stafford.

COVENTRY.—March 9.—For the erection of eight labourers' cottages and additions to farm buildings at the Corporation sewage farm, Baginton, near Coventry. Deposit 1*l* 1*s*. Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

DONCASTER.—March 7.—For the erection of retort-house and coal-store extension with iron tussed roofs at the gasworks, viz. (a) retort-house and coal-stores buildings, (b) retort-ironwork for same, (c) the whole of the buildings completed by Mr. R. Watson, engineer, Gasworks, Doncaster.

ENFIELD.—March 11.—For extending each end of two of the pavilions at the isolation hospital, World's End, Winchmore Hill. Mr. Richard Collins, Public Office, Enfield.

GILDERSOME.—March 4.—For the erection of a stable block at the Surveyor, Council Offices, York.

HASLINGDEN.—March 13.—For the demolition of four cottages, widening of the Ogden river bridge, the erection of parapet walls and other appurtenant works in connection with the said bridge, at Helmsore. Deposit 1*l* 1*s*. Office of Mr. J. Singleton Green, borough surveyor, Haslingden.

HEAGE.—March 4.—For the extension of the Heage Endowed Council school, Derbyshire, to accommodate about 150 children. Deposit 1*l* 1*s*. Mr. George H. Widdows, A.R.I.B.A., architect to the committee, County Education Offices, St. Mary's Gate, Derby.

ILFORD.—March 11.—For the erection of an elementary school for 1,230 children, together with latrines, playsheds, caretaker's house, boundary walling, fencing, drains, &c., on the Uphall Road site. Deposit 5*l* 5*s*. Mr. C. J. Dawson, architect, 11 Cranbrook Road, Ilford.

IRELAND.—March 6.—For the erection of fourteen labourers' dwellings for the Rural District Council of North Dublin. Mr. J. O'Neill, clerk, Board-room, North Brunswick Street, Dublin.

KEA.—March 9.—For the erection of a wain-house, cattle and root-house at Lower Lanner, in the parish of Kea, Cornwall. The Farmhouse at Lower Lanner.

KINGSTON-UPON-THAMES.—March 5.—For the enlargement of the head post office. Deposit 1*l* 1*s*. Mr. J. Rutherford, H.M. Office of Works, London, S.W.

LEE.—March 22.—For the erection of conveniences and a dressing-room at Northbrook Park, Bromley Road, Lee, Kent. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

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LOCK'S HEATH.—March 4.—For the erection of a Council school at Lock's Heath, Hants. Deposit 2*l.* 2*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

LONDON.—March 11.—For additions and alterations to the West Ham and East London Hospital, Stratford, E. Deposit 10*l.* Apply by March 2 to Mr. H. Percy Adams, architect, 28 Woburn Place, Russell Square, London.

MARGATE.—March 5.—For the construction of a bridge over Newgate Gapway. Mr. E. A. Borg, C.E., borough sur- veyor, Town Hall, Margate.

MILFORD HAVEN.—March 5.—For erection of cookery and laundry-rooms at the County school. Messrs. D. E. Thomas & Son, architects, Victoria Place, Haverfordwest.

MORLEY.—March 7.—For alterations and extensions to Peel Mills. Messrs. T. A. Buttery & S. B. Birds, archi- tects, Queen Street, Morley.

MOTTRAM ST. ANDREW.—March 5.—For the erection of elementary Council school to accommodate about 150 children, for the Cheshire County Council. Deposit 2*l.* Mr. John Cubbon, architect, 4 Chapel Walks, Manchester.

OSSETT.—March 4.—For the erection of a storage ware- house at Calder Vale Mills, Healey, Ossett, Yorks. Mr. B. Watson, architect and surveyor, Upper Taylor Street, Hatley.

RAVENSTHORPE.—March 11.—For the various works (painters' excepted) required in erection of nine houses in Tebbel Street. Mr. David H. Lumb, architect, Bowling Green, Ravensthorpe.

ROEDEAN.—March 4.—For the erection of junior house school on a site adjoining the existing Roedean school, near Brighton. Messrs. John W. Simpson & Maxwell Ayrton, architects, 3 Verulam Buildings, Gray's Inn, W.C.

ST. BEES.—March 5.—For additions to Grindal House. Mr. A. Huddart, architect, 9 Lowther Street, Whitehaven.

SCOTLAND.—March 5.—For the construction of the follow- ing bridges, for the Brechin district committee:—Justin- haugh bridge—taking-down the existing bridge over the river Southesk at Justinhaugh and erecting a new steel girder bridge; Westwater bridge—constructing a widening of the existing masonry bridge of three spans carrying the Brechin and Edzell highway over the Westwater; Pow- mouth bridge—taking-down the existing bridge near Bridge of Dun and erecting a new bridge. Deposit 1*l.* 1*s.* each. Messrs. Crouch & Hogg, engineers, 14 Blythswood Square, Glasgow.

SCOTLAND.—March 7.—For the mason, joiner, slater, plumber and plaster and cementwork of a house at Bow- mont Forest, near Kelso, and also for a water supply for the same. The Chamberlain to His Grace the Duke of Roxburghe.

SHEFFIELD.—March 5.—For work to be done in the erec- tion of annexe at Fulwood, for the Sheffield Royal hospital : —(Contract 1) for excavation, forming grounds, roadmaking and laying-out of grounds; (2) for buildings; (3) for heating apparatus. Messrs Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

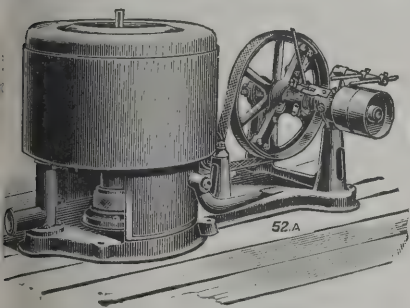
SHEFFIELD.—March 7.—For excavations for a post office. Deposit 1*l.* 1*s.* The Postmaster, Head Post Office, Sheffield.

SHEFFIELD.—March 15.—For the whole or any portion of the work required in the erection of (1) a house as a residence for the medical superintendent; (2) an isolation pavilion and an observation pavilion, all in the grounds of the hospital for infectious diseases at Lodge Moor. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SHILDON.—March 19.—For the erection of a school at Shildon for about 1,100 scholars:—(1) Below ground-floor levels; (2) above ground levels (including latrines, play- sheds, playgrounds, boundary-walls, &c.). The County Education Committee's Architect, Shire Hall, Durham.

TAUNTON.—March 14.—For alterations and additions at the isolation hospital. Mr. F. W. Roberts, architect 2 Hammet Street, Taunton.

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URMSTON.—March 2.—For benches and general fittings for the new chemical laboratory at the Manchester sewage works, Davyhulme, Urmston. The Manager of the Sewage Works.

WALES.—March 2.—For the erection of a house at Pontfadog. Mr. E. Green-Davies, architect, Plas-yn-Llan, Gobowen.

WALES.—March 6.—For alterations and additions to Morfa Calvinistic Methodist chapel, Kidwelly. Deposit 1*l.* 1*s.* Messrs. W. Jones & W. D. Morgan, M.S.A., joint architects, Pentre, Rhondda Valley.

WALES.—March 8.—For alterations to the borough police station, Carmarthen. The Borough Surveyor's Office, John Street, Carmarthen.

WALES.—March 9.—For enlargement and renovation of Saron C.M. chapel, Furnace, Llanelly. Mr. William Harries, 2 Ynys-y-cwm Road, Furnace.

WALES.—March 9.—For proposed additions to Pen-pentre, Llandaff. Deposit 1*l.* 1*s.* Mr. W. H. Dashwood Caple, architect, 2 Church Street, Cardiff.

WALES.—March 9.—For the erection of a workmen's hall at Ebbw Vale, Mon. Deposit 2*l.* 2*s.* Mr. Hy. Waters, architect, Beaufort.

WALES.—March 14.—For the erection of a school, with classrooms, &c., at the Calvinistic Methodist church, Garndiffaith. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—March 15.—For the erection of a mixed and infant school at Christchurch, near Newport, Monmouthshire. Deposit 2*l.* 2*s.* Mr. Alfred Swash, architect, Newport.

WALES.—March 16.—For the erection of fifty houses at Twynrodyn, Merthyr, and for the construction of two streets in connection therewith, including drainage works. Deposit 1*l.* 1*s.* The Borough Surveyor, Town Hall, Merthyr Tydfil.

WALES.—March 18.—For the following works, for the Pontypridd Urban District Council:—(1) Supply and erection of steelwork in connection with the construction of a bridge over the river Taff at the Berw, Pontypridd; (2)

masonry abutments, fence walls and other works in connection with above bridge; (3) supply and erection of steelwork in connection with the construction of a bridge, Factory Lane, Graig, Pontypridd; (4) masonry abutment, fence walls and other works in connection with above bridge. Deposit 1*l.* 1*s.* each contract. Mr. P. R. A. W. Loughby, engineer and surveyor, Municipal Buildings, Pontypridd.

WALSALL.—March 4.—For the erection of a brick chimney-stack, 130 feet high, at the electricity-generating station, Wolverhampton Street, and for an extension of the flues. The Borough Electrical Engineer, the Generating Station.

WOKINGHAM.—March 11.—For the construction of the brick abutments, &c., in connection with the erection of bridge over the Emm Brook in the Barkham Road. Deposit 1*l.* Mr. O. W. Marks, borough engineer and surveyor, Town Hall, Wokingham.

WORKINGTON.—March 11.—For the erection of four semi-detached villas at Townhead. Mr. W. H. Nuzum, architect and surveyor, Frostmoss Road, Workington.

YELLING.—March 5.—For works of addition and alteration to the Council school. The County Education Committee, 36 High Street, Huntingdon.

THE negotiations between the London County Council and the Chancellor of the Duchy of Lancaster with regard to the extension of the Kingsway subway to the Embankment, which have delayed the work of construction, have been concluded. By an Act of 1902 the Council was empowered to carry the subway to the Embankment, but not to construct tramways on it, and 5,400*l.* was agreed upon as the compensation payable to the Duchy as owner of the estate. A further 4,000*l.* has now been claimed in view of the construction of tramways, and the sum of 9,400*l.* has finally been fixed upon by the highways committee, subject to approval by the Council, to cover all damage other than structural to the property of the Duchy.

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TENDERS.

BEAMINSTER.

For (Contract No. 2) waterworks. Messrs. BEESLEY, SON & NICHOLS, engineers, 11 Victoria Street, Westminster, S.W.

Cooking	£3,717	0	0
Osenton	3,606	7	0
Anison & Co.	3,450	0	0
Munford & Son	3,408	7	3
Tabor	3,309	6	9
Coston & Co.	3,285	0	0
Davies, Ball & Co.	3,187	1	0
Neal	3,065	19	3
Ashley	2,995	0	0
Cottle	2,971	16	0
Pollard & Co.	2,947	10	3
Dunn	2,910	18	11
Steer & Pearce	2,903	12	2
Streeter & Co.	2,897	6	2
Meredith Bros.	2,800	0	0
Hayward	2,800	0	0
Chick, Carden & Co.	2,760	3	10
Dean	2,715	17	0
Jenking & Son	2,713	18	2
Osman	2,713	0	0
Cunningham	2,614	0	0
MACDONALD, Oxford (accepted)	2,514	0	0

BROADSTAIRS.

For the erection of pair of villas in Dickens Road. Mr. W. LEONARD DOWTON, architect, City Bank Chambers, Bedford Row, W.C.

Brown	£1,085	0	0
Martin	980	0	0
Forwalk	975	0	0
Holbourn	956	0	0
Price Bros.	940	0	0
Goodburn	900	0	0
Fuggle	896	0	0
MAY (accepted)	889	0	0
Miriam	799	0	0
Architect's estimate	900	0	0

CATERHAM.

For remodelling two bath-rooms at asylum, for the Metropolitan Asylums Board. Mr. W. T. HATCH, engineer-in-chief.

Tabor	£802	13	0
Smith & Co.	734	0	0
Humphrey & Co.	709	0	0
Wenham & Waters	705	0	0
Bowen & Sons	687	0	0
Collins	630	0	0
Streather	593	0	0
Inns	590	0	0
Glendinning	585	0	0
Bostel & Sons	575	0	0
Hussey	570	0	0
WALL, Summerstown, Tooting, S.W. (accepted)	539	0	0

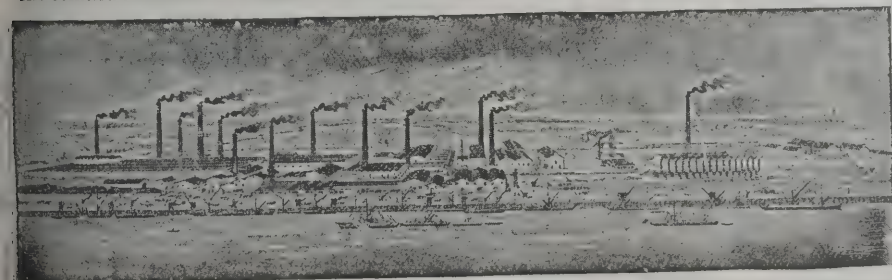
GLENFIELD.

For construction of stoneware pipe sewers, &c. Mr. J. TURNER, engineer, Wigston.

Keetch & Wainer	£3,975	0	0
Hutchison & Son	3,764	15	0
Lane Bros.	3,565	16	0
Johnson & Langley	3,550	0	0
Wright & Co.	3,500	10	8
Fox	3,500	0	0
Flower	3,443	1	3
Ward & Jetley	3,414	15	10
Macdonald	3,400	0	0
Ball	3,395	0	0
Barry	3,333	0	0
Holme & Son	3,321	5	10
Palmer	3,296	0	0
Orton	3,289	0	0
Smith	3,240	0	0
Hickman	3,103	0	0
MASON & DAVEY, Kirby Munloe (accepted)	3,075	0	0

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HANDSWORTH.

For the erection of laundry and workshop at the Wattville Street Council schools. Messrs. WOOD & KENDRICK, architects, West Bromwich.

Walton Bros.	£1,336	0	0
Buck	1,315	0	0
Smith & Son	1,290	0	0
Cane & Son	1,227	0	0
Hardy	1,195	0	0
Ingram & Son	1,190	14	0
Elvins	1,190	0	0
Atkinson	1,159	0	0
Webb	1,158	0	0
Webb & Son	1,156	0	0
Maddocks & Walford	1,150	10	0
Dallow & Son	1,120	0	0
BISHOP, King's Heath (accepted)	1,097	0	0

HENDON.

For kerbing, channelling and stone paving works in Edgware Road, West Hendon. Mr. S. SLATER GRIMLEY, engineer.

	Stoneware Pipes.			Stoneware Pipes and Concrete Tubes.		
Jackson	£4,207	1	1	£4,139	4	10
Adams	4,046	12	4	3,987	12	4
Bower Bros.	3,965	19	0	3,870	0	0
Pedrette	3,950	0	0	3,870	0	0
Brummell	3,788	15	2	3,749	18	11
Rutter	3,784	4	1	3,710	0	0
Muirhead & Co.	3,742	17	6	3,692	17	6
Morgan & Sons	3,690	17	2	3,630	0	0
Powdrill	3,625	16	8	3,558	0	5
Pedrette & Co.	3,598	19	3	—		
Mowlem & Co.	3,589	0	0	3,538	0	0
Iles	3,570	0	0	3,510	0	0
Macdonald	3,519	10	0	3,339	10	0
DICKSON, St. Albans (accepted)	3,406	18	11	3,339	2	8
Watson, jun.	3,305	18	5	3,216	5	11
Haycock & Sons	2,918	1	5	2,885	3	11
Osenton	2,753	13	4	2,671	0	0

HODDESSEN.

For reconstruction of Gas-house Bridge.

Fraser & Son	£262	10
Alexander, Finlay & Co.	225	0
Piggott & Co.	215	0
Handyside & Co.	205	0
HEAD, WRIGHTSON & Co. (accepted)	200	0

LICHFIELD.

For the erection of works at union workhouse. Mr.

RICHARD J. BARNES, architect, Lichfield.

Chattle	£7,464	0
Harris & Son	6,500	0
Willcock & Co.	6,430	0
Smith & Sons	6,174	14
Rowbotham	6,018	0
Barton	5,980	0
Deacon	5,970	0
Musson	5,675	0
Sharp & Sons	5,645	0
Gibbs	5,570	0
Tildesley	5,566	0
Elvins & Sons	5,560	0
Lowe & Sons	5,560	0
Hacksley Bros.	5,244	0
KERSHAW, Burton-on-Trent (accepted)	5,118	0
Adams	4,835	0

LONDON.

For the manufacture, supply and delivery of trucks for the additional 300 electric cars required for use on the London County Council's tramways.

The Metropolitan Amalgamated Railway

Carriage and Waggon Co.	£51,675	0
Thornewill & Warham	50,700	0
Peckham Engineering Co.	49,500	0
Mountain & Gibson (alternative)	49,350	0
Do.	45,600	0
Do.	45,510	0
Do.	45,030	0
Do.	44,250	0
Heenan & Froude	43,500	0
Kerr, Stuart & Co., Ltd., London and Stoke (recommended)	39,300	0

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LONDON—continued.

For roadwork and plate-laying, exclusive of the supply of rails and special trackwork, in connection with the reconstruction for the underground conduit system of electric traction of the existing horse tramways in Goswell Road, Pentonville Road and Gray's Inn Road, and the construction for the same system of traction of the new authorised lines in St. John Street, of about 2½ miles of double track.

Fry Bros.	£73,028	7	8
Mowlem & Co.	70,893	0	0
Griffiths & Co.	69,832	8	6
White & Co.	65,675	12	0
Manders	63,999	13	7
Dick, Kerr & Co.	60,945	11	7
Blackwell & Co., Ltd., London (recommended).	60,059	19	7
Chief engineer's estimate.	67,728	13	2

For alterations to tank, &c., near Crystal Palace, for the Metropolitan Water Board.

Steel Roof, &c.

Westwood & Co.	£1,200	0	0
Measures Bros.	811	16	4
C. & W. Walker	768	0	0
Fraser & Son	735	0	0
Piggott & Co.	695	0	0
Westwood & Wright	677	0	0
Jones & Co., Goswell Road (recommended)	499	0	0

Special Castings.

Holwell Iron Co.	51	15	0
Cochrane & Co.	48	15	0
Piggott & Co.	46	0	0
Stanton Ironworks Co. (recommended)	42	0	0

Steel Pipes.

Lloyd & Lloyd	185	10	0
Piggott & Co.	140	0	0
Spencer & Co. (recommended)	137	10	0

For alterations at the east lodge at Avery Hill.

Lucas & Sons	£84	10	0
Knight	75	0	0
Pollock (recommended)	64	0	0

LONDON—continued.

For installation of electric lighting, lightning conductors, electric bells, telephones and steam heating required in connection with art block of the L.C.C. Hammer-smith Technical Institute.

Blackburn, Starling & Co.	£2,639	0	0
Spagnoletti & Co.	2,195	0	0
Brightwell	2,185	0	0
Army and Navy Auxiliary Co-operative Supply	2,184	0	0
Grant & Taylor	1,914	0	0
Seth Brothers	1,705	0	0
Wippell Brothers & Row	1,700	0	0
Higgins & Griffiths	1,650	0	0
Glover & Co.	1,626	0	0
Fryer & Co.	1,550	0	0
Cozens	1,484	0	0
Sweet Bros.	1,465	0	0
Penrose & Co.	1,460	0	0
Barton & Sons	1,420	0	0
Smeeton & Page, 63 Queen Victoria Street (recommended)	1,368	5	0
Engineer's estimate	1,600	0	0

For removal and re-erection of overhead travelling crane at the Elephant and Castle sub-station.

Carrick & Ritchie	£220	0	0
Smith & Co.	155	0	0
Jessop & Appleby Bros. (recommended)	136	0	0

For the purchase and removal of temporary electricity generating station building of corrugated iron, Loughborough Junction.

South London Electric Supply Corporation (recommended)	£100	0	0
Keen	70	0	0
Marshall, sen.	50	0	0
Bare	20	0	0

For supply of two 55-feet fire-escapes for London County Council.

Merryweather & Sons	£105	0	0
Bayleys, Ltd.	84	0	0

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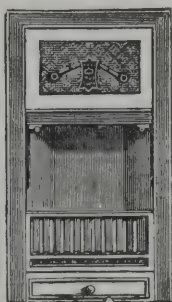
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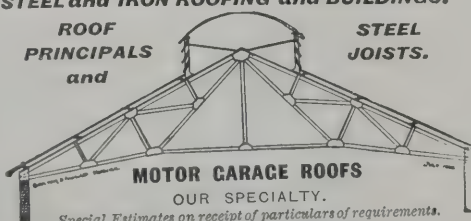
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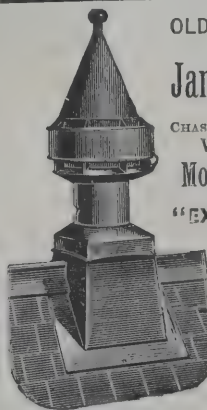
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LONDON—continued.

For supply and erection of wrought-iron fencing and gates between the park and college land at Avery Hill.

Bayliss, Jones & Bayliss	£498	17	6
Raybould & Co.	487	0	0
Faulkner & Sons	484	0	0
Hill & Smith	481	10	0
McVey	475	5	9
Elwell	475	0	0
Gratrix & Sons (<i>recommended</i>)	413	19	0

LONG DITTON.

For supply of cast-iron pipes and other castings for filter-beds, for the Metropolitan Water Board.

Maclaren & Co.	£7,298	9	0
Oakes & Co.	6,034	18	6
Cochrane & Co.	6,003	0	0
Staveley Coal & Iron Co.	5,930	6	0
Stanton Ironworks Co., Nottingham (<i>recommended</i>)	5,911	9	2

NEW FOREST.

For sinking a well at Emery Down for the Rural District Council.

	60 feet.	90 feet.
Hughes	£90 0 0	£135 0 0
Danson	74 4 0	104 4 0
CREIGHTON, Totton (<i>accepted</i>)	65 0 0	83 15 0
Grace	63 0 0	100 10 0
Dean	49 10 0	84 9 0

SCOTLAND.

For the erection of a block of shops and dwelling-house opposite the post-office, Kingussie. Mr. ALEXANDER MACKENZIE, architect, Kingussie.

Accepted tenders.

Ferguson & Cooper, mason.
Campbell, carpenter.
Reid, slater.
Urquhart, plumber.
Duffus, plasterer.
Dunbar & Macpherson, painter.

SCOTLAND—continued.

For additions to the Balavil Arms hotel. Mr. A. MACKENZIE architect.

Accepted tenders.

J. & D. Macdonald, mason.
D. & M. Fraser, carpenter.
Falconer, slater.
J. & R. Forbes, plasterer.
Urquhart, plumber.
Chisholm, painter.

SELHURST.

For construction of engine and producer-house, &c., for the Metropolitan Water Board.

Bulled & Co.	£3,822	0	0
Pattinson & Sons	3,697	0	0
Jones & Andrews	3,598	0	0
Smith & Sons	3,467	0	0
Johnson & Son	3,366	0	0
Foster	3,351	0	0
Everitt	3,350	0	0
Page & Son	3,264	0	0
Parsons	3,243	0	0
Neal	3,232	8	4
Minter	3,186	0	0
Hyde & Co.	2,993	0	0

WELLINGTON.

For carrying-out extension of the sewage works.

McMILLAN, Shifnal, excavating (<i>accepted</i>)	£5,288	6	0
LEES & Sons, Gomersal, laying supplying pipes and valves (<i>accepted</i>)	129	0	2
YORK & Co., Wellington, fixing and supplying sprinklers (<i>accepted</i>)	123	11	1

Twenty-nine tenders were received.

For excavator's, concreter's and bricklayer's work, &c., at sewage works. Mr. GEO. RILEY, engineer, Wellington, Salop.

Flower	£6,908	10	3
Holme & King	6,603	4	8
Speake	6,405	8	5
Sutherland & Thorpe	6,112	14	0

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"Standard" Porcelain Enamel Ware is moderate in cost, beautiful in its finish and extremely durable. Absolute freedom from cracks or crevices assures the maximum sanitary protection. A bathroom fitted with "Standard" Ware greatly increases property value.

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WELLINGTON—continued.

Roper	£5,581	0	0
Riley	5,875	5	0
Morley & Sons	5,825	19	8
Ward & Tetley	5,671	15	0
Tyler	5,638	9	6
Cottle	5,628	8	10
Jowett	5,623	5	2
Pearce	5,550	0	0
Holmes	5,529	1	6
Carver	5,471	16	0
Buxley	5,432	3	5
Holloway	5,400	0	0
Reading	5,399	0	0
Johnson & Son	5,309	5	2
McMILLAN, Shifnal (accepted)	5,288	6	0
Engineer's estimate	6,150	0	0

WESTERHAM.

For the erection of an engine and boiler-house and chimney shaft, for the Metropolitan Water Board.

Weller & Son	£2,172	16	4
Ellis & Co.	2,053	5	0
Roberts	1,956	13	5
Neil & Co.	1,875	0	0
Myles & Warner	1,789	5	0
Johnson & Son	1,755	0	0
Abbott, Heinrich & Co.	1,746	2	6
Somerford & Son	1,717	0	0
Durnell & Son	1,665	0	0
Crossley & Son	1,636	0	0
Browning	1,626	0	0
Strange & Sons	1,597	0	0
Thomas & Edge	1,463	0	0
McKay	1,458	0	0
Minter	1,457	0	0
Hyde & Co.	1,382	0	0
Page & Son, Croydon (recommended)	1,369	0	0

WORCESTER.

For additions to the Victoria Institute.
J. & A. Brazier, Bromsgrove (recommended) £4,825 0 0

WEYMOUTH.

For the erection of premises in St. Leonard's Road. Mr. S. JACKSON, architect, Weymouth.

Stevens	£416	5	3
Long	398	0	0
Stone & King	398	0	0
Holmes & Co.	324	0	0
WILLS, Weymouth (accepted)	324	0	0

WORTHING.

For the erection of a free library and municipal art gallery and museum in Chapel Road.

Accepted tenders.

WISDOM BROS., Isleworth, £5,702 6s. 11d. for library; £4,221 6s. for art gallery and museum; £293 3s. 5d. for boundary railings, gates, &c.—total £10,216 16s. 4d.

WHADDON.

For the erection of school. Mr. R. S. PHILLIPS, architect
Shire Hall, Gloucester.

Kent	£3,586	0	0
Price	2,613	0	0
Drew	2,399	0	0
Gurney	2,390	0	0
King & Sons	2,385	0	0
Freeman & Jones	2,357	0	0
Simmonds	2,334	0	0
Jones	2,260	0	0
Waters & Son	2,257	0	0
Tombs	2,220	0	0
Orchard & Co.	2,220	0	0
Norman	2,200	0	0
Bowers & Co.	2,180	0	0
Byard & Son	2,175	0	0
Collins & Godfrey	2,168	0	0
Baxter & Son	2,164	0	0
NICHOLLS, Gloucester (accepted)	2,075	0	0

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ELECTRIC NOTES.

THE Municipal Council of Sofia have approved in principle a petition addressed to them by M. St. Athanasoff, engineer, asking authority for the establishment in the city of a new electric installation and of a new electric tramway system.

THE Edinburgh Corporation electric-lighting committee have recommended the acceptance of estimates amounting to upwards of 10,000*l.* for new condensing plant at M'Donald Road electric station and 130,000*l.* for generators. The new plant, it is expected, will meet the demand of the department for two winters, and, while abating the nuisance complained of in this part of the city, will increase the output of the station.

MR. J. J. WALKLATE, the general manager of the Potteries Electric Traction Company, Ltd., has been appointed general manager of the Auckland Tramways Company, Ltd., New Zealand. Mr. Walklate was associated with the earliest development of overhead electric traction, having assisted in the electrification of a section of the South Staffordshire tramways under Mr. Alfred Dickinson. This was the first experiment of the trolley system in this country.

THE *Levant Herald* reports that the Turkish Government have prolonged the concession of the Société des Tramways de Constantinople until the year 1993, and the company have undertaken to substitute electric for animal traction, and to construct within five years three new lines:—(1) To Pera, from the Galata-Serai Tunnel; (2) from Pancaldi to Tattavla; (3) to Stamboul from the Mosque of Fatih. They have also undertaken to double the present line from Galata to Ortakeuy.

A DISPUTE has arisen between the parish council of Edinburgh and the electric-lighting committee of the Corporation of the city concerning the rating of the electric-lighting undertaking. The committee demanded a deduction of 47½ per cent. on the assessed rental and the Council offered 24 per cent. The committee offered to accept a deduction of 35 per cent., being the same as for railways, or to submit the dispute to arbitration. The parish council authorities, however, have intimated that they adhere to their demand for payment as imposed, and that unless it is

made within twenty-one days proceedings will be taken for recovery of the amount.

THE Norwich Town Council have approved the report of the electricity committee which stated that the estimated amount required for the purpose of the undertaking to December 31, 1908, for mains, services, meters, engine and dynamo, two boilers and steam-pipe mechanical stokers, feed pumps and feeder booster is 25,000*l.* They also recommended that application be made to the Local Government Board for sanction to borrow 25,000*l.*, being the estimated sum required for capital expenditure to December 31, 1908.

WITH regard to the power and scenic conditions at Niagara Falls, United States, Secretary Taft is reported to have granted the Canadian Niagara Power Company a permit to transmit 52,500 horse-power; the Ontario Power Company a permit to transmit 60,000 horse-power; the Electrical Development Company to transmit 46,000 horse-power and the International Railway Company to transmit 1,500 horse-power from Canada to the United States. The Niagara Falls Hydraulic Power and Manufacturing Company also receives permission to divert about 2,000 additional cubic feet of water per second for the new power plant it is building to supply the new works of the Pittsburgh Reduction Company.

THE electric-supply committee of Birmingham report to the City Council that in 1904 the Local Government Board sanctioned a loan of 373,568*l.*, in which was included a sum of 65,000*l.* for lighting mains, and in July, 1905, a further 16,000*l.* was sanctioned for lighting cables, feeders, &c., for opening up the Saltley district. Since that time the growth of the department has necessitated considerable extensions of mains, chiefly in the Summer Lane, Balsall Heath and Bordesley districts. Expenditure that has already been necessary to meet applications from consumers has amounted to a sum of 7,378*l.* over the loans authorised. The engineer estimates that for the next three years the expenditure on mains will amount to about 70,000*l.* The committee therefore recommend that the Local Government Board be asked to sanction a further loan of 80,000*l.* for these purposes.



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REFINEMENT IN WALL HANGINGS.

We had an opportunity recently of inspecting Messrs. Jeffrey & Co.'s new stock of wall-hangings, and we were greatly pleased with the variety in designs, colour schemes and prices displayed, such variety being of importance to any firm desirous of gratifying the catholic views of the public, whose taste, we may regret, too often favours bright and crude colours. We look forward hopefully to the time when wall-paper manufacturers will altogether lead instead of having to follow partially the public taste. Messrs. Jeffrey & Co. endeavour—and successfully—to minimise the defect, and when we observe designs by such artists as Messrs. Neatby, Heywood Sumner, Walter Crane, Lewis Day, &c., it is evident that the public is given ample scope for educating its taste. The firm uses a specially prepared canvas paper for the hand-printed goods, and the colouring is guaranteed to be fast; furthermore, the public is assured that arsenic does not enter into the preparation of any of Messrs. Jeffrey & Co.'s productions. It is of interest to note the possibilities in varying the interspacing of the "stripes" in designs, where this style of decoration is either partially or wholly employed. We would also call attention to the combined frieze and filling papers, as alleviating what is at present of too frequent occurrence, that is, the lack of continuity—of unity between the designs of the body and the upper portions of the walls. We observed some handsome flock papers, the designs of which are excellent. Messrs. Jeffrey & Co., whose warehouses are at Essex Road, Islington, have now conveniently situated show-rooms in Mortimer Street, W., where architects can conveniently inspect their productions. In conclusion, we would draw special attention to the handsome "Chesterfield" design, to one adapted from a damask in the Palazzo Marghera at Rome, and finally to a treatment of peacocks in embossed leather, one of Mr. Walter Crane's designs,

which took our special fancy, unmindful of the expenditure attendant upon its selection, for it costs a trifle of 18*l.* a piece; and though informed that the same design more plainly treated can be obtained for 2*s.* a yard, we have no desire to modify our preference for the more costly treatment in colours and gold.

TRADE NOTES.

THE new infirmary for Whiston Union, near Prescot, is ventilated throughout by Messrs. Arnold W. Kershaw & Co., Lancaster. Other recent contracts include Morrison schools, Liverpool; No. 2 Ring Spinning Mill, Stockport, &c.

MESSRS. JOHN OAKEY & SONS, LTD., have been able to declare a dividend of 10 per cent. for the year, and in addition a bonus of 5 per cent., free from income tax. So satisfactory a result is a testimony to able management.

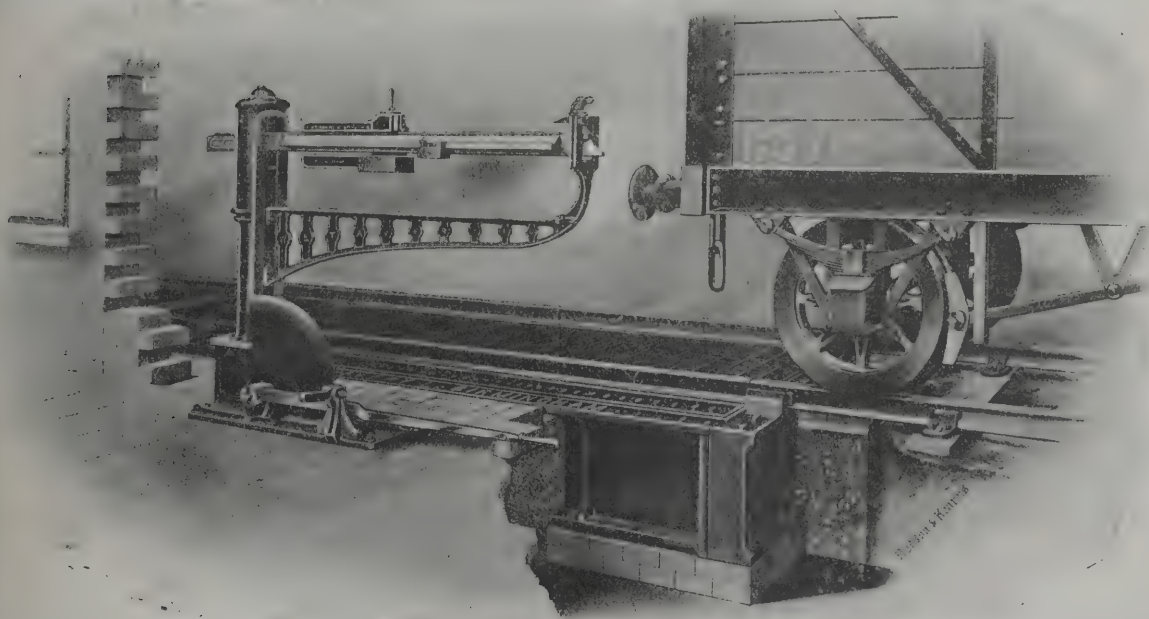
LIVING screens for lawns appears an attractive feature as advertised in our "Miscellaneous" column. Many a public garden might be improved at a low cost, and as these screens are specially prepared and are supplied at such a reasonable rate there should be no difficulty in making some of our open spaces more attractive.

THE London and Lancashire Fire Insurance Company have made arrangements for the provisions required under the extension of the Workmen's Compensation Act, by which not only workmen in the usual acceptance of the word, but domestic servants, gardeners, coachmen, grooms, shop assistants, clerks, typists, &c., are entitled to compensation for accidental injuries. The rates are low, and the insurers have the advantage of the security of an established company with a capital of 2,280,000*l.*

THE West Riding rivers board at Wakefield have decided to institute legal proceedings against the Leeds Corporation for offences under Section 7 of the West Riding of Yorkshire Rivers Act, 1894. It will be remembered that the ratepayers of Leeds recently rejected on a poll the sewage scheme of the city Corporation, involving an expenditure of about a million and a quarter pound's sterling.



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VARIETIES.

THE Merchants' House, Glasgow, is to be enlarged and otherwise altered from plans by Messrs. John Burnet & Son.

BUILDINGS for the Kirkintilloch gasworks are to be erected at a cost of 20,000*l.* from plans by the manager, Mr. William Wilson.

THE Dublin County Council have passed a resolution for providing 400 labourers' cottages without delay in the districts of Blanchardstown, Castleknock, Coolock, Drumcondra (Rural), Glasnevin (Rural), Finglas and Howth.

THE new premises on the sites of Nos. 158, 160 and 162 Oxford Street, for Messrs. Mappin & Webb, Ltd., are to be completed within eighteen months. Mr. Belcher, A.R.A., is the architect.

THE Duke of Norfolk has offered to provide a shelter to accommodate 500 people on the common at Littlehampton. It will have four shops. Probably the Town Council will suggest additions to the structure.

PLANS are being prepared for a new home for the Birmingham District Nursing Society. The cost is estimated at about 4,000*l.* A site has been selected in Summer Hill Road, comprising 1,000 square yards.

THE Scarborough harbour commissioners at their half-yearly meeting adopted the scheme for improving the harbour accommodation. Estimates of the cost were submitted as follows:—For widening the west pier, 7,460*l.*; deepening the old harbour, 3,850*l.*; deepening the east harbour, 2,950*l.*—total, 14,260*l.*

ON Monday in the House of Commons a Bill was presented and read for the first time to apply the provisions of the Life Assurance Companies Acts, 1870 to 1872, to companies carrying on the business of insuring employers against liability to pay compensation or damages to workmen in their employment.

THE Duchess of Roxburghe, in view of the contemplated visit of the Prince and Princess of Wales to Floors Castle, is said to be spending 125,000*l.* in the necessary preparations. Improvements and additions of a most extensive description are about to be carried out at the Castle for the purpose of still further beautifying it.

THE construction of a canal from Buenos Ayres to La Plata is under contemplation. The cost of construction of such a work is put down at 5,250,000*l.* The cost of maintenance is estimated at about 337,000*l.* per annum and revenue at about 360,000*l.*, leaving a probable net revenue of 23,000*l.*

THE Hammersmith Borough Council have decided, provided the County Council contribute a fair proportion of the cost, to open up, at an estimated cost of 22,300*l.*, communication between North Kensington and Shepherd's Bush by the construction of a new street from Wood Lane to Latimer Road and leading under the West London Railway.

THE Dumfries Dean of Guild Court have passed plan for a new building for St. Joseph's Commercial College. It is to be erected in the grounds of Mount St. Michael, where there is also a novitiate of the Marist Brothers, and will provide both residence and classrooms for pupils. The cost is estimated to be about 10,000*l.*

A REPORT prepared by Mr. Lister Woodhouse, comptroller to the city of Westminster, shows that on vacant land in the city nearly 40,000*l.* has been lost to the rate owing to the demolition of property for London County Council improvements, chiefly those at Millbank, Holborn Strand, and Clare Market.

THE Ramsbury Rural District Council recently had before them the selected applicants for the post of surveyor and inspector. Originally there were eighty-four, from whom a selection of four was made. The committee resolved to appoint Mr. W. Strickland, of Bristol. The salary is 65*l.* per annum for each office, rising by 5*l.* instalment to 150*l.*

THE Home Secretary, speaking in the House of Commons on Tuesday, said he regretted it was the case that there had been five fatal accidents in the Carnarvonshire slate quarries since the beginning of the year, four of them being due to falls of rock. During the whole of 1906, however, there was only one fatal accident in these quarries, and in each of the years previous to that only three. There seemed no reason to suppose that the increase was other than temporary, but the inspector was making further inquiry. He thought it might be partly attributable to the long and severe frost making the rock more dangerous.



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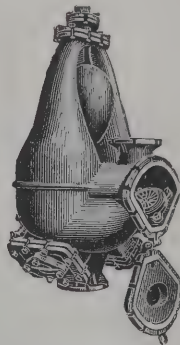
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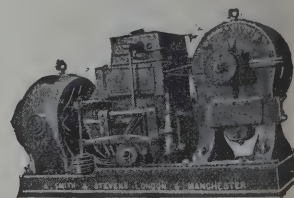
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Mr. ASQUITH, the Chancellor of the Exchequer, stated in the House of Commons on Monday that there was no necessity to appoint a body of experts to consider the desirability of the construction of a tunnel under the English Channel from the point of view of national welfare and security, as the Government is officially informed on the subject by the Committee of Imperial Defence and other professional advisers.

THE list of applications to be made at the adjourned Birmingham city licensing meeting on March 7 includes one for music, singing and dancing license for a new concert hall to be erected by Mr. Walter de Freece, in New Street on land adjoining the Theatre Royal. If the license is granted a well-appointed building, with imposing façade of terra-cotta to New Street, will be erected. The hall, which will run back a considerable distance, will provide a very large auditorium, somewhat after the style of the Empire.

THE Coventry City Council have approved recommendations from the general works committee that the Council purchase two pieces of land, with property standing thereon, at Bishopsgate Green, as a site for a refuse destructor, the total area of land being 11,751 square yards, and the total purchase price 2,920*l.*, as also that the committee be authorised to proceed with the preparation of plans and specifications for the erection of a refuse destructor and depot on the site.

A GATHERING recently took place at the Plough Hotel, Tenhousemuir, of the staff of the Carron Company, including the manager, assistant manager, heads of departments, and all the various foremen employed at Carron and Mungall foundries, engineering works, the several milleries, and Grangemouth and Bo'ness shipping staffs, under the chairmanship of the manager (Mr. Bamforth), supported by Mr. J. J. Maclaren, the chairman of the company, Mr. F. L. Burder and Mr. A. Mitchell-Dawson. The programme of toasts was unique, comprising only "The King, Queen and Royal Family" from the chair, and "Carron Company," proposed by Mr. Peter Rae, one of the oldest foremen in the employment. A musical programme was provided by several artistes from Glasgow, which gave great satisfaction. All the arrangements were

made and carried out most successfully by a small committee, and the evening's entertainment will be long remembered by every one present.

A SPECIAL meeting of the Scottish Building Trade Federation was held on the 22nd ult. in the Building Trades' Exchange, Edinburgh, to consider the proposed amendment on building regulations as to scaffolding, &c. It was decided to communicate with the Home Secretary stating that the meeting had agreed to appoint witnesses from the principal centres of Scotland—namely, Edinburgh, Glasgow, Dundee, Aberdeen and Inverness—to lay expert evidence before the departmental committee in London, as the proposed rules were not at all applicable to Scotland.

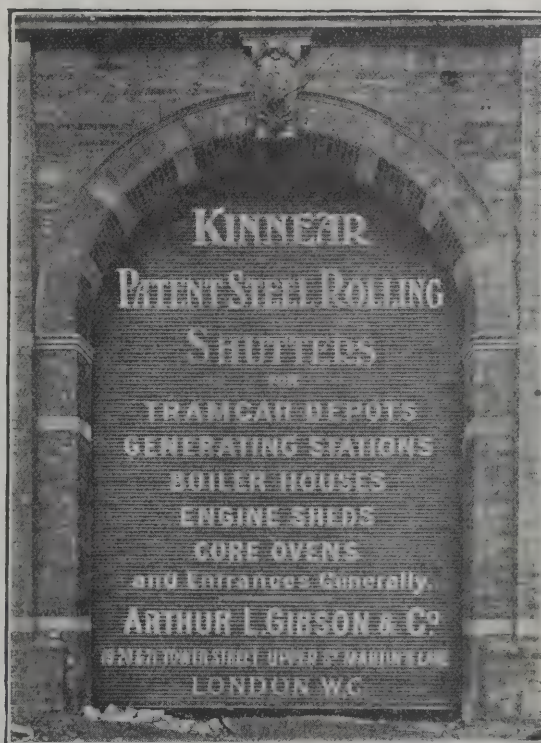
A CONFERENCE between a deputation representing the Building Trades' Operatives Federation and the contractors and some of the sub-contractors who are building the new Manchester Royal Infirmary was held on the 21st ult. The question in dispute was discussed, and in the end an amicable understanding was arrived at, the employers promising to recognise the regulations of the various trades in operation in this district. On behalf of the men it was denied that there was any grievance, as had been reported, in the fact that a Doncaster and not a Manchester firm had secured the contract. Under the arrangement the men who were out would resume work on the following day, and the dispute is therefore at an end.

As a result of investigation which has been made by the Colney Hatch asylum sub-committee, it appears that men employed in the plumbers' shop at that asylum have been making away with old lead recovered in the course of alterations to existing buildings, which should have been used for other work. A considerable quantity of metal must have been stolen and the thefts have evidently gone on for some months. There is no doubt as to the guilt of the men concerned, although there is not sufficient corroborative evidence to secure a conviction in the event of a prosecution. One plumber and two plumbers' labourers have been dismissed, and the resignation of the foreman plumber has been called for and received. Other employés, who evidently knew of the misappropriation but took no steps to inform anyone in authority, and subsequently, on inquiry, endeavoured to hide their knowledge, have been suitably dealt with.

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NEW CATALOGUES.

THERE is no man who can so rarely repose on his laurels as the safe-maker. Once upon a time it was sufficient if his work could resist brute strength. Now he has scientific skill and what are sometimes called resources of civilisation against him. The ingenuity of his and the public enemies cannot be denied, and the safe-maker has to meet increased cunning by new inventions. Messrs. Skidmore, of Wolverhampton, have been making safes and doors for more than half a century, and they could tell strange stories about the growth of the power which they have to resist. Another enemy that is no less dangerous is fire. The catalogue of the improved bent steel fire-resisting safes manufactured at the Staffordshire Safe Works shows many varieties. One cheap safe is supplied to post-offices and county courts. There are also register safes, plate safes, bullion safes and gunpowder safes, besides several types of warehouse doors, ventilating safe and strong-room doors. Most of the catalogue sizes, it is said, are kept in stock, and can be delivered in three or four days. The safes are not only secure against fire and thieves, but they are warranted free from damp or other moisture. Papers deposited in them will not become discoloured or defaced.

ROOFING slates may not at first sight appear adapted to become the subject of a catalogue, but the coloured illustrations of various slates produced by the Buttermere Green Slate Company are at least equal to any ordinary inventory in type. There are two great divisions—Coniston and Buttermere—and in each there are "light sea-green," "dark sea-green" and "deep olive-green," each having its peculiar grain or, we might call it, play of light and shade on the surface. There are also "Coniston barred," "Elterwater," "light sea-green," a "reddish rustic" and "copper barred." All these varieties are found in the company's quarries in Westmoreland and Cumberland. A glance at a geological map will show that the district belongs to the Cambrian period (or, according to Sedgwick, Upper Silurian), which was subjected in some ancient epoch to the forces necessary for the production of slate. It is also remarkable for its beauty, which sometimes may be considered as sublimity. Nature has not only supplied a

particularly tough material, but nowhere are the blocs from which slates are derived of such an enjoyable colour. Those who use the slates have therefore the satisfaction of knowing that not only will they be enduring, and serve their purpose as a roof covering, but they will always give pleasure to a cultivated eye. We can see them in London in New Scotland Yard, the Imperial Institute, the Ritz Hotel, the residence in Park Lane of the late Alfred Beit, and in most of the principal towns throughout the country. One of the charms of Mr. Voysey's country houses is derived from their use. No less than about 3,000 tons have been employed in the Claybury asylum at Woodford. The quarries are connected with the London and North-Western system, or with the ports of Barry, Wharfen or Maryport. Besides the slates the quarries yield no less handsome green stone which is adapted for mullions, sills, string-courses, &c., as well as for chimney-pieces, hearthstones and curbs. By its use a connection can be established between the exterior and interior of a building. The catalogue or description gives information about the quarries, which architects are invited to examine for themselves.

EVERY appliance, apparatus or other aid to heating will always be welcomed in England, and now especially, when the waste and nuisance of smoke are avoided. The new electric glow radiators on the Archer system, manufactured by the General Electric Company, Ltd., are particularly adapted for domestic use. As they are movable they can be placed in positions where they will be most required. There are nearly forty varieties, arising mainly from the character of the metalwork serving as radiators. The heater is a product of electricity, and can therefore be supposed to be absolutely free from the defects which arise from the combustion of ordinary fuels. Each radiator has from two to four lamps according to size, and is supplied with the requisite switches, plug socket, &c. Those for small offices or bedrooms are less in size than radiators to heat billiard or drawing-rooms. There is also a very strong variety adapted for warehouses where it is likely to be subjected to rough usage, and others which are suitable for ships and tram-cars. The system is also employed for foot-warmers and kettles. Neither heat nor electric power can be represented

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sented in a catalogue, but the brass and copperwork of the radiators appear in forms which must satisfy the most fastidious critic. That such additions to comfort can be obtained at moderate prices is enough to excite wonder, for electric heating is a boon not less remarkable than electric lighting.

PROPORTIONS FOR CONCRETE.*

THE growing use of concrete for structures in which great care must be taken to have only the best material and workmanship, has stimulated investigations into the effect of varying the relative proportions of sand and stone in the mix, the proportion of cement to the total remaining the same, and the result has demonstrated very conclusively that the proper grading and relative proportion of the ingredients have a great influence on the quality of the concrete produced. To demonstrate this great effect, the writer at one time made up a set of beams 6 inches square and 6 feet long, varying these relations very widely from almost all stone to almost all sand, and broke the beams after 30 days with the following results :—

Proportions.	Modulus of Rupture.
1 : 2 : 6	319 lbs. sq. in.
1 : 3 : 5	285 "
1 : 4 : 4	209 "
1 : 5 : 3	151 "
1 : 6 : 2	102 "
1 : 8 : 0	41 "

By inspecting the above table it is seen that although the amount of cement in each of the above beams was the same, namely 1-9 of the total material, some of the beams were over 700 per cent. stronger than others.

In investigating this subject over a term of years it has been found there is one combination of any given sand and stone which with a given percentage of cement makes the strongest concrete, and this is the proportion which also gives the densest concrete; that is, the concrete which contains the least percentage of voids, or otherwise, that which weighs most per cubic foot.

It is found also that this dense concrete is least permeable

* A paper read before the National Association of Cement Users by William B. Fuller.

to water, and consequently is the most durable, and it is also found that as a practical advantage such concrete is most easy to place, working "slick" and filling up all voids and bad corners.

The above-stated law that the densest concrete is also the strongest gives a very easy way of proportioning the materials at hand so as to obtain the best and strongest concrete possible with these given materials. That is, to obtain these proportions by trial, as follows :—

Procure a piece of steel pipe 8 to 12 inches in diameter and about a foot long and close off one end, also obtain an accurate weighing scale. Weigh out any proportions selected at random of cement, sand and stone, and of such quantity as will fill the pipe about three-quarters full, and mix thoroughly with water on an impervious platform, such as a sheet of iron; then, standing the pipe on end, put all the concrete in the pipe, tamping it thoroughly, and when all is in measure and record the depth of the concrete in the pipe. Now throw this concrete away, clean the pipe and tools, and make up another batch with the total weight of cement, sand and stone the same as before, but the proportions of the sand to the stone slightly different. Mix and place as before and measure and record the depth in the pipe, and if the depth in the pipe is less and the concrete still looks nice and works well, this is a better mixture than the first. Continue trying in this way until the proportion has been found which will give the least depth in the pipe. This simply shows that the same amount of material is being compacted into a smaller space and that consequently the concrete is more dense. Of course, exactly similar materials must be used as are to be used on the work, and after having in this way decided on the proportions to be used on the work it is desirable to make such trials several times while the work is in progress, to be sure there is no great change in materials, or, if there is any change, to determine the corresponding change in the proportions.

The above described method of obtaining proportions does not take very much time, is not difficult, and a little trouble taken in this way will often be productive of very important results over the guess method of deciding proportions so universally prevalent. I have repeatedly known concrete to be increased in strength fully 100 per cent. by

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The above illustration shows Fire Escape Staircase recently erected
at the Goyt Mill, Stockport.

simply changing the proportions of sand to stone as indicated by the above method and not changing the amount of cement used in the least.

A person interested in this method of proportioning will find on trial that other sands and stones available in the vicinity will give other depths in the pipe, and it is probable that by looking around and obtaining the best available materials the strength of the concrete obtainable will be very materially increased.

As a guide to obtaining the best concrete, the proportion of cement remaining the same, the following are the results of extensive tests:—

The stone should all be of one size, or should be evenly graded from fine to coarse, as an excessive amount of the fine or middle sizes is very harmful to strength.

All of the fine material smaller in diameter than one-tenth of the diameter of the largest stone should be screened out from the stone.

The diameter of the largest grains of sand should not exceed one-tenth of the diameter of the largest stone.

The coarser the stone used the coarser the sand must be, and the stronger, more dense and watertight the proportioned work becomes.

When small stones only are used the sand must be fine, and a larger proportion of cement must be used to obtain equal strength.

EARTHQUAKE-PROOF BUILDINGS.

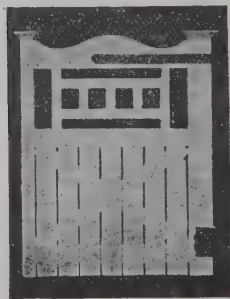
A LECTURE was delivered on Thursday in last week by Professor Milne on "Building Construction in Earthquake Countries." In the course of it he said that in 1880 the Japanese established a Seismological Society, and the work was now continued under the auspices of their Government by a committee, who received every year a subsidy of from 1,000l. to 5,000l. They had published sixty or seventy volumes, many of which related to construction in countries liable to earthquakes. Whenever a great earthquake occurred there were to be found on the scene Japanese engineers, architects and seismologists, whose object was to make notes of that which fell and that which stood, and why it fell or stood. The first work of the Seismological Society was to invent instruments, which had now been

adopted the world over. These instruments measured the rate at which earthquake motion was applied to the base of the structures. The result of this had been that engineers had now forces which were expressed in mechanical units, which they had to withstand. If an earthquake shock occurred in London and the suddenness of the back and forward motion was only 1 foot per second, the probability was that there would be 6,000,000 chimney-pots in the streets. At Kingston (Jamaica) the rate at which the motion began and ended was probably about ten times this quantity. Having given the suddenness of the movement the builder could put up structures to withstand it. He made his designs and then tested models of them on a shaking table. These experiments on seismic stability still went on, and buildings, tall chimneys, piers for bridges and other structures had been put into a practical form. The new types of dwelling-houses had been put in districts where earthquakes were very frequent. After twenty-five years of experiment it was found that the new structures stood, whereas those of the old type had been shattered. Necessarily the shock is always felt at the base of the structure first, and the new designs have this in view. They avoid heavy topweights, gables, copings and arches. As the result of twenty-five years of experiment it is found that buildings of the new type stand while those of the old pattern are shattered. As an example, doubtless undesignated, of earthquake-proof construction, the Professor instanced the buildings recently erected at Osborne for our naval cadets. The lecture was illustrated by a number of striking lantern-slides.

At the close of the lecture, on the motion of Mr. Jesse Collings, M.P., who presided, seconded by Mr. Sydney Olivier, it was resolved:—"That this general meeting assembled to hear Professor Milne's lecture on 'The Construction of Buildings in Earthquake Countries' wishes to impress upon the Government the desirability of rebuilding the city of Kingston (Jamaica) on such scientific lines as will render it as far as possible immune from earthquakes, hurricanes and fire; and cordially supports, therefore, the appeal of the Jamaica Relief Committee in Kingston for a substantial grant and an adequate loan on easy terms in order that operation may be conducted on such lines without delay."

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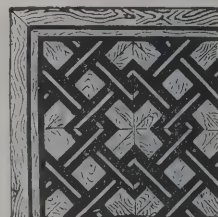
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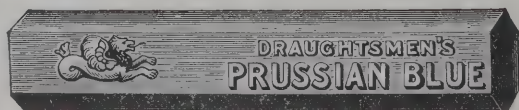
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CLEE HILL BASALT FOR ROADS.

At a meeting of the roads and bridges committee, the county surveyor of Wilts reported:—Since January 7 I have inspected a large mileage of main roads in all parts of the county with a view of getting a general knowledge of their winter condition. Generally speaking I have found the flint roads and those repaired with Clee Hill basalt are in the most satisfactory state. Limestone surfaces have been extremely muddy and greasy, or, when somewhat drier, in a very sticky condition. The surfaces coated with Shepton Mallet "basalt" appear very liable to "pulling up." I would like to suggest for the consideration of the committee whether, in dealing with the estimates for the year 1907-8, it would not be economical to use a smaller tonnage of really good hard material such as Clee Hill basalt or other stone of a similar class, rather than the larger quantity of very inferior road metals which have very little durability and involve so much cleaning. It must be borne in mind that practically all this material has to be imported into the county. The railway carriage in some cases is considerable, while the hauling, spreading and rolling are almost the same per ton as for the very best materials. Taking into consideration the after expense of cleansing, I feel convinced there is no economy in using these inferior stones, while the disadvantage to all classes of users of the roads is very great, both in heavier traction and discomfort. If it meets with the approval of your committee I propose to obtain quotations at all stations for various well-recognised durable road metals with a view of their use, as far as circumstances permit, on those roads where the traffic or the situation renders their substitution desirable.

The Local Government Board have communicated to the Hammersmith Guardians its sanction of a total expenditure of 220,017*l.* on the erection of the workhouse infirmary, but leaving out the cost of the electric-lighting installation. Towards the expenditure the Board authorised the appropriation of the proceeds of the sale of Consolidated stock amounting to 106,184*l.* and the borrowing of 107,990*l.*, but declines to authorise the balance of 5,843*l.* at present.

HIGH WINCOBANK ESTATE COMPETITION.

THE awards in the competition for site planning in connection with the Model Cottage Exhibition at Sheffield are as follows:—Gold medal, Messrs. W. Alex. Harvey & Arthur McKewan, of Birmingham; silver medal, Messrs. Currey & Thompson, of Derby; bronze medal, Mr. Claude Batley, of Kettering and London. The gold medal design has now been adopted by the Sheffield County Council and the Local Government Board officials have promised to facilitate the work. The following description of the various features of the accepted plan has been furnished:—

It has been considered by the authorities that in successfully developing an estate the following principles should be borne in mind, namely:—(1) Access to estate; (2) aspect of roads—north and south roads most desirable; (3) selection of centre—accessible connections from all points of village; (4) size of gardens. After visiting and carefully studying the site, we are of opinion that it is absolutely essential that the main approach should be at the junction of Bellhouse Road and Windmill Lane; we have therefore planned a main artery running in a south-easterly direction to serve for the future development of the Corporation estate. This opens out the land extremely well. The intersection with the road in continuation of Foxglove Road forms the centre of the village, with its triangle, around which are provided sites for the public buildings as required. This centre is generally accessible from all points, and will form, we think, a natural centre for the whole of the Corporation estate. While straight roads intersecting at awkward angles have been avoided, the main streets have been planned with some degree of straightness for the convenience of access to different parts of the village. Roads running east and west have been practically eliminated, for in so doing much scheming to get the sun on both sides of the cottages will be spared. The idea has been to give breadth to all thoroughfares without being extravagant, and to this end the building line of the cottages has been well set back from the road 20 to 30 feet, the ample front gardens giving a refreshing greenness to the prospect besides a better perspective to the house.

The two quadrangles arranged as shown will also, by

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varying the frontage line, give an added interest to the roads. The roads are from 40 to 45 feet in width, with footpaths of 8 to 10 feet, planted with trees at intervals of 15 yards. The cottages are arranged in blocks as shown on the drawing, and planned so as to allow free circulation of air around them and to secure the greatest possible

amount of sunshine; the long straggling extensions at the back have been avoided. The average garden space to the cottages varies from 350 to 500 yards approximately, giving twelve houses to the acre; lines of fruit trees are shown, which besides yielding fruit form a pleasant screen between the gardens. In addition to the gardens a number of allot-

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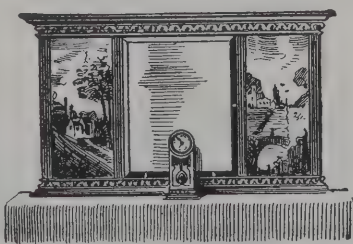
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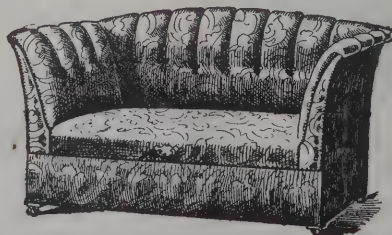
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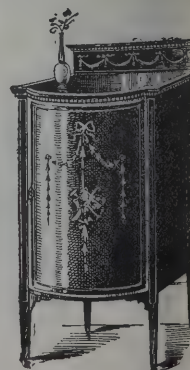
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ments have been provided, as from experience we know that there will be a demand for them. Sites for public buildings are provided at the centre as shown; two recreation grounds for tenants and children are as planned. The large one it is suggested might be used for open-air concerts, bowling-greens, &c.

LOWER HALSTOW CHURCH.

The following report on St. Margaret's Church, Lower Halstow, has been prepared by Mr. W. D. Caröe:—

This church possesses features of much interest. It is quite evident that a Romanesque structure originally existed upon the site, and this was largely constructed of Roman bricks. The earliest portion of this building seems to exist in the south chancel wall, where a brick window and some brick herringbone work still exist *in situ*. This work belongs either to the early part of the ninth century or else to late in the eleventh. I am not prepared to offer a definite opinion. It is not unlikely that this was a small rectangular cell complete in itself with or without a chancel, existing astward of the present east wall.

The main structure of the present nave appears to be of Early Norman foundation, and it is pretty evident that when this was erected the east wall of the chancel was also brought into being. My surmise is that the ancient cell was made into a chancel with a new east wall and a new nave was attached to it. There are quite clear evidences that the new nave was originally a plain parallelogram lighted with high round-headed windows. One of these is still to be found in the north wall of the tower, and I think evidences of one or more will also be found under the plaster above the arcades of the nave.

There appears to have been some prolongation of the south wall of the nave at its west end, which I am not at present able to decipher.

The next stage in the progress was the insertion of the arcades and the erection of the aisles about 1150-60. This appears to have been rather a clumsy piece of work, as the wall bases, which were cut through for the insertion of the arches, were never properly removed. Early in the thirteenth century great changes were made and the church assumed very much the form in which we now see it. The tower

was erected, the north door inserted, the chancel was arcaded and buttressed, probably also reroofed and re-windowed. One of these windows still exists (but badly restored) in the north wall. A sacristy (now destroyed) was erected in the internal angle between the chancel and the north aisle. To this date also belong the remnants of the Early English font, and many of the ancient encaustic tiles which still exist.

The subsequent changes are not of great moment. In 1340-50 a new west window was added and towards the end of the fourteenth century a new east window and side windows to the chancel, together with a new window at the east end of the south aisle. In the sixteenth century an enlarged window was introduced in the north aisle, to replace a small slit, part of which still remains close at hand.

The pulpit is Jacobean, the western gallery early eighteenth century. The pews belong to about 1750, at which time considerable repairs seem to have been set on foot, among them the enlargement of the south belfry window, and the straightening out of the roof pitches of nave and aisles and sundry repairs in brickwork.

The ancient roofs are probably coeval with the erection of the aisles and exhibit the marked Kentish peculiarity of showing the truss upon the outer wall surface of the gables. This woodwork has been allowed to decay, and has been made good with inserted brickwork, which must not, however, be mistaken. The porch belongs to the nineteenth century. When it was erected, most unfortunately the ancient south-west doorway was swept away, a loss much to be regretted.

One or two special features call for notice. The font, as already said, is a remnant of thirteenth-century work and still retains its four Purbeck subsidiary columns. The present bowl is a mere plaster makeshift.

The marks of the ancient solid screen over the rood-loft are clearly visible, and one of the corbels of the altar beam of the south chapel should also be noted.

The two wall posts which abut against the north tower wall are probably only makeshifts also. The gutter between the tower and the nave roof has no doubt been faulty, and the ends of the beams have become rotten in consequence, and these posts have been introduced to make good the defect.

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It is a special interest to the building that it retains a form which was very usual in the thirteenth century—the nave and aisles under one continuous roof. This form was probably almost universal, but few examples remain to us as perfect as this one.

It appears that the ancient timbers of the original roof are fairly perfect, but in order to straighten the pitch a light structure, in parts very flimsy indeed, has been erected over it.

There should be no hesitation in regaining the original form and opening out the trussed rafter roof which will be found when the plaster is removed. The weather roof should be boarded and felted, and the existing tiles, which are in excellent order, refixed. In this work the ugly modern vestry chimney should be removed. Instead of it and the tortoise stoves I suggest an efficient hot-water apparatus. The heating vault can well be placed in the angle between the north aisle and the chancel, and the chimney can be designed in this position to be an ornament rather than the reverse.

A good deal of careful work is required to secure walls which are bulged and fissured, and it is essential to repair windows and doors which have had to be cut about and patched up with cement.

Special attention will be needed to the north-west and north-east angles of the north aisle, both of which need some underpinning. The former angle threatens to fall out altogether. The shaky and bulged condition of the north door must also be dealt with, but this can be done without rebuilding.

The brick angle quoins of the tower are now detached and shaky, having at the outset only been held in by iron cramps, which are now rusting and forcing them out instead of the opposite. It would be a wise measure to secure these, or, if funds are forthcoming, replace them with stone. The general construction of the tower roof is satisfactory, but the hips and the hip knob are letting in the water. The belfry windows are in the last stage of decay, the bell beams and bell frame must be renewed, and the floor of the tower repaired.

The interior of the church and its seating demand most careful attention and consideration. The walls are probably

covered with ancient paintings, whereof an interesting figure of St. Cecilia, attended by an angel, is clearly to be seen under the western arch of the north arcade. Other evidences are also visible, all pointing to the fact that the plastering is original.

The existing gallery at the west end appears to be chiefly constructed of oak, and I suggest the retention of this feature in a somewhat more complete and seemly form. I understand that a mixed choir is usual, and here would be an excellent opportunity of adopting the western choir arrangement which is likely to be more and more favoured in years to come in cases where a surplined choir is not possible.

In considering the pews it must not be forgotten that dry-rot exists in the floors, which are raised very uncomfortably in some parts, and tend to spoil the internal proportions of the building. At the same time some of the seats are very uncomfortable. I should be the first, however, to respect an affection for the old pews, and I have laid out a plan whereby these might be adopted to a more comfortable and reasonable form. In this replanning I should, of course, retain and reuse the old floor tiles and stone flagging. I suggest placing the vestry under the tower with a simple oak screen in front of it, and the font I place near the south door. The pulpit should be put upon an appropriate base, be lowered one step, but should otherwise remain as it is. The porch, of course, has no interest and is in a dilapidated condition. . . . I have designed an appropriate flint and stone porch to take its place, but it is quite clear that this must wait upon all other works which I have called attention to.

I estimate the works as follows:—Roof, walls and windows externally (exclusive of tower), 712*l.*; interior walls, floors, seating and gallery, vestry screen, 357*l.*; heating apparatus, vault and chimney, 220*l.*; tower, walls, windows, louvres, &c., floors and beams, 237*l.*; rehanging bells on new frame, 65*l.*; total, 1,591*l.*

The porch I have designed would cost about 175*l.* in addition to the above. I have estimated as far as I can from past experience what the cost of dealing with the roofs will be, but until these are uncovered it is obviously impossible to discover the exact state of the timbers, and some margin more or less must be allowed.

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THE
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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

FAILSWORTH.—March 28.—The District Council invite designs for a library (cost not to exceed 3,000l.) in Oldham Road. Premiums of 20l. and 10l. Deposit one guinea. Mr. H. C. Broome, clerk, Council Offices, Failsforth.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

WIMBLEDON.—March 9.—For an elementary school in Pelham Road to accommodate 1,000 children. Premiums of 150l. (to merge in the commission) for the first design, and of 100l. and 50l. Mr. J. W. Simpson, assessor. Send in name with qualifications to Mr. A. Steele Sheldon, clerk, Education Office, 12 Queen's Road, Wimbledon.

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BERWICK-ON-TWEED.—March 14.—For the erection of two dwelling-houses in Castlegate. Messrs. Gray & Boyd, architects, 2 Ivy Place, Berwick-on-Tweed.

BOURNBROOK.—March 20.—For a tower 300 feet high at the new university buildings at Bournbrook, Birmingham. Deposit 2l. 2s. Sir Aston Webb, R.A., and Mr. E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BRADFORD.—March 12.—For a circular brick chimney, 50 yards high, to be erected at the Union hospital, Horton Lane, Bradford. Deposit 1l. 1s. Mr. Fred Holland, engineer and architect to the Board, 11 Parkinson's Chambers, Hustlergate, Bradford.

BRIGHTON.—March 12.—For repairs, &c., to the laundry buildings, drying-rooms, &c., at the workhouse, Elm Grove. Mr. E. Wright, architect, Parochial Offices, Brighton.

CHATHILL.—March 13.—For the erection of four houses at Sea Houses, Chathill, Northumberland. Mr. George Reavell, jun., Alnwick.

CHELTHENHAM.—March 16.—For building shop and dwelling-houses at Bishop Street and Henrietta Street. Mr. Daniel Conroy, architect, 21 Shipquay Street, Londonderry.

CHESTER.—March 20.—For public elementary school for 350 boys, to be erected in George Street, Chester. Deposit 1l. Mr. H. Beswick, architect, Newgate Street, Chester.

COCKERMOUTH.—March 11.—For excavating, masons' work, slating and plastering of the proposed new business premises in High Street, Cleator Moor. Mr. Ern. Martindale, architect and surveyor, Cleator Moor.

COVENTRY.—March 9.—For the erection of eight labourers' cottages and additions to farm buildings at the Corporation sewage farm, Baginton, near Coventry. Deposit 1l. 1s. Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

DONCASTER.—April 3.—For the erection of a wing at the Yorkshire Institute for the Deaf, Doncaster. Deposit 1l. 1s. Mr. E. Hall Ballan, architect, 19 and 20 Baxter Gate, Doncaster.

DURHAM.—March 19.—For alterations to schools at Green, Woodland, and High Spen. County Education Committee's Architect, Shire Hall, Durham.

ENFIELD.—March 11.—For extending each end of the pavilions at the isolation hospital, World's End, Winchmore Hill. Mr. Richard Collins, Public Offices, Enfield.

GRASSINGTON.—March 14.—For the various works required in erection of a Primitive Methodist chapel at Grassington (Yorks.). Mr. James Hartley, architect, Skipton Chambers, Skipton.

GREAT YARMOUTH.—March 12.—For the erection of grand stands on the racecourse, South Denes. Mr. J. Wm. Cockrill, borough surveyor, Town Hall, Great Yarmouth.

HASLINGDEN.—March 13.—For the demolition of cottages, widening of the Ogden river bridge, the erection of parapet walls and other appurtenant works in connection with the said bridge, at Helmsore. Deposit 1l. 1s. One of Mr. J. Singleton Green, borough surveyor, Haslingden.

ILFORD.—March 11.—For the erection of an elementary school for 1,230 children, together with latrines, playsheds, caretaker's house, boundary walling, fencing, drains, &c., on the Uphall Road site. Deposit 5l. 5s. Mr. C. J. Dyson, architect, 11 Cranbrook Road, Ilford.

IRELAND.—March 25.—For building a parish church and presbytery at Belgooly, Cork. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

LEE.—March 22.—For the erection of conveniences and a dressing-room at Northbrook Park, Bromley Road, Lee, Kent. Mr. G. L. Gomme, clerk, County Hall, Springfield Gardens, S.W.

LONDON.—March 11.—For additions and alterations to the West Ham and East London Hospital, Stratford. Deposit 10l. Apply by March 2 to Mr. H. Percy Adams, architect, 28 Woburn Place, Russell Square, London.

MAINDÉE.—March 12.—For the erection of new Congregational church, London Street, Maindee, Newport. Deposit 1l. 1s. Messrs. Habershon, Fawcaker & Co., architects, 41 High Street, Newport.

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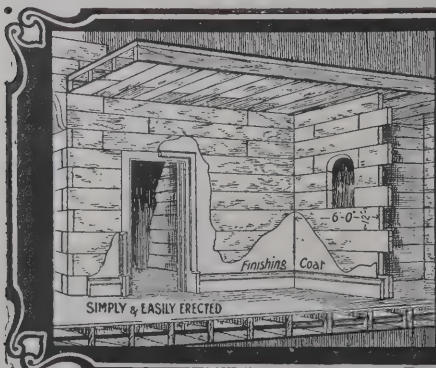
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MANCHESTER.—March 20.—For the erection of the City and Municipal school, Hulme, Manchester. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

MARKET DEEPING.—March 9.—For pulling-down farmhouse and erection of new house at Market Deeping. Messrs. J. G. Stallebrass & Son, architects and surveyors, North Street, Peterborough.

NEWCASTLE-UPON-TYNE.—March 16.—For the construction of an underground public convenience at the corner of Church Street and Station Road. The Sanitary Committee, Committee Clerk's Office, Town Hall, Newcastle-upon-Tyne.

OVENDEN.—March 28.—For the various trades in erection of a Sunday school at Ovenden. Messrs. Chas. F. L. Horsfall & Son, architects.

PEMBROKE.—March 9.—For erection of a boundary wall enclosing an addition to the cemetery at St. Daniel's churchyard, Pembroke. Mr. Henry T. Pratt, London House, Pembroke.

RAVENSTHORPE.—March 11.—For the various works (painters' excepted) required in erection of nine houses in Lebble Street. Mr. David H. Lumb, architect, Bowling Green, Ravensthorpe.

RISHWORTH.—March 12.—For erection of a small wash-house and laundry in connection with Rishworth grammar school. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

SAXMUNDHAM.—March 21.—The East Suffolk county education committee invite separate tenders for erection of the following:—(1) A new infants' Council school at Dell Road, Oulton Broad; (2) a special subjects centre on part of the Council school playground at Saxmundham. Mr. C. E. Key, architect, Aldeburgh.

SCOTLAND.—March 14.—For the erection of the new municipal art school on the site of the cattle market at Lauriston. Deposit 2*l.* 2*s.* Mr. J. M. Dick Peddie, architect, 8 Albyn Place, Edinburgh.

SCOTLAND.—March 14.—For the following works to be executed and minor alterations proposed to be made at Willowbrae school, for the Edinburgh School Board:—(1) Masons' work; (2) joiners' work; (3) slaters' work;

(4) plasterers' work; (5) plumbers' work; (6) painters' work. Mr. Carfrae, architect, 3 Queen Street, Edinburgh.

SHEFFIELD.—March 15.—For the whole or any portion of the work required in the erection of (1) a house as a residence for the medical superintendent; (2) an isolation pavilion and an observation pavilion, all in the grounds of the hospital for infectious diseases at Lodge Moor. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SHERBURN HILL.—March 19.—For erection of the Sherburn Hill school for about 250 scholars. The County Education Committee's Architect, Shire Hall, Durham.

SHILDON.—March 19.—For the erection of a school at Shildon for about 1,100 scholars:—(1) Below ground-floor levels; (2) above ground levels (including latrines, play-sheds, playgrounds, boundary-walls, &c.). The County Education Committee's Architect, Shire Hall, Durham.

TAUNTON.—March 14.—For alterations and additions at the isolation hospital. Mr. F. W. Roberts, architect, 2 Hammet Street, Taunton.

WALES.—March 9.—For erection of shop premises and dwelling-house at Rhydfelan, Pontypridd. Mr. Arthur Lloyd Thomas, engineer and architect, Pontypridd.

WALES.—March 14.—For the erection of a school, with classrooms, &c., at the Calvinistic Methodist church, Garndiffaith. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

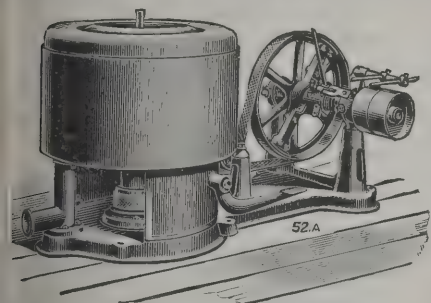
WALES.—March 15.—For improvements to playground at the infants' department of the Argoed Council school. Mr. David Morgan, architect, Cardiff.

WALES.—March 15.—For the erection of a classroom and other works at the Blaina Central Council school, Blaina. Mr. C. Dauncey, secretary, County Council Offices, Newport, Mon.

WALES.—March 15.—For the erection of a mixed and infant school at Christchurch, near Newport, Monmouthshire. Deposit 2*l.* 2*s.* Mr. Alfred Swash, architect, Newport.

WALES.—March 16.—For the erection of fifty houses at Twynrodyn, Merthyr, and for the construction of two streets in connection therewith, including drainage works.

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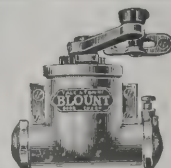
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WALES.—March 18.—For the following works, for the Pontypridd Urban District Council:—(1) Supply and erection of steelwork in connection with the construction of a bridge over the river Taff at the Berw, Pontypridd; (2) masonry abutments, fence walls and other works in connection with above bridge; (3) supply and erection of steelwork in connection with the construction of a bridge at Factory Lane, Graig, Pontypridd; (4) masonry abutments, fence walls and other works in connection with above bridge. Deposit 1*l.* 1*s.* each contract. Mr. P. R. A. Wyloughby, engineer and surveyor, Municipal Buildings, Pontypridd.

WALES.—March 20.—For the erection and completion of a Wesleyan chapel, school, classroom, &c., at Llandudno. Deposit 3*l.* 3*s.* Mr. W. Beddoe Rees, 3 Dumfries Place, Cardiff.

WARMINSTER.—March 16.—For building additions to the Buries, Warminster. Messrs. Long & Glass, architects, 53 Market Place, Warminster.

WICKFORD.—March 25.—For the erection of a new classroom and other alterations and additions to the Wickford school, Essex. Mr. F. Whitmore, architect, 73 Duke Street, Chelmsford.

WORKINGHAM.—March 11.—For the construction of the brick abutments, &c., in connection with the erection of a bridge over the Emm Brook in the Barkham Road. Deposit 1*l.* Mr. O. W. Marks, borough engineer and surveyor, Town Hall, Workingham.

WORKINGTON.—March 11.—For the erection of four semi-detached villas at Townhead. Mr. W. H. Nuzum, architect and surveyor, Frostoms Road, Workington.

WORLINGWORTH.—March 14.—For the enlargement of school at Worlingworth. Mr. H. Preston, Wood Farm, Worlingworth, Framlingham.

THE Shropshire education authority have adopted the plans for a new grammar school at Bridgnorth submitted by Messrs. Pritchard & Pritchard, of Kidderminster, at an estimated cost of 6,050*l.*, with an additional cost of 260*l.* for a workshop.

TENDERS.

ARMATHWAITE.

For the erection of a stone bridge of four arches across the river Eden, Cumberland. Mr. GEO. JOS. BELL, county surveyor and bridgemaister, The Courts, Carlisle.

Whitaker Bros.	£7,212 0 0
Little	6,508 18 8
Dougill & Sons	5,219 7 6
Mackay	5,158 2 0
TELFER, Langholme, N.B. (accepted)	4,964 16 0
Millward & Co.	4,928 0 0
McIl Dowie	4,908 11 0
Lant	4,878 6 3
County surveyor's estimate	5,000 0 0

BILSTON.

For heating Ettingshall Council schools on the low-pressure hot-water system. Mr. J. P. WAKEFORD, surveyor. SPENCER, Cross Bank Works, Oldham (accepted).

BRISTOL.

For the erection of a house. Mr. W. H. WATKINS, architect, 15 Clare Street, Bristol.

LEWIS (accepted)	£925 0 0
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BROMYARD.

For the erection of two cottages on the Firs estate, Bromyard, Herefordshire. Mr. HERBERT SKYRME, architect, 138 Widemarsh Street, Hereford.

James	£450 0 0
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CARDIFF.

For the erection of new vestries at the church of St. Mary, Cardiff. Mr. G. E. HALLIDAY, architect, 19 Castle Street, Cardiff.

Gibson & Sons	£627 0 0
Symonds & Co.	620 0 0
Blacker Bros.	609 18 0
Cox & Bardo	589 9 0
Turner & Sons	578 0 0
Knox & Wells	567 0 0
DUNN, Cardiff (accepted)	560 0 0

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he erection of a laundry building and bakery on land adjoining the workhouse at Chatham. Mr. E. FARLEY COBB, architect, 20 High Street, Rochester.

Laundry and boiler-house.

erson	£3,461	0	0
ngley	3,205	0	0
fee	2,860	0	0
esswas	2,757	0	0
owning	2,650	0	0
anson & Son	2,633	0	0
asby & Salmon	2,624	0	0
est Bros.	2,590	0	0
ay	2,570	0	0
ker	2,555	0	0
rden & Head	2,544	0	0
ow	2,500	0	0
tes	2,480	0	0
ebb	2,475	0	0
nsdale	2,418	0	0
skin	2,367	0	0
rnelius & Son	2,350	0	0
nk	2,335	0	0
illips	2,310	0	0
ley	2,206	0	0
INNER, Chatham (accepted)	2,193	0	0
chitect's estimate	2,530	0	0

Bakery and stables.

erson	1,473	0	0	A.
ngley	1,369	0	0	152
asby & Salmon	1,128	0	0	125
fee	1,038	0	0	130
anson & Son	980	0	0	154
owning	965	0	0	86
est Bros.	959	0	0	130
esswas	957	0	0	125
ebb	928	0	0	128
ay	927	0	0	85
rden & Head	925	0	0	93
ker	919	0	0	125
rnelius & Son	898	10	0	115
A—Extra for glazed facings.				101

CHATHAM—continued.

Lonsdale	£894	0	0	£106
Miskin	874	6	7	125
Snow	872	0	0	60
Gates	870	0	0	116
Monk	851	0	0	98
Skinner	821	0	0	138
PHILLIPS (accepted)	810	0	0	110
Filley	800	0	0	144
Architect's estimate	960	0	0	—

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DEWSBURY.

For the erection of a villa residence in Birkdale Road, Dewsbury. Messrs. KIRK & SONS, architects, Dewsbury.

Accepted tenders.

Scott & Sons, mason.
Armitage & Sons, joiner.
Newsome, plumber.
Thompson, slater.
A. & F. Hodgson, plasterer.
Ramsden, painter.

For the erection of two dwelling-houses in Bath Street, Dewsbury. Messrs. KIRK & SONS, architects, Dewsbury.

Accepted tenders.

Whitehead, mason.
Armitage & Sons, joiner.
Shepley, plumber.
Thompson, slater.
A. & F. Hodgson, plasterer.
Jackson, painter.

GRAVESEND.

For alterations and additions to Victoria House.

Beal & Hubbard	£330	10	0
Smith & Son	327	8	0
W. & F. Tuffee	312	0	0
Tong	308	10	0
Miskin, Ltd.	300	0	0
Thomas	287	15	0
Burr	256	0	0
HOLLAND (accepted)	228	0	0

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Durham (accepted) £5,775 0 0

GUILDFORD.

For additions, alterations and reparations to the old school buildings at the workhouse, for use as relief infirmary.

Mr. E. L. LUNN, architect, 36 High Street, Guildford.

Swayne & Son £876 0 0

HAYES.

For the erection of a new Council school at Clayton Road, Hayes, Middlesex. Mr. H. G. CROTHALL, architect.

Lovatt, Ltd.	£3,900	0	0
Minter	3,868	0	0
Kearley	3,855	0	0
Knight & Son	3,759	0	0
Johnson & Co.	3,680	0	0
Fassnidge & Son	3,651	0	0
Renshaw	3,642	0	0
A. & B. Hanson	3,590	0	0
Portsmouth	3,577	0	0
Fairhead & Son	3,555	0	0
LAWRENCE & SON, Tottenham (accepted)	3,544	0	0

HEATON.

For the erection of houses in Wilmer Drive, Heaton, Yorks. Messrs. WALKER & COLLINSON, architects, Cheapside Chambers, Bradford.

Accepted tenders.

Robinson & Sons, Thornton, Bradford, mason.
 Robinson & Co., Bradford, joiner.
 Higginbotham, Bradford, plumber.
 Frost & Sons, Bradford, plasterer.
 Thornton, Shipley, slater.
 Mitchell, Great Horton, Bradford, painter.

HEREFORD.

For constructing an ice manufactory and new machine room. Mr. W. E. H. CLARKE, architect, Cathedral Chambers, Hereford. Quantities by architect.

Hiles	£575	0	0
Beavan & Hodges	573	18	0
Friend	573	0	0
Powell	565	0	0
Cooke	523	0	0
Bolt	500	0	0
WILKS (accepted)	470	0	0

KEIGHLEY.

For the erection of a warehouse at Holme Mill, Keighley. Messrs. JOHN HAGGAS & SONS, architects, North Street, Keighley.

Accepted tenders.

Turner, Utley, near Keighley, mason.
 Judson & Steel, Apsley Street, Keighley, joiner.
 W. H. & E. Walton, Bingley, slater.
 Turner, concreter.
 Wallace, Queen Street, Keighley, plumber.
 Roberts & Co., Cutler Heights, Bradford, ironfounder.
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For the construction of male and female convenience, children's shelter, &c., in the public gardens, Sefton Road, Litherland, Lanes. Mr. A. H. CARTER, surveyor.

Holme	£625	0	0
Wright	621	0	0
Lloyd	599	0	0
Costain & Sons	550	0	0
Spencer	540	0	0
Hall & Jamieson	539	0	0
Webster	527	0	0
Johnson	514	0	0
Tyson	495	0	0
JOHNSON, Seaforth (accepted)	477	0	0

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LONDON.

For roadwork and paving works in connection with the reconstruction of tramways from Vauxhall to Brixton and construction of new lines from Goose Green to Peckham, and along Tooting High Street and Mitcham Road.

White & Co.	£100,977	0	0
Griffiths & Co.	92,091	0	0
Mowlem & Co.	87,714	0	0
Blackwell & Co.	84,007	0	0
Dick, Kerr & Co.	83,052	0	0
Manders, Leyton (recommended)	82,722	0	0

For supply and delivery of conduits, troughs and covers during period ending December 31, 1909.

Conduits.

Albion Clay Co.	£1,767	6	8
Henley's Telegraph Works Co.	1,745	6	8
Knowles & Co.	1,743	10	0
Siemens Bros. & Co.	1,738	0	0

Troughs and Covers.

Knowles & Co.	1,606	0	0
Albion Clay Co.	1,342	0	0
Siemens Bros. & Co.	1,290	13	4
Henley's Telegraph Works Co.	1,235	13	4

For supply and delivery of cable during the period ending December 31, 1909.

Siemens Bros. & Co.	£12,386	10	0
British Insulated and Helsby Cables	12,330	0	0
St. Helens Cable and Rubber Co.	12,281	10	0
Callender's Cable and Construction Co.	12,251	0	0
Glover & Co.	12,173	0	0
Western Electric Co.	12,111	10	0
HENLEY'S TELEGRAPH WORKS CO., London (recommended)	11,945	0	0

For drainage arrangements at Park pumping station, Tottenham.

Patman & Fotheringham	£362	0	0
Trollope & Colls	341	0	0
Willmot & Sons	325	0	0
L. & H. W. Patman	315	0	0
Porter	298	0	0
Docwra & Son (recommended)	249	18	3

LONDON—continued.

For the provision and erection of a hand booklift in connection with the alterations and additions in course of execution at the electricity works.

Waygood & Co.	£58	10	0
Pemberton, Arber & Co.	49	10	0
Smith & Stevens	49	0	0
Easton Lift Co.	35	0	0
Nightingale	35	0	0
RICHMOND & Co., 189½ Burdett Road (accepted)	33	0	0

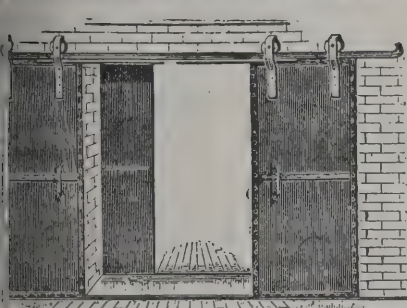
For additions to the Acton and Chiswick Polytechnic, Chiswick. Mr. H. G. CROTHALL, architect.

Gough & Co.	£8,292	0	0
Gibson & Co.	7,994	0	0
Lovatt, Ltd.	7,950	0	0
Spencer, Santo & Co.	7,797	0	0
Bollom	7,655	0	0
Lacey	7,525	0	0
Minter	7,509	0	0
Knight & Son	7,464	0	0
Dickens	7,400	0	0
Renshaw	7,377	0	0
Heath	7,350	0	0
Barker & Co.	7,287	0	0
Dorey & Co.	7,099	0	0
Lawrence & Son	7,074	0	0
Johnson & Co.	7,047	0	0
WISDOM BROS., Isleworth (accepted)	6,899	10	0

For new cookery and manual training centre at St. Ann's Council schools, Hanwell. Mr. H. G. CROTHALL, architect.

Platford & Son	£1,544	0	0
A. & B. Hanson	1,542	0	0
Tribe & Co.	1,519	0	0
Mattock & Parsons	1,487	0	0
Bollom	1,486	0	0
Dorey & Co.	1,449	0	0
Dickens	1,440	0	0
Barker & Co.	1,383	0	0
LACEY, Hounslow (accepted)	1,346	0	0

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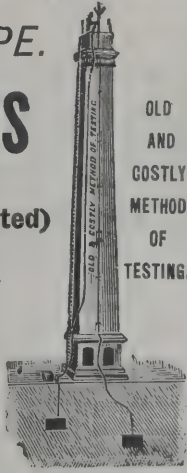
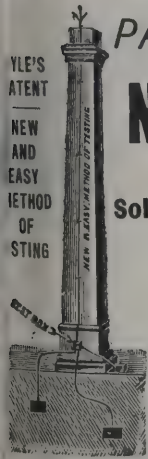
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LONDON—continued.

For alteration to bar and for repairs and decorations, &c., at the Higham Hill tavern, Walthamstow, London, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

KINGSLAND (accepted) £489 0 0

MALDON.

For the supply and laying of cast-iron water-mains with accessories in the parishes of Purleigh and North Fambridge, Essex, amounting altogether to about two miles of 3-inch and three-quarter mile of 2-inch pipes. Messrs. PRICE & BELSHAM, engineers, 52 Queen Victoria Street, London, E.C.

Tilley Bros.	£1,401	8	3
Appleby	1,306	12	3
Griffiths & Co.	1,274	0	10
Mitchell & Son	1,073	7	8
Redhouse, sen.	1,068	1	8
Reade & Son	1,053	5	4
Young	1,008	4	4
Tabor	999	0	0
Jackson	980	4	0
Wilson, Border & Co.	971	10	6
Farrow & Sons	934	4	6
Beach & Co.	923	0	0
COLLINGWOOD & Co., 43 Cambridge Gardens, W. (accepted)	917	13	8

Sections 1 and 2 only.

Hughes 866 16 3

SCARBOROUGH.

For conversion of the refreshment-room into a concert hall. Mr. C. EDESON, architect and surveyor, 25 Hunt-riss Row, Scarborough.

Accepted tenders.

Pickup, Brook Street, smith and founder	£524	14	0
Plaxton, North Street, carpenter and joiner	513	10	10
Maynard, Castle Road, plumber	430	0	0
Bland, Nelson Street, bricklayer	340	0	0
Kelly, Aberdeen Walk, painter	124	18	0
Hardgrave, Falsgrave Road, slater	5	10	0

OSSETT.

For the various trades in connection with the erection of Southdale Council school, Ossett, Yorks.

Excavator, bricklayer and mason.

PEACE & OLDROYD, Gawthorpe, Ossett (accepted) £3,812 19 0

Painter.

SANDERSON, Wesley Street (accepted) 140 0 0

Plumber.

HEPWORTH & MOORHOUSE, Dale Street (accepted) 640 0 0

Carpenter and joiner.

LOCKWOOD & SONS, Town End (accepted) 1,872 10 0

Slater.

BREAR & SON, Sharpe Street, Dewsbury (accepted)* 609 10 0

* The amount has been increased to 680l. 7s. by extra work decided to be done in lathing and counter-lathing and allowing for greater overlay than specified.

Plasterer.

WILKINSON, Station Road (accepted)* 130 3 6

* Increased to 139l. 15s. in respect of extra work not specified in schedules of quantities.

Whole of work.

Denholme & Co. 7,825 0 0

SHIRLEY.

For the erection of stabling accommodation at Clock House, Shirley, Hants. Mr. J. A. CROWTHER, borough engineer.

Preece	£3,061	0	0
Bagshaw & Son	2,960	0	0
Richards	3,600	0	0
Stevens & Co.	2,586	0	0
Nichol	2,514	0	0
Dyett	2,437	9	0
Jupe	2,421	0	0
Lawrence	2,395	0	0
Osman	2,380	0	0
Jenkins & Sons	2,367	0	0
LONG, Southampton (accepted)	2,342	0	0

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WESTWOOD GROUND,
HARTHAM PARK
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SOUTHALL.

or the erection of new Council school, Clifton Road, Southall. Mr. H. G. CROTHALL, architect.

Minter	£6,067	0	0
Treasure & Son	5,867	0	0
Bollom	5,775	0	0
Knight & Son	5,701	0	0
Barker & Co.	5,682	0	0
Dickens	5,631	0	0
Dorey & Co.	5,590	0	0
Lawrence & Son	5,474	0	0
Mattock & Parsons	5,430	0	0
Wisdom Bros.	5,365	0	0
Renshaw	5,365	0	0
A. & B. HANSON, Southall (accepted)	5,339	0	0

STAINES.

or Staines reservoirs communication works, pipelaying, Child's Hill to Cranley Gardens.

Mayoh & Haley	£49,385	0	0
Dowra & Son	42,267	18	3
Mowlem & Co.	42,115	0	0
Scott & Middleton	40,123	0	0
Baldry & Yerburch	37,739	6	1
Aird & Sons	36,721	7	2
Nunn	34,575	14	8
Hay & Co.	34,000	0	0
Muirhead & Co.	32,464	9	6
McAlpine & Sons	31,599	0	9
Byrom, Ltd.	29,975	15	0
Moran & Sons	28,990	0	0
Davies, Ball & Co. (recommended)	27,425	0	0

WATFORD.

or the erection of new stores, buildings and stables at the Council offices. Mr. D. WATERHOUSE, surveyor.

DARVILL, Watford (accepted).

WILLESDEN.

For the construction of about 2 miles 1 furlong 6 chains of double track (including the demolition of the existing bridge and the erection of a new steel girder bridge 45 feet wide between parapets and 225 feet long, in five spans, across the London and North-Western main line at Willesden Junction, with new abutments and approaches, and also other extensive road and bridge widenings), for electric traction along Old Oak Lane, Victoria Road, Horne Lane, &c., in the parishes of Willesden and Acton, Middlesex. Mr. H. T. WAKELAM, county engineer, Middlesex Guildhall, Westminster, S.W.

Law	£73,208	0	0
Perry & Co.	72,368	0	0
Adams	70,830	1	0
British Electrical Equipment Co.	70,492	11	5
Fasey & Son	68,985	0	6
Pattinson & Son	68,579	0	0
Finnigan	68,279	3	5
Muirhead & Co.	67,420	12	6
Kirk & Randall	66,750	0	0
Mowlem & Co.	66,603	0	0
Kelletts, Ltd.	65,951	4	7
Hay & Co.	65,648	2	3
Holloway	65,626	3	6
Morecroft	65,410	0	0
Trentham	64,879	0	0
Davies, Ball & Co.	64,847	0	0
Manders	64,259	1	3
Wimpey & Co.	62,785	0	0
Underwood Bros.	62,604	0	0
Hunt & Son	61,836	11	0
Wall & Co.	61,505	0	0
Ford	59,948	6	6
Dick, Kerr & Co.	59,948	6	6
BLACKWELL & Co., Westminster (accepted)	59,048	5	11
County engineer's estimate	64,608	10	0

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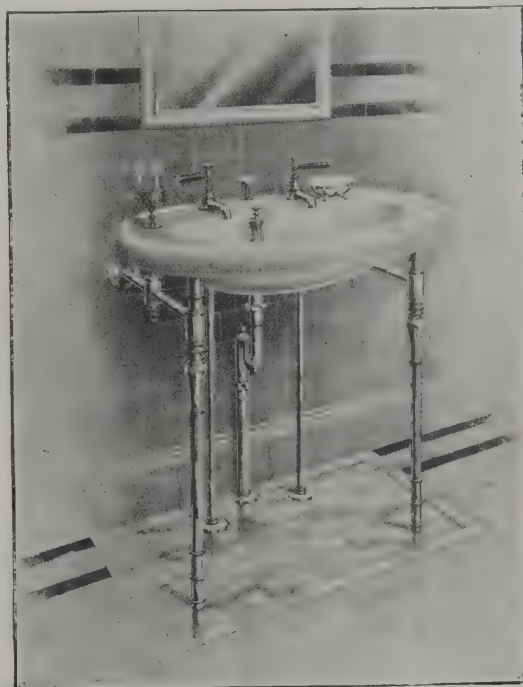


Fig. 941. THE "MALCOLM."

HIGHLY GLAZED
FIRECLAY
LAVATORY BASINS.

HIGHLY GLAZED
FIRECLAY
LAVATORY BASINS.

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WEMBLEY.

For the construction of about 1 mile 2 furlongs 5 chains of double track (with road widenings) for electric traction along the Harrow Road, in the parish of Wembley, Middlesex. Mr. H. T. WAKELAM, county engineer, Middlesex Guildhall, Westminster, S.W.

Fry Bros.	£32,720	10	2
Perry & Co.	32,267	0	0
British Electric Equipment Co.	31,033	10	6
Finnigan	30,898	18	4
Adams	30,756	2	2
Mowlem & Co.	29,818	0	0
Davies, Ball & Co.	29,797	17	1
Law	29,501	0	0
Manders	29,459	2	3
Muirhead & Co.	29,446	18	6
Hunt & Son	28,742	12	0
Holloway	28,481	3	2
Wall & Co.	28,261	0	0
Trentham	28,172	0	0
Kirk & Randall	28,165	0	0
Blackwell & Co.	27,093	8	2
Underwood Bros.	26,518	0	0
Wimpey & Co.	26,326	0	0
Dick, Kerr & Co.	25,734	11	9
FORD, Willesden (accepted)	25,734	11	9
County engineer's estimate	30,118	19	2

NEW CATALOGUES.

THE new edition of the catalogue of Messrs. S. W. Francis & Co., Ltd., would be sufficient to convince a foreigner that England is a nation of shopkeepers. The illustrations show the perfection and the elaborateness of the arrangements for enabling shopkeepers to display their goods to advantage and to provide for their security. The shop fronts have only a minimum of obstruction in the form of framing, and yet by the skilful adaptation of material adequate strength is provided. The shutters are as important as the ornamental brass sash fronts, for at night the shops are firmly closed against enemies. The shutters,

which are a specialty of the company, are also used for the protection of banks, offices and mansions. Trade has its own laws, and Messrs. S. W. Francis & Co. have studied them carefully, and they have in consequence become recognised factors in the prosperity of traders of all classes.

It was wise for Messrs. Messenger & Co., of Loughborough and London, to illustrate both interiors and exteriors of many of their conservatories, for it is difficult to decide which are the more satisfactory. Whatever architectural arrangement is adopted it is sure to have its use. Many of the structures, we need not say, have been especially designed by architects. The company can say with pride that they have carried out commissions in every part of the kingdom, and the names of those who are fortunate in possessing Messrs. Messenger's greenhouses will be found a sufficient testimony to the superior class of work which has been executed. The list of architects for whom they have worked is also a remarkable testimony. The state that "special attention is paid to carrying out the designs of architects with care and accuracy, and when required we are prepared to send a competent engineer to make surveys and advise generally as to the most suitable arrangement for glasshouses or heating, on condition that out-of-pocket expenses for the journey are paid if no order ensues." Prefixed to the catalogue are some practical hints which will be useful to those intending to erect large or small conservatories, and which also are explanatory of the principles observed in the different classes of the structures. As all materials used in the heating apparatus are also made by the company their effectiveness in working is guaranteed. There is also a patent lever apparatus which is applicable to other buildings besides greenhouses. The examples shown are so interesting they require no supplementary praise.

THE improvement and building committee of the Manchester Corporation have put on record the approval of the agreement come to last week between the authorities of the university and the highways committee on the scheme for extending the university buildings.

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STRUCTURAL ENGINEERS.

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Section Books & Stock Lists on Application

ILLUSTRATIONS.

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ROYAL NAVAL HOSPITAL, CHATHAM.

CATHEDRAL SERIES.—CARLISLE: SOUTH AISLE, LOOKING EAST.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.—DOVE.

TRADE NOTES.

THE whole of the sanitary fittings required in the new Lumber Motor Works, Coventry, are being supplied by Mr. Wm. E. Farrer, sanitary specialist of Birmingham, London, Cardiff, &c. The order comprises closets, lavatories, urinals, sinks, &c.

THE town clerk of Cape Town has informed Messrs. B. Joyce & Co. that the Corporation are entirely satisfied with the time-keeping qualities of the turret clock installed by the firm, the results showing that a highly creditable standard of time is being maintained by the clock.

THE new hospital for the Smethwick and Oldbury Joint Sanitation Board is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves, with ascending smoke flues, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

AN illuminated turret clock has just been erected at the new police courts, Sunderland, with Lord Grimthorpe's improvements inserted, by Messrs. Wm. Potts & Sons, Ltd., of Leeds and Newcastle-upon-Tyne, for the Mayor and Corporation of Sunderland. Messrs. Potts & Sons have also erected a new illuminated clock, with three external dials, for Messrs. Harrod, Barnsley, Yorks, and clock at Hull for the North-Eastern Railway Company.

THE East Indian Railway Company are just having despatched to their order fifty weighing machines for use on their different stations for weighing luggage. These machines have a capacity of 40 cwt. and 56 maunds, and by the use of Avery's patent polygonal bar the weight can be read in either standard, thus preventing any confusion as to charges and also a great saving in time. Each one of

these machines has been tested to its full capacity by their authorised agent before leaving the works of Messrs. W. & T. Avery, Ltd., of Soho Foundry, Birmingham, who are supplying them. Messrs. Avery also have in hand several other large orders for the East.

MESSRS. GEORGE MILLS & Co., engineers, Radcliffe (the proprietors of the "Titan" patent automatic sprinkler), have received letters from firms whose premises were protected by the sprinklers during the past month. One writer says "that had it not been for the prompt action of the sprinklers the mill would have been burned down." In another case it is said that everything in connection with the system, which was set up seven years ago, worked satisfactorily, and the fire was successfully extinguished. The proprietors of a large wood-working factory in London testify to the efficient service rendered by the sprinklers, for when the firemen arrived the fire was quite extinguished.

ELECTRIC NOTES.

MESSRS. AUSTIN & Co., of Newcastle, have introduced an electric lift which does not require an attendant and obviates the danger of insufficiently protected lift openings. Under the system a car will arrive at any floor desired by the simple pressure of a button, and immediately the gate is opened and the passenger steps in the whole of the buttons on the various landings are put out of action, so that only the passenger himself can operate the lift. Inside the car he presses a button corresponding with the floor he wishes to be taken to, and having arrived there the car immediately comes to a standstill. Should he before reaching that floor change his mind as to destination, all he has to do is to press an emergency button, which stops the car, and then, in turn, the button for the floor on which he desires to land. The action of the car, it should be said, locks the gates leading to the lift.

THE electric-lighting committee of the Derby Corporation recommend the Council to fix a uniform charge of 1d. per unit for the supply of electrical energy used throughout the whole day, instead of the present charges of 1½d., 1½d. and 1d.

KAHN SYSTEM REINFORCED CONCRETE

THE KAHN TRUSSED BAR IS A SCIENTIFIC & ECONOMICAL REINFORCEMENT.

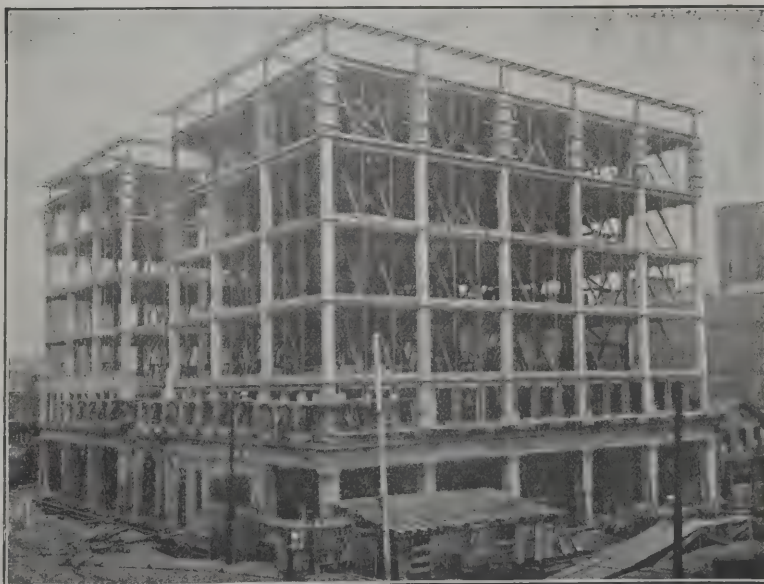
MARK THE FIXED SHEAR MEMBERS. THEY MEAN—TO THE CONTRACTOR, RAPIDITY AND ECONOMY OF ERECTION—TO THE OWNER THEY MEAN EFFICIENCY AS WELL.

NO LOOSE MEMBERS TO FIX.

WE CHARGE NO ROYALTIES.

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We want your enquiries for Foundation Rafts, Footings, Beams, Floors, Landings, Staircases, Roofs, &c.



THE KAHN TRUSSED BAR, ALTERNATING TYPE

TRUSSED CONCRETE STEEL CO.,
CAXTON HOUSE, WESTMINSTER.

THE Aston electricity committee has instructed the borough electrical engineer to prepare a scheme for the electric lighting of the urban district of Erdington. The committee will report to the Town Council that it hopes shortly to submit the scheme for consideration, with a view to application being made to the Local Government Board for sanction to the borrowing of a loan for the execution of the work.

THE Montreal Municipal Council have decided to renew for twenty years, beginning May 1910, the contract of the Montreal Light, Heat and Power Company to supply the city with gas and electricity. The gas contract is a pure monopoly, but in the case of electricity it is provided that any company that cares to come in and compete with the Montreal Light, Heat and Power Company may do so on accepting the same conditions as are imposed on that company. It is claimed, however, that the electricity contract will also prove exclusive in practice.

MR. GRAHAM HARRIS, the arbitrator appointed to decide the dispute between the Leyton Urban Council and the North Metropolitan Tramways Company as to the amount to be paid by the Council for the company's works, which are situated in Leytonstone, has issued his award. The portion of the company's system situated in Leyton and Leytonstone was compulsorily acquired by the Council. The Council contended, however, that they were not required to purchase the works, which did work for the whole system, except so far as they were necessary to the portion which they had acquired. This contention has been upheld by the arbitrator, who awards the company 19,168*l.*, as against the 73,442*l.* demanded. The Council have no use for these car-sheds, having built extensive premises in Lea Bridge Road for the purposes of their electric tramways.

THE contract for the hydraulic-power plant required for the third installation in Cauvery Falls power station, India, which supplies power to the Mysore Gold Fields, has been placed with Messrs. James Gordon & Co., water-power engineers and contractors, Knight-riding Street, E.C., and includes a special design of pelton wheel to develop 2,700 b.h.p. under a fall of 380 feet for direct coupling to alternating current generator, sensitive quick acting governor, and

heavy rivetted steel pipe line 4 feet diameter with expansion joints, relief valve, &c. This is the first order for hydraulic plant for this station obtained by an English firm, all the existing plant being by continental makers. The sub-contract for all the rivetted steel piping required has been placed with the Steel Pipe Co., Ltd., of Kirkcaldy, by Messrs. Gordon & Co.

AFTER consideration of a report from a sub-committee prepared after consultations with Major Cardew, as expert adviser, the electric-light committee of the Coventry Corporation have resolved to make the following important recommendations to the City Council:—(1) That the scheme prepared by the manager for immediate extensions at the electric-light works at the estimated cost of 27,000*l.* be approved, subject to the sanction of the Local Government Board being obtained to the necessary loan. (2) That the scheme prepared by the manager for further extensions of the electric-light undertaking, to cover the needs of the next five years, at a total estimated cost of 180,000*l.*, be approved subject to the sanction of the Local Government Board being obtained to the raising of the necessary capital, and also subject to a special recommendation being presented by the electric-light committee and adopted by the Council before any further expenditure is incurred. (3) That application be made to Parliament during the present session for the raising of capital for the purposes of the electric-light undertaking. (4) That application be also made to Parliament for powers for the Corporation to supply energy in certain districts adjoining the city. (5) That application be also made to Parliament for clauses enabling the Corporation to make charges for stand-by supplies.

COLONEL HELLARD, of the Ordnance Survey Department giving evidence on Tuesday before the Royal Commission on Coast Erosion, stated that during the past twenty of twenty-five years the total gain of land to England and Wales was 30,752 acres, and the loss 419 acres. The general feature was that there had been a gain of land and a loss of foreshore. The popular view that the country was being washed into the sea at the rate of 2,000 acres a year was a mistake.

FIRE-RISKS

MINIMISED BY USING

PATERSON'S

FIREPROOF ELECTRIC CABLES AND WIRES

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VARIETIES.

NEW Empire theatre is about to be erected in Prince's Street, Devonport. The architect is Mr. Frank Matcham.

A NEW club and institute is to be erected in the Sea View Road, Southend-on-Sea, and building operations will commenced at once.

THE Manchester and Salford Wesleyan Mission are about to erect a new hall with classrooms attached opposite Free Trade Hall, Manchester, at a cost of 50,000/.

ON Wednesday the Cardiff secondary schools committee decided to erect on the site of the present temporary buildings a new boys' intermediate school, at a cost not to exceed 20,000/., inclusive of furniture.

THE plans sub-committee of the Filey Council have approved of plans submitted by Mr. Andie Caine for the erection of an amusement hall and variety theatre, to be built in the Sylvan Glade, near the Crescent.

THE recently-erected church hall for the new church of Saviour, Westcliff-on-Sea, proves to be quite inadequate for the congregation each Sunday. It has been decided therefore to hurry on the erection of the new church at the earliest possible moment.

THE Lincoln City Council were engaged last week in considering the question of the city water supply. Mr. Percy Griffith, the consulting engineer, stated that a depth of 2,015 feet was pierced at the Boultham bore some months ago, and water was found in plenty. Pumping operations have been in progress night and day for several months to purify the water, but without success. The Council decided to continue the boring a further 185 feet. This will bring the bore to the depth of 2,200 feet, which was originally agreed upon.

THE Birmingham Trades Council at their meeting last week carried the following resolution:—"That in the opinion of this Council the refusal of the Local Government to sanction loans to borough councils and others for improvement works, unless the work be done by specially engaged labour, is a retrogressive step, being economically unsound, being against real economy in the cost of production and calculated to seriously depress the standard of life of the workers."

THE New York city authorities have selected in international competition the contract of an English firm for the provision of a refuse-destroyer and boiler, &c., complete, on Staten Island. The destructor will have a capacity of 60 tons per day of 24 hours, and the boiler and its appurtenances are proportioned large enough to efficiently absorb the whole of the heat from the combustion of the refuse.

THERE has been a rush to the hills of Flintshire of late in pursuit of the "simple life," and bungalows of wood frame and iron sheeting on brick foundations are becoming common. The health authorities note that the structures are not in accord with their by-laws. Sanitary officers to whom plans of the bungalows are submitted for approval find no fault with the sanitary arrangements, but while admitting them as suitable erections on the hills they are in doubt as to the advisability of approving them when built on the lowlands. So far the builders have kept to the highlands. A Liverpool firm, it is said, propose to build quite a cluster of bungalows on Flint Common.

IN forwarding his annual report on the health of Millom, Cumberland, to the local authority Dr. Stone, the medical officer, attributed the delay in its preparation to the fact that it was quite impossible to work in the evenings owing to the bad light from the gas. He had not mentioned the bad gas in his report, not wishing to bring down the Local Government Board inspector, but it had been most poisonous all the winter, and no doubt caused illness, though possibly not so much as had been attributed to it. He did not think that Millom people should be blinded and poisoned without some protest.

MR. LOCKHART, C.E., Kirkcaldy, has forwarded a report on a new water scheme for the two Anstruthers and Pittenweem, to take the place of the present reservoirs, the water in which has been condemned as unfit for domestic purposes. Mr. Lockhart proposes the erection of a new reservoir to the north of Carnbee and Kellie Law capable of holding 46,500,000 gallons, and the cost, with three new filters, he estimates at 8,788/. This is exclusive of legal and engineering expenses and the cost of land and wayleave. The scheme is under the consideration of the three town councils, and it is estimated that, if gone on with, there would be a three-months' supply, after giving off 160,000 gallons per day to the inhabitants.

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HEAT LOSSES IN BUILDING.*

At the August meeting of the Society, Walter Jones, of Stourbridge, England, read a valuable paper entitled "Heat Losses and Heat Transmission," in which he compared the different coefficients for building losses as given by various authorities. This comparison indicated that the authorities differed greatly as to some coefficients, but were in quite close agreement as to others.

Some years ago I tried to find what actual experiments had been made for determining these various coefficients. The result of this investigation indicated that practically all of our coefficients for heat losses and heat transmissions resulted from experiments made by Peclet in France about 1880, and further that, so far as I could ascertain, these were the only original experiments which completely cover the field. These experiments are described in vol. i. "Traité de la Chaleur," E. Peclet, Paris (1st ed., 1863; 4th ed., 1878). I have published in the fourth edition of my work on "Heating and Ventilating" a translation of that portion of Peclet which relates to heat transmission through radiators and buildings. There is not available a translation of Peclet in English. Various authorities in different languages, in applying Peclet's experimental values to different conditions, have obtained slightly different results, partly due to difference in assumed conditions and partly due to the translation, and this in a large measure accounts for the difference in the various coefficients as given by different authorities.

There is no doubt that in some cases coefficients had been deduced from rules of practice or rules of thumb, but such coefficients have not generally been of a scientific form nor have they been widely used.

In the English work on "Heat," by Box, numerous examples of the application of Peclet's coefficients were given. This work was published very early, it was the first English work to call attention to Peclet's experiments, and is in a measure largely responsible for the coefficients which are used extensively by the English-speaking people.

Box and Peclet both present methods of computing

building losses by applying the coefficients to small sections of the building. This method is an accurate one, but seems to me, in view of the crudeness of the coefficients themselves, a refinement which is not warranted except for very large buildings. For that reason I advise the use of average values in computing the heat losses from walls and windows of buildings of ordinary or small size. My opinion is that the average values, which can be readily and quickly applied, give fully as satisfactory results as the application of each special coefficient to each special part of the building, and it saves a great amount of labour. For large buildings the more exact method is preferable, suggested by Box and Peclet.

From my study of the Peclet experiments, which I believe are the scientific basis of the coefficients practically used by all our authorities, I do not believe that they have such a degree of accuracy as to warrant extending our computation results very far. To illustrate, if the Peclet experiments involve an error of 10 per cent, which I think probable, and if these determine our coefficients, it is rather absurd and foolish to carry our calculations in applying these coefficients to $\frac{1}{2}$ of 1 per cent; yet this is a thing which all of us are very prone to do, and we often imagine that because our figures are carried to small decimal places our results are therefore very accurate.

The coefficients which are given by Recknagel and Rietschel agree so closely with those derived from Peclet's experiments, that I believe they have the same origin as those which we have obtained from Box, which we know came from Peclet. This fact confirms me in the opinion that the scientific derivation of the principal coefficients used for heat losses from buildings is derived from Peclet's experiments.

Respecting the coefficients for heat transmission from radiating surfaces, a large number of experiments have been made in nearly every country. The coefficients derived from these experiments, however, agree so closely with those given by Peclet that for general cases those given by Peclet can be used with satisfactory results.

In view of the recent improvements in apparatus for measuring heat transfers and of the changes in building construction which have occurred during the last quarter of the century, it would certainly be desirable if the experimen

* From a paper read before the American Society of Heating and Ventilating Engineers, by Professor R. C. Carpenter.

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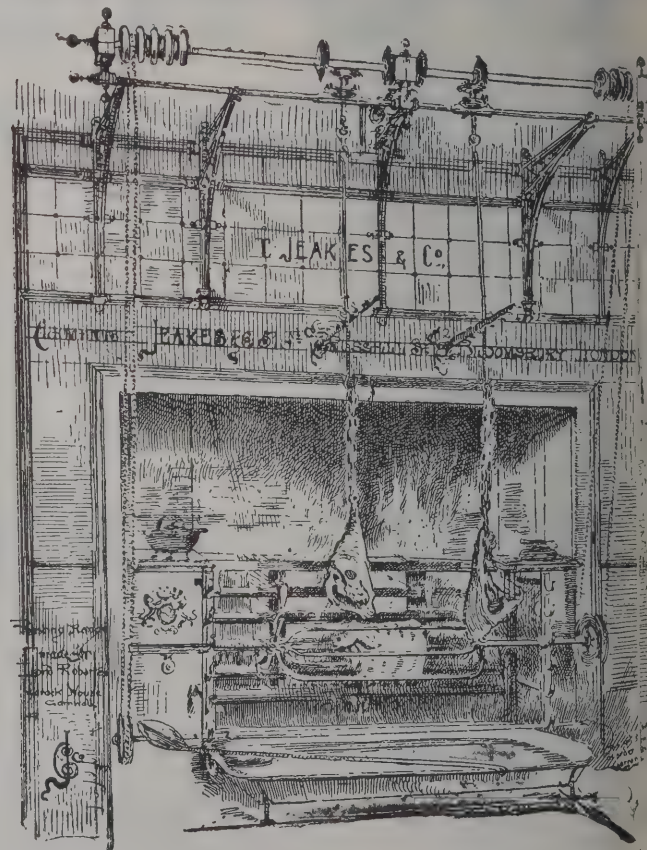
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made by Peclet could be repeated on a larger scale and with more accurate instruments. It is not probable, however, that if this were done the results would be essentially different from those obtained years ago by Peclet. We know that within certain practical limits Peclet's results are accurate, since the coefficients obtained from them when applied to modern heating systems give satisfactory results. In two cases I have had an opportunity of comparing the heat transmitted through the walls and windows of a building with the average of Peclet's results, and in both these cases the comparison checked up very closely.

In the first case a room on the second floor with exposed side and end had 246 square feet of wall surface and 96 square feet of window surface. By experiment I found that when the air in the room was 28 degs. above that outside, 4,247 B. t. u. per hour were required to maintain a uniform temperature and represented the building losses; when 27 degs. above, 4,240 B. t. u. were required. The average of Peclet's results indicates that 4 square feet of wall surface or 1 square foot of window surface transmits practically one B. t. u. per square foot per hour per degree difference of temperature. Applying this rule to the cases stated, the building loss for the first case should have been 4,410 and for the second case 4,253 B. t. u.

In the second case a test of the New York State Veterinary College showed that to maintain the building 31 degs. warmer than the outside air, 16,000 B. t. u. were required per minute, of which 39 per cent. escaped in the ventilation flues and 61 per cent. passed by conduction through the walls and windows. The building was exposed on all sides, was three storeys in height, had 9,280 square feet of glass and 31,644 square feet of exposed wall surface. By the rule founded on Peclet's average results as above, the building loss should be 532,952 B. t. u. per hour. The actual loss by experiment by the building was 547,200 B. t. u. per hour, which is within 2 per cent. of that called for by the rule. In this case the building was of brick, thickness of the walls 24 to 16 inches, the windows having single glass.

The above experiments, as well as those which are made by structures proportioned in accordance with the coefficients, indicate the substantial practical accuracy of the early experiments by Peclet, and show that we do not

run any very great risk of making serious mistakes in applying them. It is quite probable that the variation in conditions as to materials or exposure, which are not considered in the average case, cause most of the errors in the application of these coefficients.

THE GENERAL POST OFFICE EXTENSION.

WE learn that the tender of Messrs. Holloway Bros. has been accepted for the erection of the two new buildings which will form a further addition to the existing establishment at St. Martin's-le-Grand. The whole of the site formerly occupied by Christ's Hospital is to be excavated to the average depth of 26 feet so as to accommodate two underground storeys in addition to a large boiler-house, and above ground level there will be two buildings, one 201 feet long by 60 feet wide by 85 feet high for the use of the public, and the other 312 feet long by 185 feet wide by 63 feet high for use as a sorting-office. These three structures are to be built throughout on the Hennebique ferro-concrete system. The buildings were designed by Sir Henry Tanner, principal architect to H.M. Office of Works. We are informed that Mr. Mouchel, the introducer of the Hennebique system, has been appointed as consulting engineer.

THE sub-committee of the Salford Corporation charged with the consideration of the question of building a new town hall have approved a scheme which provides for the erection of a structure at a cost of 80,000*l.*, and the expenditure of a further sum of 20,000*l.* on furniture, fittings and other necessary equipments. This estimate of 100,000*l.* does not take into account the cost of the site, which was not decided on, although the neighbourhood of Peel Park was spoken of. The new building, if the recommendations are adopted, will be on the lines of and harmonise with the Technical Institute in Peel Park. It will provide accommodation for all the offices in the present town hall with the exception of the police offices and the police courts, which it is proposed shall remain in their present situation.

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THERE are many water-closets in the market which appear as if they were intended to imitate the Cataract of Lodore in a small way, for the water comes sounding and bounding and rounding, and grumbling and rumbling and tumbling, and clattering and battering as described by Southey for children. If there was an advantage to compensate for so much fuss which disturbs quiet houses and shocks modesty there would be some excuse for it; but it is all mere "sound and fury signifying nothing"—to use Macbeth's words. It is needless to enter into an explanation of the causes of a commotion which is a satire on sanitation. Many people believe it to be a sign of efficiency, but that it is a preventable evil is demonstrated by the Grundy closet, "The Only," which belongs to the Sanitary Appliances Syndicate. It has been found that under adverse conditions, such as when placed on a wooden floor in a timber building, neither filling of closet nor discharge is audible at a distance of a couple of yards. Waste of water is also prevented, although there is no lack of hydraulic force. The cost, no doubt, is above that of the ordinary closet, but one having silent automatic action and non-ball valve can be supplied for 65s. The value of the improvement can best be estimated by seeing one of "The Only" closets at the show-rooms of the syndicate, 68 Victoria Street, Westminster. Owing to the success of the syndicate it is understood that a company on a larger scale will be organised, as from the variety and importance of the appliances it should be an opportunity for profitable investment.

BUILDERS' EXCHANGE, BIRMINGHAM.

At the inauguration of the Builders' Exchange Club on the 28th ult. there were a series of demonstrations given, and at 6.30 a lecture upon "Ford Stone," by Mr. L. P. Ford, the inventor.

The president for the year is Mr. Ebenezer Parkes, M.P. for the Central Division of Birmingham, and the vice-presidents are Major J. Howard Cartland, J.P., Alderman J. J. Gittings, J.P., Councillor H. M. Grant, Messrs. A. Handley, Wm. Sapcote, Ralph Webb, J. B. Whitehouse,

F. G. Whittall, with a general committee upon which are other builders, and many of the principal firms are represented.

Vice-president Mr. W. Sapcote presided at the opening ceremony, and described the utility of the institution for architects, builders and others, and referred to the progress made under the able management of Mr. W. J. Spurrier, the founder and secretary.

The next item of the programme was a demonstration of concrete-block making by Messrs. Dunmore & Co., of Irthlingborough, Northamptonshire. During the making of six blocks a large number of architects, builders, &c., keenly followed each detail of the simple process of manufacture under the active superintendence of Messrs. W. A. T. Flitton, manager, and Thos. Lenton, secretary.

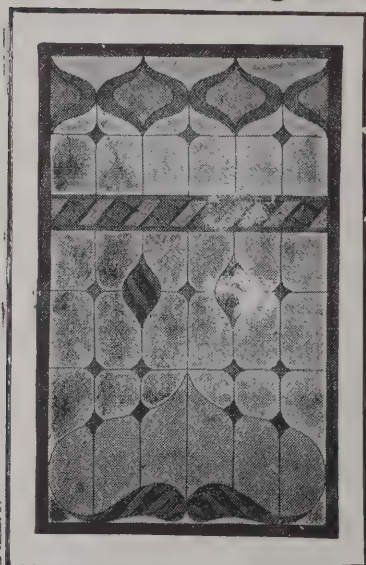
Mr. Spurrier then explained and demonstrated the valuable effect of the action of the special powers of the Chappuis daylight reflectors. These reflectors are arranged in the lower exhibition hall so that they are brought into position by a pulley and cord, and then raised to reflect the light some 40 feet. Next he illustrated the action of the Van Kannel panic revolving door, which opens immediately pressure is made against the closed door.

A very interesting demonstration was the varied uses to which the new metal ladder tape can be put. This is a Birmingham invention and production, and was used in the building of the new telephone boxes at the Builders' Exchange. Ten thousand feet of this metal ladder tape only occupies a cubic foot, and is opened out into the ladder by being pulled through a simple tool. This ladder tape is then stretched and laced on to a framing or uprights and plastered.

In the evening Mr. Ford delivered his lecture upon "Ford Stone." He gave the history of its inception and production, and a large number of lantern slides were shown of Birmingham buildings demonstrating the action of the local atmosphere on the natural stones, and he claimed that Ford stone would resist the action of the acid fumes and so prevent the disfiguring of the buildings and effect a great saving in cost.

Mr. G. H. Jack, C.E., F.G.S., was in the chair for this part of a particularly interesting evening.

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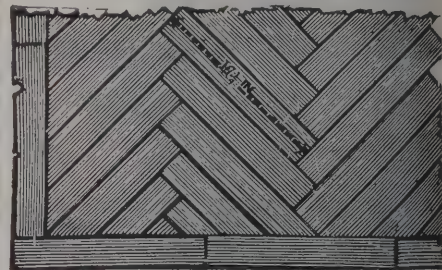
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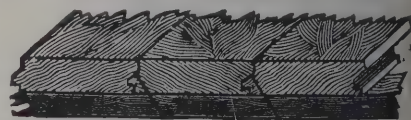
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THE HOUSING QUESTION AT COVENTRY.

THE Coventry City Council have decided upon three important recommendations by the committee appointed to consider the problem of the housing of the working classes. The first is that twenty-two tenements, on the dual tenement system, should be erected by the Corporation on the west side of Short Street, according to plans prepared by the city engineer, at an estimated cost (including that of site) of 3,930*l.*, and that application be made to the Local Government Board for their sanction to a loan of that amount. Secondly, it is proposed that the city engineer's scheme for laying out 8 acres of land owned by the Corporation at the north end of Harrow Lane, and the erection thereon of 216 self-contained houses at a total estimated cost of 49,480*l.*, be provisionally approved, subject to any arrangement to be hereafter made by the Council as to the appropriation of a portion of the land for the purpose of a public elementary school, and also subject to special recommendations being presented from the committee before any expenditure beyond that subsequently dealt with is incurred. The third recommendation is that the erection of forty-eight houses, self-contained and fronting to Narrow Lane—being part of the scheme previously mentioned—be proceeded with at an estimated cost of 10,832*l.*, and that the Local Government Board be asked to sanction a loan of that amount.

FIREMASTER M'COLL reports that the causes of the eighty-seven fires which occurred in Glasgow during the four weeks ending February 12 were:—Defective building construction, 38; dropped lights, 11; sparks from fire, 5; hot ashes, 3; goods in contact with gas jet, 2; defective electric-light installation, heat from gas stoves, vapour in contact with lights, children playing with lights and escape of gas, 2 each; friction of machinery, spark from furnace, fat boiling over, wax boiling over, incendiarism, paraffin lamp and electricity, 1 each; and unknown, 11. Thirty-seven of the fires due to defective building construction occurred in properties erected before, and one in a property erected since, the passing of the Building Regulations Act, 1892. There were three malicious alarms.

SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, March 4, Mr. J. W. Wilson, vice-president, in the chair, a paper was read on "The Connaught Bridge, Natal," by Mr. Edward J. Stead, assistant district engineer, Public Works Department, Natal, and of which the following is an abstract:—

The author opened his paper with some notes on the Umgeni river and the watershed, giving particulars of rain-fall and floods. He then gave a general description of the bridge. The total span between abutments is 922 feet 8 inches, and the number of spans is twelve. The width of the bridge between curb plates is 22 feet. The south abutment was described in detail. There are 75 piles in the foundation, of an average length of 29 feet each, which are braced together at the heads and surrounded by a mass of concrete. The arrangements for driving piles were described, and the loads on piles given, together with details of the concrete abutment and wing walls faced with masonry. The north abutment consists of a pair of cylinders similar to the piers, as owing to the nature of the foundation it was not practicable to construct a concrete abutment. The embankment is carried round the cylinders and faced with masonry pitching.

The author then described the cylinder piers and the methods adopted to sink them. The cylinders were of steel, 6 feet diameter below and 4 feet diameter above river bed. The author dealt with the difficulties experienced in connecting the cylinders of different diameters by means of a taper cylinder as provided in the design of the bridge, it being found difficult and expensive to sink cylinders exactly to meet the fixed level of taper pieces. He then described a telescopic form of joint which was ultimately adopted in all piers except the first. The cylinders were sunk to an average depth of 77 feet below river bed, the deepest cylinder being 103 feet 8 inches. The guides and staging, plant and method of sinking were dealt with, and the strata sunk through were described.

The author next gave particulars of observations taken of the resistance by surface friction on the cylinders, show-

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ing how the different strata affected the amount of loading necessary to overcome the resistance, and he added some of his opinions deduced from the observations on the works. The cylinders were filled up solid with concrete and the method of placing the concrete was described, after which the author gave details of the upper piers and bracings. During the construction of the bridge some of the cylinders were tested for their supporting power, and a description was given of two of these tests, which in each case were applied after the concrete hearing had been deposited.

The superstructure is of steel throughout; the spans are 77 feet 4 inches from centre to centre of piers; the width between the main longitudinal girders is 24 feet, and footways are carried on brackets on the outside of each main girder. Each span has eleven cross-girders, upon which are carried the corrugated decking plates. The roadway is macadamised.

Mr. Stead gave an account of the damage done by an extraordinary flood when the river rose 14 feet in twelve hours. The old low-level timber bridge was swept away and it was necessary to construct a temporary bridge, 500 feet long and 19 feet wide in seventeen spans, the bridge having been built in ten days.

Finally the author stated that the cost of the bridge was 52,000*l.* The steelwork was made by Messrs. Westwood & Co., of London, from the design of Mr. H. G. Humby, consulting engineer to the Natal Government. The contractors were Messrs. Smullins Bros. & Mansel, of Johannesburg. The time occupied in the erection of the bridge was twenty-two months, viz. from March 1904 to January 1906.

REINFORCED CONCRETE CONSTRUCTION.

THE following are the by-laws adopted for reinforced concrete construction in Toronto :—

Before permission to erect any reinforced concrete structure is issued, complete drawings and specifications must be filed with the inspector of buildings, showing all the details and the size and position of the reinforcing rods, stirrups, &c., and giving the composition of the concrete;

provided, however, that permission to erect any reinforced concrete structure does not in any manner imply the acceptance of the construction until after tests have been made of the actual construction to the satisfaction of the inspector of buildings.

The execution of concretework shall be confided to workmen who shall be under the control of a competent foreman or superintendent.

Proportion of Concrete.—The concrete shall be mixed in the proportions of not less than one part of cement, two parts of sand and four parts of clean stone or gravel, or in such other proportions as may be necessary to make the resistance of the mixture to crushing not less than 2,000 lbs per square inch after hardening for twenty-eight days.

Method of Testing.—The tests to determine this value must be made by a competent engineer, furnished by the owner of the building or by the contractor, and such tests as well as the preparing of the mixture for the same, shall be made in the presence of and under the direction of the inspector of buildings or his regularly authorised assistants. All concretework entering into the construction of any building shall be made of like material and proportioned in the same manner as the concrete in the accepted tests.

Mixing of Concrete.—The concrete used in reinforced construction must be what is usually known as a "wet" mixture, and all concrete shall be thoroughly mixed by machine to an even, uniform consistency. When a section or panel of reinforced concrete or any trussed concrete member is started, it must be finished in its entirety before shutting down for any purpose which will make a necessary delay of more than thirty minutes' duration, and any batch or remnant of concrete which has been allowed to stand until it begins to set must be at once removed, and shall not be mixed and used in any portion of the work.

Putting Concrete in Place, &c.—All concrete must be placed in the forms in its final position as quickly as possible after being properly mixed, and particular attention must be given to the thorough puddling of concrete around a reinforcement, and under the lower flanges of all beams so as to make the entire mass a monolithic body entirely free from voids or unfilled portions.

Quantity of Cement.—Only high-grade Portland cement shall be used in reinforced concrete construction. Such

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cement when tested neat shall after one day in air develop a tensile strength of at least 200 lbs. per square inch, and after one day in air and six days in water shall develop a tensile strength of at least 500 lbs. per square inch, and after one day in air and twenty-seven days in water shall develop a tensile strength of at least 600 lbs. per square inch. Provided always that a copy of a duly certified statement of the result of each such test of the cement to be used in any concrete construction shall be filed with the city architect before the said cement is used in said construction. Other tests as to fineness, constancy of volume, &c., made in accordance with the method prescribed in recognised "standard specifications for cement," shall be furnished when deemed necessary by the city architect.

Sand.—The sand to be used must be clean, sharp and coarse, perfectly free from loam or dirt.

Crushed Stone or Gravel.—The stone used in the concrete shall be clean crushed stone or gravel of a size that will pass through a $\frac{3}{4}$ -inch ring. The stone shall be fresh broken and screened, free from dust, and if gravel is used it shall be thoroughly washed.

Method of Reinforcing.—All reinforcing steel shall be completely enclosed by the concrete; the thickness of concrete on the bottom or exposed side of any reinforcing steel member of a lintel, beam, girder or column shall not be less than 2 inches, and there shall not be a less thickness than 1 inch on the bottom of the steel in a floor slab.

Thickness of Concrete between Reinforcement Rods.—The steel in lintels, beams or girders shall be disposed so that there shall not be less than one and a half times the thickness of the steel, in concrete, between the different pieces of steel of which the reinforcement is composed.

Stresses.—Reinforced concrete shall be so designed that the stresses in the concrete and the steel shall not exceed the following limits:—

Extreme fire stress on concrete in compression	500 lbs. per square inch
Concrete in direct compression	350 lbs. per square inch
Shearing stress in concrete	50 lbs. per square inch
Tensile stress in steel	16,000 lbs. per square inch
Compression in steel	12,000 lbs. per square inch
Shearing stress in steel	10,000 lbs. per square inch

Adhesion of Concrete to Steel.—The adhesion of concrete to steel shall be assumed to be not greater than the shearing strength of the concrete.

Moduli of Elasticity.—The ratio of the moduli of elasticity of concrete and steel shall be taken as 1 to 12.

Bending Moments.—The following assumption shall guide in the determination of the bending moments due to the external forces:—Lintels, beams and girders shall be considered as simply supported at the ends, no allowance being made for continuous construction over supports, and the bending moment for a uniformly distributed load on such a member shall be taken at not less than $\frac{WL}{8}$, where W is the uniformly distributed load in pounds and L is the span in inches.

Floor plates, when constructed continuous, and when provided with reinforcement at top of plate over the supports, may be treated as continuous beams, and the bending moment for a uniformly distributed load taken at not less than $\frac{WL}{10}$. But in the case of square floor plates which are

reinforced in both directions and supported on all sides, the bending moment may be taken at $\frac{WL}{20}$.

The floor plate to the extent of not more than five times the width of any beam or girder may be taken as part of that beam or girder in computing its moment of resistance.

Moment of Resistance.—The moment of resistance of any reinforced concrete construction under transverse loads shall be determined by formulas based on the following assumptions:—

(a) The bond between the concrete and steel is sufficient to make the two materials act together as a homogeneous solid. (b) The strain in any fibre is directly proportionate to the distance of that fibre from the neutral axis. (c) The modulus of elasticity of the concrete remains constant within the limits of the working stresses fixed in this by-law. (d) The tensile strength of the concrete shall not be considered.

Shearing Stress and Adhesion.—When the shearing stresses developed in any part of a reinforced concrete

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construction exceed the safe working strength of concrete as fixed in this by-law, a sufficient amount of steel shall be introduced in such a position that the deficiency in the resistance to shear is overcome. When the safe limit of adhesion between the concrete and steel is exceeded, provision must be made for transmitting the strength of the steel to the concrete to at least such an extent as will bring the adhesion to within the safe limit fixed in this by-law.

Reinforced Concrete Columns.—Reinforced concrete may be used for columns when the ratio of length to least side of diameter does not exceed twelve. The reinforcing rods shall be rigidly tied or latticed together at intervals of not more than the least side or diameter of the column. In all cases where reinforced concrete columns rest upon girders, walls or foundations or other piers either wrought or cast-iron or steel bearing plates or bases must be provided. The plates or bases to be of sufficient size to distribute the load which the column supports to such an extent that the compressive stress per square inch on the girder, wall or foundation or other pier will not be in excess of that allowed in this by-law for masonry, brickwork or the different kinds of concrete, or if the girder, wall or foundation or other pier is constructed of material the strength of which is not specially referred to in this by-law, the plates or bases must be of a sufficient size to distribute the load to such an extent that the safe compressive stress per square inch allowed by standard engineering authorities on such material will not be exceeded. The plates or bases must also be either of sufficient thickness or be braced or webbed so as to resist within the limit of stress allowed in this by-law the bending and shearing stresses to which they will be subjected by the columns, and the ends of all reinforcing rods must be milled or sawed off normal to the perpendicular axis, and each must have a full and perfect bearing on the plate or base.

Tests.—*To be Made by Contractor on Demand.*—The contractor shall be prepared to make, and shall make, load tests on any portion of a reinforced concrete construction within a reasonable time after erection, as often as may be required by the inspector of buildings. Such tests shall show that the construction will sustain a load of three times that for which it is designed without any sign of failure. No concretework shall be done in freezing weather except

where the influence of frost can be and is entirely excluded.

Hollow Concrete or Cement Blocks.—The exterior walls of buildings not exceeding 35 feet in height to the highest point of the roof, from the finished ground line adjoining the walls or surface of sidewalk, if built on the street-line may be constructed from the ground floor joist up with hollow concrete or cement blocks, provided the blocks meet the requirements hereinafter specified, and that the walls are made of the same thickness as hereinbefore called for in the tables for brick walls.

The blocks upon which joists rest are to be solid, and if special blocks are not used and blocks have to be cut to allow joists to enter the walls, the spaces in the blocks between the joists to be filled in solid with concrete of a similar description to that of which the blocks are made and all portions of the wall, also piers or buttresses which support beams or girders causing concentrated loads shall be solid blocks and of sufficient strength to sustain within the limit hereinafter specified the full load for which support is intended.

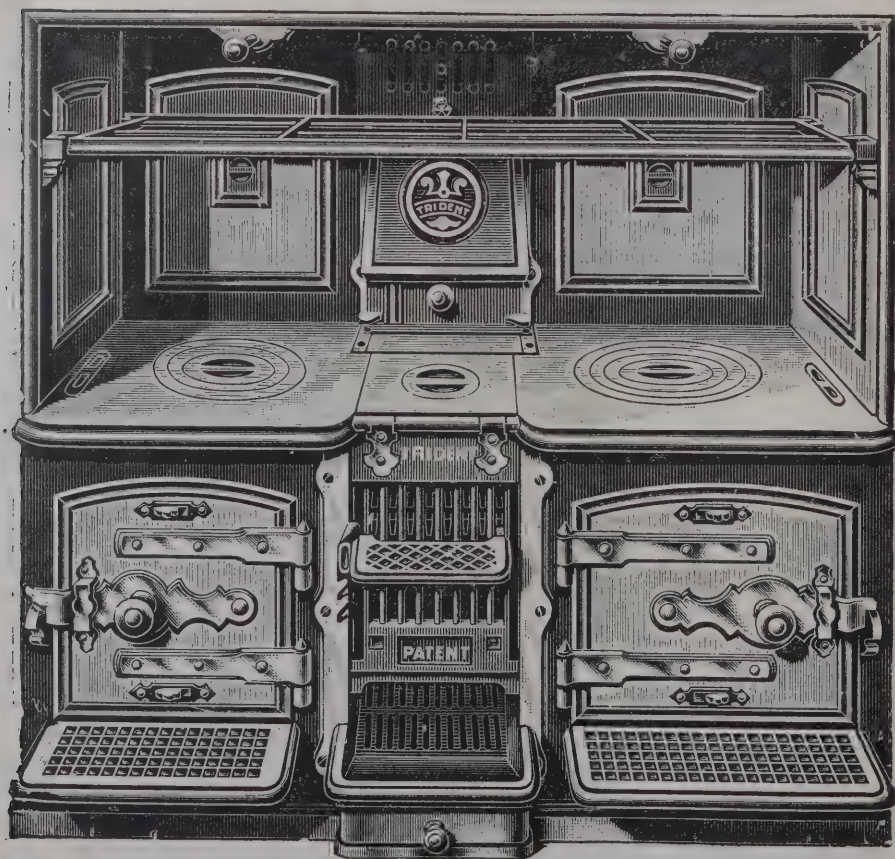
The hollow space in a block shall not exceed one-third ($\frac{1}{3}$) of the superficial area, and no block shall be used which will at the age of twenty-eight (28) days crush at less than one thousand (1,000) lbs. per square inch of solid area, and no block in a wall, pier or buttress shall be subjected to a greater stress than one hundred and fifty (150) lbs. to the square inch of available effective section.

No concrete or cement blocks shall be used in the construction of any building until they shall have attained the age of at least three (3) weeks, and all blocks shall be made from Portland cement of a similar quality in all respects to that hereinbefore specified for under the title of "reinforced concrete construction."

The manufacturer or user of any such blocks shall before commencing the erection of a structure with them submit a sample to the inspector of buildings for approval, and at their own expense and under the supervision of the said inspector or his representative have, at any and all times, such tests made as may be required.

No concrete or cement blocks shall be used in the construction of any structure until they shall have been approved of and accepted by the inspector of buildings.

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THE
Architect and Contract Reporter.

FRIDAY, MARCH 15, 1907.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

DURHAM.—March 15.—The Durham County Education Authority invite competitive plans for a Secondary school at Bishop Auckland. Premiums of 20l. and 10l. will be paid for the plans placed second and third respectively. Mr. J. A. L. Robson, secretary for higher education, Shire Hall, Durham.

FAILSWORTH.—March 28.—The District Council invite designs for a library (cost not to exceed 3,000l.) in Oldham Road. Premiums of 20l. and 10l. Deposit one guinea. Mr. H. C. Broome, clerk, Council Offices, Failsforth.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

ALDERMAN'S GREEN.—March 22.—For proposed alterations and additions to premises at Alderman's Green, near Coventry. Mr. T. F. Tickner, architect, High Street Chambers, Coventry.

AMBLESIDE.—March 28.—For the whole of the various trades and works in connection with grammar school. Messrs. Walker, Carter & Walker, architects and surveyors, Windermere.

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BLACKBURN.—March 18.—For the erection of offices, van shed, &c., in Blakey Street. Messrs. Simpson & Duckworth, architects, Richmond Chambers, Blackburn.

BORDON.—March 20.—For the erection of barrack expense stores at Bordon, Hants, in the Aldershot district, Woolmer sub-district. Mr. Harry B. Measures, director of barrack construction, War Office, Atterbury Street, Grosvenor Road, S.W.

BOURNBROOK.—March 20.—For a tower 300 feet high at the new university buildings at Bournbrook, Birmingham. Deposit 2*l.* 2*s.* Sir Aston Webb, R.A., and Mr. E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

CARDIFF.—March 28.—For the erection and completion of a manual instruction centre at Splott Road Council school, Roath. Mr. W. Harpur, M.I.C.E., city engineer, City Hall, Cardiff.

CHELTEMHAM.—March 16.—For building shop and dwelling-houses at Bishop Street and Henrietta Street. Mr. Daniel Conroy, architect, 21 Shipquay Street, Londonderry.

CHESTER.—March 20.—For public elementary school for 350 boys, to be erected in George Street, Chester. Deposit 1*l.* Mr. H. Beswick, architect, Newgate Street, Chester.

COCKERMOUTH.—March 18.—For erection of a lean-to building at the rear of Corporation offices in Stanley Street. Mr. George Keyte, Town Hall, Workington.

DONCASTER.—April 3.—For the erection of a wing at the Yorkshire Institute for the Deaf, Doncaster. Deposit 1*l.* 1*s.* Mr. E. Hall Ballan, architect, 19 and 20 Baxter Gate, Doncaster.

DORCHESTER.—April 3.—For building three cells at the town police station. The County Accountant's Office, Dorchester.

DURHAM.—March 19.—For alterations to schools at Cox Green, Woodland, and High Spen. County Education Committee's Architect, Shire Hall, Durham.

DURHAM.—March 21.—For a house proposed to be built at the top of Western Hill. Names to 5 Silver Street, Durham.

ERDINGTON.—March 26.—For the erection of a west wing to the No. 2 north pavilion at the workhouse, Erdington, near Birmingham. Send names and addresses to Mr. John

North, clerk, Union Offices, Vauxhall Road, Birmingham, by noon on March 18. Deposit 5*l.* Messrs. C. Whitwell Son, architects, 3 Newhall Street, Birmingham.

FALKIRK.—March 19.—For the mason, joiner, slate plumber, plasterer, heating, glazier, tiler and painter's work of new infant department at Comely Park school. Messrs. A. & W. Black, architects, Falkirk.

GLOUCESTER.—March 20.—For the erection of proposed schools in Denmark Road. Deposit 3*l.* Send names to Mr. Walter B. Wood, architect, 12 Queen Street, Gloucester, by March 20.

HANDSWORTH.—March 19.—For building and other work at the tramway depôt, Birchfield Road:—(A) for raising and reconstructing iron roof of the car-shed, rebuilding walls, erecting steel stanchions and other work; (B) for drainage, alterations to inspection pits and other work. Mr. H. Richardson, A.M.I.C.E., surveyor, Council House, Handsworth, Birmingham.

HEMEL HEMPSTEAD.—March 27.—For the building work in connection with the construction of an elevated water tower at Felden, near Boxmoor. Deposit 5*l.* 5*s.* Mr. Lovell Smeathman, town clerk, Hemel Hempstead.

HERTFORD.—March 18.—For the erection of form-room and dormitory annexes at Haileybury College. Send name to Messrs. John W. Simpson & Maxwell Ayrton, architects, 3 Verulam Buildings, Gray's Inn, London, W.C.

IRELAND.—March 25.—For building a parish church and presbytery at Belgooly, Cork. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

IRELAND.—March 27.—For building villa at Victoria Park, Londonderry. Messrs. R. E. Buchanan & Co. architects, Castle Street, Londonderry.

KEIGHLEY.—March 27.—For the erection of a fence wall at Cophurst. Mr. Walter Fowlds, borough engineer, Keighley.

LEEK.—March 21.—For extensions and additions to the isolation hospital, Ashbourne Road. Deposit 2*l.* 2*s.* Mr. W. E. Beacham, surveyor, Town Hall, Leek, Staffs.

LEE.—March 22.—For the erection of conveniences and a dressing-room at Northbrook Park, Bromley Road, Lee, Kent. Mr. G. L. Gomme, clerk, County Hall, Springfield Gardens, S.W.

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LEYLAND.—March 23.—For reconstructing a road-bridge over Mill Brook, in Slater Lane. Mr. Wilkinson, surveyor to the Council, Public Hall Buildings, Leyland, Lancs.

LONDON.—March 26.—For repairs and alterations to 164 Denmark Hill, Ruskin Park. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

MANCHESTER.—March 20.—For the erection of the City Road municipal school, Hulme, Manchester. Deposit 2½ 2s. The Education Offices, Deansgate, Manchester.

MANNINGHAM.—March 16.—For the re-erection of a box-works at Cornwall Terrace, Manningham, Bradford. Mr. Benjamin Dobson, architect, 5 Charles Street, Bradford.

MARAZION.—April 5.—For the erection of a police constable's dwelling-house at Marazion, Cornwall. Mr. Oliver Caldwell, architect, County Offices, Bodmin.

MATLOCK BATH.—For a pavilion to be erected on the promenade, Matlock Bath. The materials of external walls to be of stone, brick, iron, glass, concrete or other approved, or a combination thereof. Deposit 1½ 1s. Cost not to exceed 2,000l. Mr. Wm. Jaffrey, surveyor, Council Chambers, Matlock Bath.

MITFORD BRIDGE.—March 23.—For widening the Mitford bridge, Northumberland. Mr. J. A. Bean, county surveyor, the Moothall, Newcastle-on-Tyne.

NEWARK.—March 18.—For rebuilding a bridge on the Swinderby Road, North Collingham. Mr. R. Oakden, jun., surveyor, 17 Winchelsea Avenue, Newark.

NEWCASTLE-ON-TYNE.—April 13.—For construction of a coal shed at the city asylum, Coblodge. Deposit 2½ 2s. The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

NEWCASTLE-UPON-TYNE.—March 16.—For the construction of an underground public convenience at the corner of Church Street and Station Road. The Sanitary Committee, Committee Clerk's Office, Town Hall, Newcastle-upon-Tyne.

OVENDEN.—March 28.—For the various trades in erection of a Sunday school at Ovenden. Messrs. Chas. F. L. Horsfall & Son, architects.

PENDLETON.—April 8.—For erecting a school to accommodate about 1,120 children at Halton Bank, Pendleton,

Salford. Deposit 1½ 1s. Mr. John H. Woodhouse, architect, 100 King Street, Manchester.

RADSTOCK.—March 16.—For additions and improvements to the Radstock Council school, Somerset. Mr. W. F. Bird, Midsomer Norton.

ST. AUSTELL.—March 18.—For inserting new shop front, enlarging shop, &c., to premises, Fore Street. Mr. B. C. Andrew, architect, Biddicks Court, St. Austell, Cornwall.

SAXMUNDHAM.—March 21.—The East Suffolk county education committee invite separate tenders for erection of the following:—(1) A new infants' Council school at Dell Road, Oulton Broad; (2) a special subjects centre on part of the Council school playground at Saxmundham. Mr. T. E. Key, architect, Aldeburgh.

SCOTLAND.—March 18.—For mason, carpenter, slater, plasterer, plumber, painter and glazier, and iron beamwork of additions to Buckie public schools. Mr. John Macdonald, clerk to the Ruthven School Board, Buckie.

SHERBURN HILL.—March 19.—For erection of the Sherburn Hill school for about 250 scholars. The County Education Committee's Architect, Shire Hall, Durham.

SHILDON.—March 19.—For the erection of a school at Shildon for about 1,100 scholars:—(1) Below ground-floor levels; (2) above ground levels (including latrines, play-sheds, playgrounds, boundary-walls, &c.). The County Education Committee's Architect, Shire Hall, Durham.

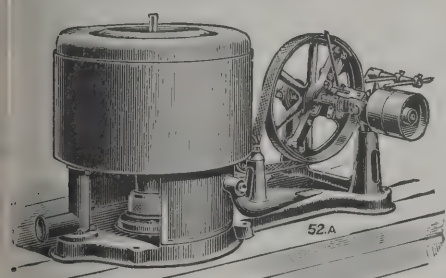
SKIPTON.—March 20.—For the mason, joiner, plumber, painter and slater's work required in erection of five cottages in Otley Road. Mr. John Parkinson, 22 Belle Vue Terrace, Skipton.

STAINLAND.—March 16.—For the mason, carpenter, joiner, plumber, glazier, plasterer, slater and painter's trades in erection of six houses at Stainland, Yorks. Mr. H. Thompson, architect, Southgate Chambers, Elland.

WALES.—March 16.—For the erection of fifty houses at Twynrodyn, Merthyr, and for the construction of two streets in connection therewith, including drainage works. Deposit 1½ 1s. The Borough Surveyor, Town Hall, Merthyr Tydfil.

WALES.—March 18.—For the following works, for the Pontypridd Urban District Council:—(1) Supply and erec-

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tion of steelwork in connection with the construction of a bridge over the river Taff at the Berw, Pontypridd; (2) masonry abutments, fence walls and other works in connection with above bridge; (3) supply and erection of steelwork in connection with the construction of a bridge at Factory Lane, Graig, Pontypridd; (4) masonry abutments, fence walls and other works in connection with above bridge. Deposit 1*l.* 1*s.* each contract. Mr. P. R. A. Wiloughby, engineer and surveyor, Municipal Buildings, Pontypridd.

WALES.—March 20.—For the erection and completion of a Wesleyan chapel, school, classroom, &c., at Llandudno. Deposit 3*l.* 3*s.* Mr. W. Beddoe Rees, 3 Dumfries Place, Cardiff.

WALES.—March 18.—For the erection of chapel and schoolroom for the English Congregational church, Manselton, Swansea. Deposit 1*l.* 1*s.* Messrs. Dyer, Son & Winterburn, architects, Northampton.

WALES.—March 20.—For the erection and completion of a Wesleyan chapel, school, classroom, &c., at Llandudno. Deposit 3*l.* 3*s.* Mr. W. Beddoe Rees, 3 Dumfries Place, Cardiff.

WALES.—March 21.—For the erection of fifty houses and the construction of roads and surface-water drains on the Pantydrainen Estate, Onllwyn, near Neath. Mr. T. E. Richards, architect and surveyor, Market Square Chambers, Pontypridd.

WALES.—March 23.—For the rebuilding of (1) Cross Keys hotel, Briton Ferry; (2) Eaglesbush inn, Melyncrythan, Neath. Mr. J. Cook Rees, architect, Neath.

WALES.—March 23.—For extensions to the Brynmawr County schools. Deposit 2*l.* 2*s.* Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—March 30.—For pulling-down and rebuilding business premises in Market Square, Pontypridd. Messrs. W. M. Lewis & Morgan, architects and surveyors, Market Square, Pontypridd, or 55 Dunraven Street, Tonypandy.

WARMINSTER.—March 16.—For building additions to the Buries, Warminster. Messrs. Long & Glass, architects, 53 Market Place, Warminster.

WESTBOURNE.—March 19.—For the erection of office and other improvements at the Westbourne Council boy school, Westbourne, Sussex. Mr. H. W. Stringfellow, architect, Emsworth.

WEST MALLING.—March 26.—For the erection of a caretaker's cottage at the sewage farm. The Sanitary Surveyor, The Limes, West Malling.

WICKFORD.—March 25.—For the erection of a new classroom and other alterations and additions to the Wickford school, Essex. Mr. F. Whitmore, architect, 73 Duke Street, Chelmsford.

WRANGLE.—March 27.—For an addition, alterations and repairs to the Wesleyan chapel, Wrangle, and also for seating in the chapel. Mr. Jas. Rowell, architect and surveyor, Church Lane, Boston.

In connection with the Grand National steeplechase the Great Central Company in past years have made a new departure by arranging to run special express trains including luncheon on the outward journey and tea and dinner on the return, for a most moderate inclusive fare and with such marked success that we notice other companies are following their enterprising example. We observe that the Great Central Company's arrangements for the forthcoming meeting comprise a first-class train leaving London (Marylebone) at 7.25 A.M. on Friday March 22, the fare of 36*s.* 6*d.* including luncheon on the outward journey and tea and dinner on the return. Another train conveying third-class passengers only departs from Marylebone at 7.18 A.M., and the fare of 20*s.* include luncheon and dinner on the train. Accommodation will be reserved on notification being sent to Mr. Monckton, Marylebone station, and the tickets including meals can be had at any time from the Marylebone booking office. On Wednesday, March 20, a special dining-car excursion will be run to Southport, with bookings to Liverpool for three or four days, leaving Marylebone at 1 P.M.; return fare 20*s.*

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TENDERS.

ALDERSHOT.

For the erection of first portion of Catholic soldiers' institute, South Camp. Mr. W. BEVAN, architect, 90 Parliament Chambers, Westminster.

Longley & Co.	£1,474	0	0
Salter	1,459	0	0
Lovell & Son	1,426	0	0
Martin, Wells & Co.	1,400	0	0
Fryer & Co.	1,390	0	0
Cockerell	1,363	16	0
Tompsett & Co.	1,350	0	0
Cæsar Bros.	1,320	0	0
Jenkins & Sons	1,297	0	0
Kemp	1,274	0	0
Lawrence	1,239	0	0
SNUGGS, Aldershot (accepted)	1,227	0	0
Hughes	1,189	0	0

BOSTON.

For repair of roof of chancel in parish church.

SHERWIN & SON, Boston (accepted)	£1,437	0	0
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BRISTOL.

For alterations and additions to the workshop at the Day Industrial school.

Denby & Co.	£239	0	0
Hawley	208	13	3
Walters & Son	207	0	0
Jones & Co.	192	0	0
Downs & Son	190	0	0
Roe	190	0	0
Neale	190	0	0
Clark & Sons	180	0	0
PREECE, Bristol (accepted)	160	0	0

DUBLIN.

For the erection of eleven labourers' cottages in Blackhorse Lane.

CLARKE, Clanbraesil Street (accepted)	each	£136	0	0
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For the erection of three labourers' cottages in Baldoyle.

LACY, Baldoyle (accepted)	each	£142	0	0
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CHELTENHAM.

For erection of house in Hall Road, Leckhampton. Mr. THOMAS MALVERN, architect, Cheltenham.

Billings & Sons	£836	0	0
Burrows	699	10	0
Bendall & Sons	679	0	0
Saunders & Sons	671	0	0
Drew	666	9	9
Wilson	641	10	0
STRANGE, Cheltenham (accepted)	610	0	0

For alterations to premises in Winchcombe Street. Mr. THOMAS MALVERN, architect, Cheltenham.

Wilson	£655	0	0
Malvern & Son	649	0	0
Mealing & Co.	640	0	0
BILLINGS & SONS, Cheltenham (accepted)	563	0	0

CHINGFORD.

For making-up, paving, sewerage, kerbing, lighting, &c., Alpha Road, Chivers Road and Ainslie Road West Chingford, Essex. Mr. J. T. GRIFFIN, surveyor.

Wilson	£2,032	3	0
Adams	1,982	0	0
Jennings & Grenfell	1,952	0	0
Parsons & Parsons	1,740	0	0
Seymour & Hanson	1,736	0	7
W. & C. FRENCH, Buckhurst Hill (accepted)	1,653	0	0

GLOSSOP.

For the erection of convalescent and nurses' home. Messrs. BULMAN & VINYCOMB, architects, 67 and 69 Chancery Lane, W.C.

CLAYTON BROS., Poynton, Stockport (accepted)	£5,836	0	0
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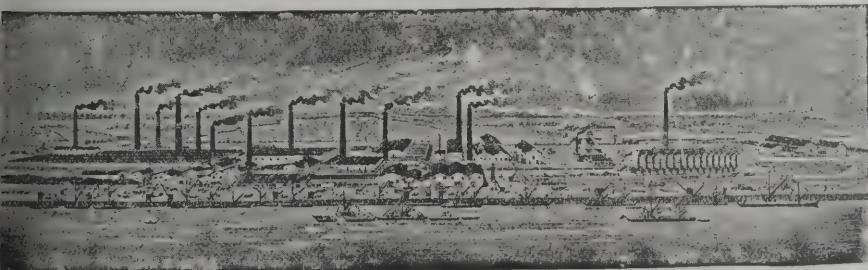
HERNE BAY.

For cleaning and painting and other works at St. Anne's House, for Metropolitan Asylums Board. Mr. W. T. HATCH, engineer.

Browning	£958	0	0
Kazak	934	12	0
Turtle & Appleton	914	0	0
Miskin, Ltd.	908	0	0
Line	888	0	0
Hussey, Kensington, S.W. (accepted)	717	0	0

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HORNSEA.

For construction of rifle range for the 1st V.B. East Yorkshire Regiment. Mr. A. EASTON, architect, Hull.

Walls & Thomas	£1,114	16	8
Robinson	930	0	0
Thacker	800	0	0
Stone & Atkin	769	7	3
Levitt	719	17	3
Curtis	715	2	0
Medforth	695	0	0
Pickering	647	3	2
Good & Sons	634	15	0
Waghorn	590	0	0
Kettlewell	499	0	0

LEICESTER.

For large factory additions. Mr. J. A. L. BEASLEY, architect and surveyor, 35 Friar Lane, Leicester. Quantities by the architect.

Herbert & Sons	£2,266	0	0
Kellett & Son	2,130	0	0
Chapman	2,063	0	0
Wright	2,048	0	0
Bradshaw Bros.	1,994	7	6
Cole	1,975	0	0
Hanson	1,961	0	0
HARDINGTON & ELLIOTT, Leicester (accepted)	1,920	0	0
W. & H. Foulds	1,901	14	0

LONDON.

For about 217 yards run of road widening and construction, together with 9-inch soil and surface-water sewers, Gainsborough Road, North Finchley. Mr. C. J. JENKIN, engineer.

Muirhead & Co.	£1,599	10	5
Killingback & Co.	1,328	1	4
Adams	1,298	0	3
Parry & Co.	1,278	2	5
Griffiths & Co.	1,266	0	9
Rogers & Co.	1,243	0	0
Amy	1,201	13	9
Free & Sons	1,200	19	7
Iles	1,180	0	0
Bell & Co.	1,147	0	0
Engineer's estimate	1,160	7	11

LONDON—continued.

For steam and water-pipe work, &c., at the workhouse Homerton.

Fraser & Son	£647	0
Stewarts & Lloyds	559	0
Boaz & Co.	540	0
Cannon & Hefford	490	0
Moorwood	470	0
Benham & Sons	413	0
Cannon & Sons	397	0
Potter & Sons	328	0
Le Bas & Co.	325	0
Spencer	325	0
J. & F. May	303	0
Bradley	299	0
Wilson & Co.	290	0
AITON & Co., Hythe Road, N.W. (accepted)	287	0
Dawson & Co.	287	0

For about 230 yards run of road-widening and construction in Hendon Lane, Finchley. Mr. C. J. JENKIN, engineer.

Paterson	£2,266	6
Williams	2,209	11
Killingback & Co.	2,153	16
Amy	1,851	0
Adams	1,832	9
Parry & Co.	1,823	4
Free & Sons	1,750	0
Rogers & Co.	1,724	0
Iles	1,620	0
Engineer's estimate	1,812	12

For the conversion of the present Caledonian hotel, Robert Street, Adelphi, into offices and chambers, for Mr. George James Drummond. Messrs. HAYWARD & MAYNARD, architects, 20 John Street, Adelphi.

McCormick	£11,370	0
Carmichael	11,190	0
F. & H. F. Higgs	11,040	0
Macey & Sons	10,893	0
WALLER & Co. (accepted)	10,640	0

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LONDON—continued.

LONDON—continued.

For the erection of a school on the Rosendale Road site, Wandsworth, for 390 infants.

Lathey Bros.	£7,112	0	0
Garrett & Son	7,042	0	0
Downs	6,947	0	0
Holloway	6,918	0	0
J. Smith & Sons	6,881	0	0
Marsland & Sons	6,870	0	0
Appleby & Sons	6,860	0	0
Holliday & Greenwood	6,774	0	0
W. Smith & Son	6,672	0	0
Triggs	6,596	0	0
Johnson & Co.	6,550	0	0
Leng	6,514	0	0
Rice & Son	6,441	0	0
J. & C. Bowyer	6,386	0	0
Whitehead & Co., Portland Place North, Clapham Common (recommended)	6,327	0	0
Architect's estimate	6,503	0	0

For repairs to roads at the Brook fever hospital, Woolwich. Mr. W. T. HATCH, engineer-in-chief.

Tilbury Contracting and Dredging Co.	£1,272	19	4
Adams	878	0	0
Wood & Sons	815	0	0
Miskin, Ltd.	720	0	0
Griffith & Co.	639	15	4
Grounds & Newton	583	0	0
Mowlem & Co.	554	0	0
WOODHAM & SONS, Catford, S.E. (accepted)	473	0	0

For the re-erection of shop and premises at No. 73 George Row, Bermondsey, for Mrs. Lillico. Messrs. DUNSMORE BROTHERS, architects, 1 Garthorne Road, Honor Oak Park, S.E.

Buller	£476	0	0
Nash	398	0	0
Potton & Son	394	0	0
White	359	0	0
Harrison	310	0	0
Gathercole Bros.	300	0	0

For painting and cleaning London County Council schools.

Groves, Adys Road, Dulwich	£416	0	0
Sayer & Son, Westmoreland Road, Walworth	391	0	0
Parsons, Boundary Lane, Camberwell	368	5	9
Groves, Glengall Road, Poplar	365	0	0
Kearley, Harwood Road, Fulham	346	0	0
Staines & Co., Shepperton Road, Islington	345	0	0
Brown & Sons, Edinburgh Road, Kensington	329	11	0
Bonneau, Vittoria Place, Islington	326	15	0
Kearley, Cook's Ground, Chelsea	322	0	0
Howie, Mantle Road, Deptford	316	0	0
Porter, Hindle Street, Hackney	308	5	0
Richards, Latchmere, Battersea	303	5	0
Proctor & Son, Church Manor Way, Woolwich	299	0	0
Woolaston & Co., Marner Street, Bow and Bromley	294	0	0
Randall & Ball, Grafton Road, Islington	280	0	0
Chappell, North End Road, Fulham	275	0	0
Barrett & Power, Central Street, Finsbury	265	0	0
Bonneau, Orchard Street, Hackney	232	0	0
Brown & Sons, Droop Street, Paddington	224	15	0
Howie, Wickham Lane, Woolwich	219	0	0
Ford, Church Street, Kennington	209	0	0

For the supply of 10,000 feet of cope iron for the protection of the stall divisions at fire stations.

Gospel Oak Galvanising Co.	£95	0	0
Try & Son	83	6	8
St. Pancras Ironwork Co.	70	0	0
Marshall & Hatch, Ltd., 74 to 80 Bingfield Street, N. (recommended)	55	16	3

For the re-erection of shop and premises, Bermondsey. Messrs. DUNSMORE BROS., architects.

Buller	£476	0	0
Nash	398	0	0
Potton & Son	394	0	0
White & Co.	359	0	0
Harrison	310	0	0
Gathercole Bros.	300	0	0

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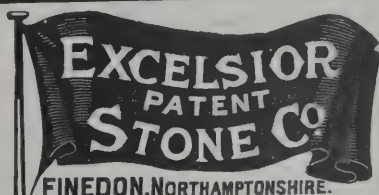
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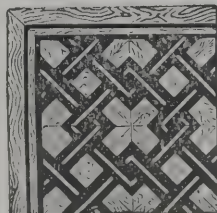
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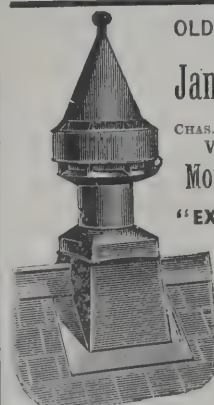
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For reconstruction of Millwall Pier.

Tilbury Contracting and Dredging Co.	£802	7	0
Chafen & Newman	771	10	0
Piper	706	0	0
CAMPBELL & HANDMAN, New Broad Street, E.C. (accepted)	698	3	7

For providing and fixing two independent boilers and low-pressure hot-water apparatus at the Alverton Street school, Deptford.

Paragon Heating Co.	£863	0	0
Wippell Brothers & Row	707	0	0
Defries & Sons	707	0	0
Palowkar & Sons	688	0	0
Cannon & Sons	680	10	0
Cannon & Hefford	679	0	0
G. & E. Bradley	651	10	0
Brightside Foundry and Engineering Co.	651	0	0
Yetton & Co.	640	0	0
Kite & Co. 132 Euston Road (recommended)	580	0	0
Architect's estimate	580	0	0

LUTON.

For paving and other works, Tennyson Road. Mr. S. F. L. Fox, surveyor.

Free & Sons	£542	9	6
Patent Victoria Stone Co.	527	8	3
POWDRILL, Luton (accepted)	499	7	5

STROUD.

For improvements at Merry Walks. Mr. G. P. MILNES, surveyor.

Gardner & Son	£601	16	6
BAXTER & SONS, Stroud (accepted)	562	0	0

For lining swimming-baths with glazed brick sides and tiled bottom with callendrite lining.

Callendar & Co.	£274	5	6
Baxter & Sons	192	0	0
Gardner & Son	189	7	0

REDDITCH.

For the provision of a refuse destructor.

HEENAN & FROUDE, Manchester (accepted)	£2,174	0	0
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WAKEFIELD.

For erecting four houses on St. John's estate. Mr. A. HART architect, Wakefield.

Accepted tenders.

Flower Bros., excavator, bricklayer and mason	£452	18	8
Loyd, carpenter and joiner	176	10	9
Thresh, plumber	60	0	0
Sedgwick, slater	37	5	0
Platts, plasterer	28	15	0
Naylor, painter	9	5	0

WALTHAMSTOW.

For the construction of new road and road bridge, Beech Hall estate. Messrs. STANLEY PARKES & BROWN, surveyors, Tottenham.

Wilkinson & Co.	£1,246	0	0
Soan	1,186	13	0
Adams	1,152	4	10
Catley	1,080	19	6
Jackson	1,061	0	0
Bloomfield	1,060	2	4
Hoffman	1,055	13	7
Grounds & Newton	1,050	8	11
Wood & Son	1,039	18	11
Kavanagh & Co.	1,017	0	0
Waghorn	1,012	1	8
Wilson	969	0	0
Trueman	947	0	0
Bell & Son	941	0	0
French & Co.	917	0	3
F. G. Porter	916	4	11
J. C. Porter	829	0	0
EDGE & Co., Stalybridge (accepted)	818	13	9

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Gymnastic Section Book 2, Information and Plans Gratis.

WATFORD.

For laying about 370 yards of 9-inch and 6-inch pipes, together with manholes, in Aldenham. Mr. ERNEST LAILEY, engineer, Watford.

Pedrette	£583	0	0
Free & Sons	446	1	9
Cousins	441	14	6
Mann	392	15	5
Goodchild & Jeffery	390	0	0
Williams	388	16	4
Swaker	380	0	0
Brown	370	0	0
Bailey & Sons	365	0	0
Williamson	359	18	9
BRACEY & CLARKE, Watford (accepted)	362	0	0

WELLINGBOROUGH.

For erection of post-office, for H.M. Office of Works, &c.

Colborne	£5,087	12	5
Smith	4,382	0	0
Barnsley & Sons	4,188	0	0
Parker & Son	4,278	0	0
Hacksey Bros.	4,129	0	0
Fish & Sons	3,979	5	0
Stevens	3,959	18	0
Drever	3,930	0	0
Henson & Son	3,861	0	0
Webster	3,806	19	0
Archer	3,689	0	0
Kettering Co-operative Builders	3,695	0	0
Gent & Middleton	3,670	0	0
Berril & Green	3,650	0	0
BROWN & SONS (accepted)	3,578	17	6
Goodman & Murkett	3,230	0	0

WORTHING.

For the erection of laundry buildings at Swandean.

Crane	£494	2	1
Moat	442	0	0
Herbert	433	0	0
J. A. East	415	0	0
W. J. East	340	0	0
Selby	337	0	0
BAKER, jun., Worthing (accepted)	319	10	0

WOODFORD.

For rebuilding stabling, skittle-alley and other works at the Horse and Well, Woodford, Essex. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Willmott	£1,233	0	0
Clemens Bros.	1,060	0	0
Osborn & Sons	1,014	0	0
C. & W. Crampton	968	0	0
Sheffield Bros.	965	0	0
S. Blow & Co.	960	0	0
Crisp & Jones	925	0	0
Rowley Bros.*	837	0	0

* Accepted as modified.

WORCESTER.

For the extension of the Victoria Institute. J. & A. BRAZIER, Bromsgrove (accepted) £4,825 0 0

For the erection of warehouse and offices. Messrs. J. W. SIMPSON & MAXWELL AYRTON, architects, Gray's Inn, W.C. Quantities by Messrs. G. M. SIMPSON & NORMAN EVILL.

Johnson & Co.	£15,472	0	0
Willecock & Co.	15,429	0	0
Espley & Co., Ltd.	15,390	0	0
Wilkins & Sons.	15,273	0	0
Collins & Godfrey	14,995	0	0
Sapcote & Son	14,959	0	0
Parnell & Son	14,945	14	0
Treasure & Son	14,790	0	0
Whitehouse & Son	14,773	0	0
Walters & Son	14,160	0	0
Woods & Son	13,985	0	0
Dallow & Co.	13,870	0	0
Jarvis & Son	13,850	0	0
Lee & Son	13,798	0	0
Moss & Son	13,791	16	7
Norman	13,703	10	6
Bromage & Evans	13,651	0	0
Crane	13,647	3	2
J. & A. Brazier	13,586	0	0
Hopkins	13,570	0	0
Dickinson	13,490	0	0

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For the erection of the proposed mental-wards and receiving-wards at the workhouse.

Smith & Son	£3,085	0	0
Flaxman	2,950	0	0
Norden	2,855	0	0
Elvy & Son	2,736	0	0
Hammond & Son	2,725	0	0
Moss & Co.	2,720	0	0
Woodhams	2,665	0	0
Leaney	2,660	0	0
Whur & Campkin	2,650	0	0
Frank Davey	2,589	0	0
Burrill	2,560	0	0
Whur	2,517	0	0
Westgate	2,508	0	0
W. E. Davey	2,478	16	4
F. & E. DAVEY, Southend (accepted)	2,437	0	0

CORRESPONDENCE.

A Durable Building Stone.

SIR,—I have been interested in reading the letters in your last issue. I am not personally acquainted with the Hollington stone, although I believe it to be a good stone for artistic effect, but I have doubts about its use for London. Personally, I have found nothing to equal Portland. I have used in one or two instances a Yorkshire stone and have found it satisfactory; but for all the satisfaction given I am still of the opinion that for the London atmosphere Portland is the best stone for exterior use.

Faithfully yours,

THIRTY-ONE YEARS' (LONDON) EXPERIENCE.

SIR,—Regarding your interesting correspondence as to a durable building stone for thickly populated districts, neither of the replies this week are very convincing. The clerk of works recommends Hollington stone because it has lasted so well in country churches, but although Hollington may be very good, there are many stones one can say that of. According to Professor Church in your

current issue, "London discharges a million tons of oil of vitriol into the air every year," which certainly ought to test anything, and I do not think that anyone can mention a better stone to stand it than good brown Portland. A present I every day see and admire the Mansfield stones in an old Norman minster, with the masonry in a splendid state of preservation, but it would not be the case if there were many acids floating about in the air.—Yours faithfully

ANOTHER CLERK OF WORKS.

SIR,—As Mr. Tunstall's letter of the 8th inst. is likely to convey the impression to your readers, and also to "J. J. M.," that the only quarry able to supply mottled Hollington is Messrs. Stevenson's, I take the liberty of correcting same. There are several others, one of the largest being Messrs. J. & W. Fielding, of Alton, Staffs who are owners of quarries at Alton and Hollington, and numerous buildings in the Black Country are erected out of their stone.

If "J. J. M." is interested in the quality of his steps and landings I should most certainly recommend him to use Messrs. G. Armitage & Sons', Ltd., of Robin Hood, near Wakefield, "Armistone," as being one of the hardest and most durable of all York stones. The reason I mention step stones and landings is that, owing to the open specification so often given in the quantities for these—viz. "hard York stone to be laid on its natural bed," &c.—contractors are compelled to estimate and also use (unless the architect specifies particular quarries) the softest hard York they can procure, which in a great many cases is absolutely unsuitable for the job, especially where there is heavy traffic. This is as much the fault of the quarry-owners as the architect. The former in only a few cases ever take the trouble to put an architect in touch with the various stones they quarry. Now Messrs. G. Armitage & Sons, Ltd., have gone to the trouble of getting over this difficulty by issuing to architects a box of York step stones of different degrees of hardness, with full particulars as regards their uses, and I am certain if "J. J. M." were to write to this firm they would forward him one, which, as regards the York stone trade, is an education in itself.

GEORGE BOOKER,

Driffold, Sutton Coldfield:

Quarry agent.

March 13, 1907.

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NEW PREMISES FOR THE SCOTTISH PROVIDENT INSTITUTION,
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"FAITH"—A WINDOW IN THE TEMPORARY CHURCH OF
ST. BARNABAS, MITCHAM.

ST. JUDE'S PAROCHIAL BUILDINGS, NEWCASTLE-ON-TYNE.

PLAN INDICATING POSITION OF ROOMS IN PROPOSED LONDON
COUNTY HALL.

CATHEDRAL SERIES.—CARLISLE: EXTERIOR OF CHOIR FROM
SOUTH-WEST.

VARIETIES.

Arrangements for the International Building Trades Exhibition are now complete. The opening ceremony will be performed at 12 noon on Saturday, April 6, by the right Hon. the Lord Mayor, Sir William Treloar, the vote of thanks to whom will be moved and seconded by Sir John Webb, R.A., and Mr. F. L. Dove, L.C.C., president of the Institute of Builders, respectively. The exhibition will be open from 10 A.M. to 10 P.M. every week day from Saturday, April 6, to Saturday, April 20, inclusive. A phenomenal success is now assured, for the whole of the Olympia will be taken up by the exhibits, gallery, main hall and annexe having been allotted to their fullest capacity.

The last of the present series of Carpenters' Hall lectures takes place on Thursday evening, the 21st inst., when Professor W. R. Fisher, B.A., will discourse on "Coppice-with-standards and larch woods."

The Harrogate Town Council have resolved to apply for a loan of 34,500*l.* for completing the main drainage scheme at Harrogate. It was resolved to ask the sanction of the Local Government Board to a further loan of 1,000*l.* for completing the Masham waterworks.

An official communication has been received at Portsmouth from the Local Government Board, giving the permission of that authority for the Town Council to borrow the sum of 70,000*l.* for the municipalisation of the South Parade pier.

Efforts are being made to resuscitate the Caithness pavement industry. An influential committee is being formed in London to aid in restarting work at the quarries. From 20,000*l.* to 40,000*l.* per annum used to be paid in wages alone, but the works ceased two years ago.

The *Levant Herald* reports that the Turkish Admiralty propose enlarging the dry dock in the Golden Horn and building a floating dock; also that the Constantinople Prefecture have decided to build six large slaughter-houses in Constantinople and the suburbs, in accordance with plans which have been approved by the Porte.

The directors of the Morecambe Central Pier have decided upon effecting an extensive alteration of their property. The large dancing area at the pier head is to be covered in, and a substantial structure erected, with promenade and roof garden, approached from the pier deck by three separate staircases. The work is to be proceeded with at once.

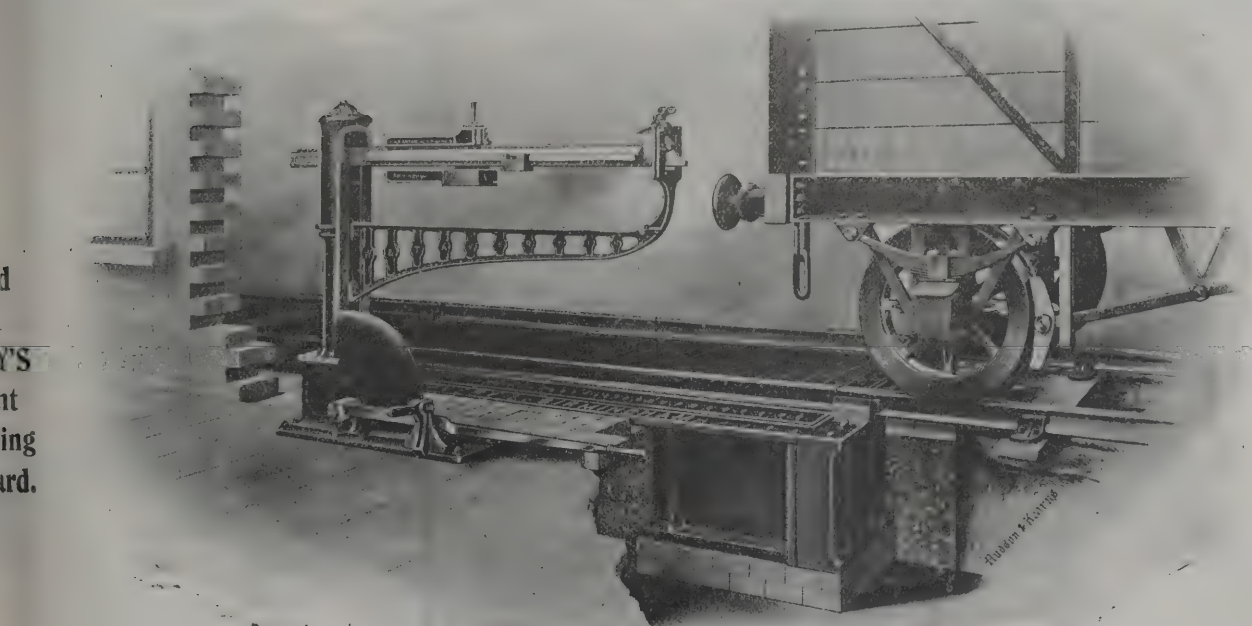
A REPORT by the Board of Trade shows that the total number of bills deposited for the session of 1907 relating to railways, canals, tramways and the supply of electricity, gas and water is 101, as compared with 151 of the session of 1906; the total amount of money proposed to be raised is 42,380,282*l.*, as compared with 57,949,511*l.*—a decrease of 15,569,229*l.*

The Camberley Urban District Council received thirty-three tenders for the work required in the provision, laying and jointing of cast-iron and stoneware pipe sewers, together with other incidental works in accordance with the plans and specifications prepared by Messrs. Willcox & Raikes. The engineers have been instructed to make inquiries with reference to the lowest tenderers, and to report at as early a date as possible. The tenders ranged from 17,000*l.* to 26,000*l.*

The Lincoln City Council have resolved to discontinue boring operations at Boultham at a depth of 2,200 feet, which it is expected will soon be reached. The bore is now an admitted failure, the water having become worse instead of better since the boring operations were resumed a few weeks ago. The Council have also decided to decline the offer of the South Lincolnshire Water Company to supply the city with Bourne water at a cost not exceeding



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3d. per 1,000 gallons. They are now considering a "strictly confidential" report of their waterworks engineer on the future supply of water to the city and district, which embraces details of several schemes.

MR. WILLIAM R. SUTTON, of Sydenham Hill and of Golden Lane, carrier, died in 1900, leaving estate which was resworn in July 1902 at £2,095,850. Mr. Sutton left the ultimate residue of almost the whole of his estate upon trusts to found "Sutton Model Dwellings" in any part of the country, with the condition that, although each tenant should pay some rent, none should be charged full rent. It is understood the trustees are now about to begin by building some blocks of dwellings in London.

"A FORGOTTEN CAPITAL OF THE ORIENT" is the title of a very interesting article in *Harper's Magazine* for March, by Mr. C. E. Russell, who gives a graphic account, which is admirably illustrated, of Fatehpur Sikri, the old capital of Akbar the Great, situated about twenty miles south of Agra. Almost as he left them, the palaces, streets, towers and exquisitely turned minarets still remain, and these stone poems form, it is considered, a fitting monument to the better side of Akbar's character.

A VAST water conservation and irrigation scheme is to be carried out at a place called Barren Jack, on the Murrumbidgee, by the Government of New South Wales. The total cost will be 1,500,000l. The area of the water to be used is 1,000 square miles, from which a main canal more than 150 miles long, with subsidiary channels, is to be formed; these will enable 1,500,000 acres to be irrigated. The scheme is said to be the largest of its kind in the world with the single exception of the dam at Assouan.

At the last meeting of the governors of George Heriot's Trust in Edinburgh the foundationers and elementary education committee recommended the institution of a course in carpentry and joinery for soldiers in barracks at a fee of 2s. 6d. It was explained that the War Office were very anxious to have a scheme to give some technical education, and Colonel Macintosh had said that he had about half a dozen soldiers very anxious to get this instruction, and he would like very much if, as an experiment, they could see their way to take it up. The fee of half a crown would cover the cost of the material, and the

instructor had agreed to give the instruction in his own time.

THE Edinburgh Town Council have considered a report by the electric-lighting and law committees in regard to the claim by the parish council for poor and school rates in respect of the electric-lighting undertaking, from which appeared that the parish council was willing to allow deduction of 24 per cent., while the committee claimed allowances involving deductions equal to 47½ per cent. The parish council, as mentioned last week, had subsequently offered 35 per cent. The dispute is to be referred to the Courts.

THE Hull City Council approve an agreement between the Corporation and the Hull and Barnsley Railway Company by which Parliamentary powers are to be sought for an important scheme for the development of the port. The Corporation are to sell the railway company 15 acres of land and lend them 150,000l. at 3½ per cent. to construct among other things, a pier or landing-stage in the river Humber, to permit of the landing and embarking of passengers by large vessels at low water. The Corporation have previously had a similar scheme passed by the House of Commons but rejected by the Lords.

THE municipal housing scheme of the Clydebank Town Council has caused a considerable amount of friction. After investigation in different parts of the country as to ways and means, twenty-six houses of one, two and three rooms and kitchen were built at Whitecrook, and a ballot took place among selected ratepayers for their tenancy. Some of the ratepayers selected would not enter the houses at all, it being alleged that they were not according to the plan shown. Then those who did remain clamoured for a large abatement on their rent, and it was ultimately decided to remit the first quarter's rent. There has accordingly been a considerable deficit on the first year's working.

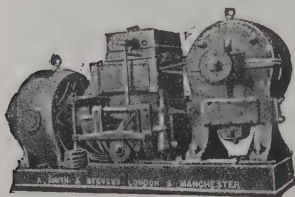
THE sub-committee of the Lord Provost's committee of Edinburgh Town Council in charge of the cleaning and renovating of the monuments in the city reported that they had now reached the stage when it was necessary to report to the full committee. Two monuments have been treated one marble, of Allan Ramsay, and the other the bronze of George IV. The cost of the former was 165l. and of the

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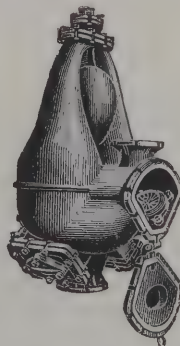
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er 45/. The sub committee decided to recommend the Provost's committee to proceed with the other monuments, but in the case of the Scott monument, if it is dealt with, it is suggested that the figure should not be treated in the solution that has been applied to the Allan Ramsay monument.

THE question of providing additional filters and clearer tanks is engaging the attention of the Edinburgh and District Water Trustees. With the multiplication of buildings at a high altitude the question of these filters being constructed at a higher level than those of Alnwickhill has been considered. Mr. Hill, Manchester, consulting engineer, was called in to consult as to the advisability of providing these, and to advise as to the places where they could be placed, has strongly recommended the provision of additional filters, and a remit has been made to him to make borings of different places in the vicinity of Fairmilehead, and he will present a report to the Trust as to the one he recommends. The cost, it is expected, will amount to about 150,000/.

A CROWDED meeting of the owners and occupiers of the property in the City of London was held in the Aldhall last week to protest against the proposals in the Metropolitan Water Board's "Charges" Bill now before Parliament. The Lord Mayor, who was attended by the sheriffs and the civic officers, presided during the first part of the meeting. The following resolution was adopted unanimously:—"That this meeting of owners and occupiers of business premises in the City of London strongly protest against the provisions of the Metropolitan Water Board (Charges, &c.) Bill in Parliament, introduced by the Metropolitan Water Board, which Bill, while professing to be only a measure for equalising the rate to be charged for water throughout the metropolitan area, will in effect enormously increase the rates at present levied for water supplied to business premises in the City and elsewhere.

COMPARATIVE costs of various paving materials have been obtained by the streets and buildings committee of Edinburgh Town Council. The first cost of granite setts (with bedding) is 11s. 6d. per superficial yard; whinstone setts, 8s. 3d.; hard wood blocks, 15s.; compressed rock setts, 12s. 6d.; tar macadam, 6s.; and ordinary

macadam, 3s. 9d. The total period of life, with expenditure, per superficial yard, is in the case of granite setts, thirty-five years, 15s.; whinstone setts, twenty-five years, 11s. 3d.; hard wood blocks, fifteen years, 17s.; rock asphalt, twenty-two years, 18s. 6d.; tar macadam, fifteen years, 7s. 3d.; and ordinary macadam, ten years, 4s. 7d. The gross average cost per annum of granite is 5d. per yard; whinstone, 5½d.; wood, 13½d.; asphalt, 10d.; tar, 5½d.; and ordinary macadam, 5½d. In the cases of granite and whinstone there is a deduction of 4s. and 1s. 6d. respectively, as the value of paving for re-use in side streets, leaving a net average cost of these materials of 3¼d. and 4¼d. respectively.

MR. PETER TAWSE, one of the most extensive contractors in the North of Scotland, died in Aberdeen, in his fifty-third year, on Friday. He commenced business on his own account in Aberdeen in 1896. His first contract was the paving of Schoolhill Viaduct, followed by similar work on Rosemount Viaduct and Union Terrace. Among his other contracts in the city were the low-level sewer, the construction of the electric subway, the first section of the high-level sewer from Point Law to Skene Street; and in the district, the Waterton and Dyce waterworks, the extension of Peterhead waterworks, and sewerage and water schemes at Laurencekirk, Strichen, Banchory, Culter, &c. He also carried out large street contracts in Dundee, Forfar, Perth and Arbroath. His greatest work was the Girdleness outfall sewer, with the tunnel under the Dee and through St. Fittick's Hill, this and the electric light costing 130,000/. At the time of his death Mr. Tawse had on hand contracts representing an aggregate sum of 150,000/., amongst which are the Donside sewage scheme and the new pontoon dock for Aberdeen.

THE bridges and roads committee of the Kent County Council reported as follows:—Material for main road repairs, 1907-8. (a) Imported material.—Your committee have by advertisement invited tenders for the supply of 72,000 tons of hard material. Seventy-four tenders were received from sixty-four contractors. For 1906-7 the quantity tendered for was 70,630 tons, and the number of tenders was sixty-nine from sixty contractors. The competition is therefore a little greater this year.

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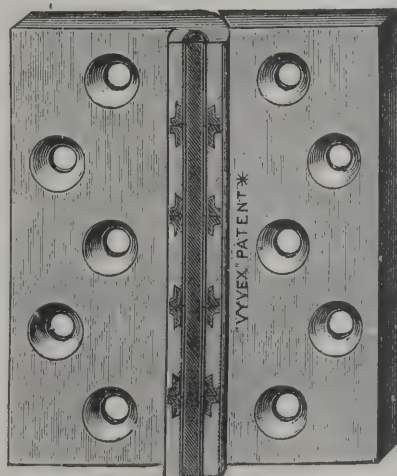
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TRADE NOTES.

THE Titan sprinkler proved its efficiency in a fire at the factory of the Prince of Wales Spinning Company, Oldham. Very little assistance was required from the fire brigade.

A LARGE striking clock with three dials is to be erected upon the new Co-operative Society's buildings in Mansfield, and is being made by John Smith & Sons, Midland Clock Works, Derby.

THE London and Lancashire Insurance Company having arranged to meet the requirements of the new Compensation Act, have prepared a useful epitome of the essential points of the Act, defining respectively the liability of the employer and the benefits to the employé. The elaborate rules of procedure, &c., are omitted.

THE Patent Indented Steel Bar Co., Ltd., have received a cable from New Zealand notifying them that the jury of awards of the International Exhibition now being held at Christchurch have awarded them a gold medal for their exhibit, this award being the highest that could be obtained. This is the third gold medal that the indented steel bar has been awarded at international exhibitions.

SCOTTISH NATIONAL EXHIBITION.

MATTERS have so far progressed in connection with the Scottish National Exhibition of 1908 that the Executive are now in a position to invite architects to lodge competitive designs for the buildings. In the conditions of competition it is pointed out, says the *Scotsman*, that the Exhibition buildings are to be erected on the north-eastern section of Saughton Hall grounds, lying to the south of the Saughton golf course. The buildings for general exhibits are to be not less than 100,000 superficial feet, and for machinery and exhibits in motion not less than 20,000 superficial feet. A concert-hall, seated for 2,000 persons, is to be provided for, with space for a large orchestra and organ. The fine arts building is to have not less than 1,500 lineal feet of wall-space, and to be capable

of extension to 2,000 lineal feet. One of the conditions is that the total cost of the buildings is not to exceed 20,000 exclusive of electric light, gas, water and other supply pipes. Taken as a whole, the area of the buildings for exhibits is to be somewhat similar to the area occupied by the buildings of the 1886 Exhibition. There will be two principal entrances—one at the car terminus at Gorgie by the proposed Corporation bridge over the Water of Leith, and the other from the Balgreen Road, at the north-east corner of the grounds. The designs are to be in the hands of the secretary not later than May 11, and the authors of the first and second designs are to receive each a premium of 100l., the author of the third getting 75l. The assessor is Mr. John J. Burnet, A.R.S.A., F.R.I.B.A., Glasgow, who was one of the architects for the buildings of the 1886 Exhibition. The grounds consist of the fine old park and gardens of Saughton Hall, picturesquely situated on the Water of Leith, and are admirably suited for the purpose of an exhibition, the Water of Leith being available for aquatic displays, while the numerous trees will lend themselves to lighting effects by night. The grounds extend to about 50 acres, nearly double the extent available for the 1886 Exhibition, so that there will be plenty of space available for all purposes, more especially for sports. A grand stand capable of accommodating 1,500 will be erected at the sports enclosure, which will be on the west side of the ground. Mr. W. H. Knight, the manager, is at present in London in regard to the music and other entertainments. Between sixty and seventy designs for posters have been lodged, and the committee are to meet on Thursday to select two of these, for which prizes of 50l. and 20l. are to be awarded. The designs, two of which are from Paris, are to be on view in Edinburgh on Friday and Saturday.

ARTERIAL DRAINAGE IN IRELAND.

THE report of the Vice-Regal Commission on Arterial Drainage in Ireland states that the Commissioners recommend (1) the formation of a Government Drainage Department, whose functions should be to define the boundaries of the several catchment basins in Ireland, ascertain the

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ure, extent and cost of the drainage works required rein, determine the constitution of the body which shall responsible for the maintenance of works when executed, and be the guardian for the expenditure of public money; (2) the creation of conservancy boards for the large or "major" catchment areas, which should have charge of the main outfall works and exercise control over subordinate drainage committees in their area with a view to securing harmony, action and unity of purpose; (3) drainage committees for small or "minor" catchment basins and for drainage districts in the large watersheds. These latter would be largely under the control of the County Councils. In dealing with this complex and difficult problem the Commissioners have framed their proposals to meet the following tests:—Will they enable new drainage districts to be formed in a simple and economical manner; will they meet the after-effects of all districts existing and to be formed, large and small; will they provide for the security and repayment of Government loan for the accurate determination of the increased value of the improved lands and for the expedited acquisition of land and water rights? And the answer to each of these questions will, the Commissioners hope, be found in the affirmative.

A NOTE ON HOUSING OF THE WORKING CLASSES.*

is is essentially not a paper dealing with the whole question, but merely a note, or perhaps it would be better described as an appeal for further consideration on the question of the advantages and disadvantages of block dwellings and cottage tenements, more particularly relating to towns.

There are certain places which contain unsanitary, insanitary, and dirty areas, which, for every reason, it is desirable should be cleared. The only thought given to the cleared sites is, that they should again be used for so-

* A paper by Alban H. Scott, M.S.A. (medallist), read at a meeting of the Institute of Sanitary Engineers and published in the *Journal*.

called model dwellings. Upon these valuable sites expensive buildings are erected, known as model block dwellings, the cost being about 60s. per person accommodated, and about 8s. 6d. to 9s. 6d. per foot cube; this is taking a moderate estimate.

Every acre takes about 1,100 persons. Roadways or playgrounds 40 feet wide are provided between each block of buildings; this is not a great advance for the twentieth century, and no doubt these 40 feet roadways or "playgrounds" were only provided when they were found absolutely necessary to give light for a six-storey building. The sanitary accommodation, being used in common, is most undesirable.

The rents charged are 3s. to 4s. 3d. per room, and about 12s. per week for four rooms inclusive, the return on the capital being a fraction under 4 per cent. Taking the plans of a block such as those just mentioned, we find that the single rooms are planned to act as living-room and bedroom, the food cupboard being placed close to the foot of the bed. The superficial area of this room is 150 feet.

In the two-room tenement the plans show living-room of about 150 feet sup., and bedroom of 120 feet sup., containing one double bed, one single bed and a cot, the room containing cubical capacity of just over 1,000 feet, or about 250 feet cube per person—not so much as they allow in our prisons and workhouses, nor so much as the L.C.C. demand for a common lodging-house; and please be it always remembered that these premises are designed for constant use, and occupied by working families.

If one of the occupants is ill, can you conceive a more undesirable place to reside, with summer temperature and four people sleeping in a room of 120 feet super.?

It must also be kept in mind that such tenants as occupy these premises can never get away for a holiday. They are kept pent up winter and summer always in the same condition, just a 40-foot roadway or "playground" surrounding their dwellings.

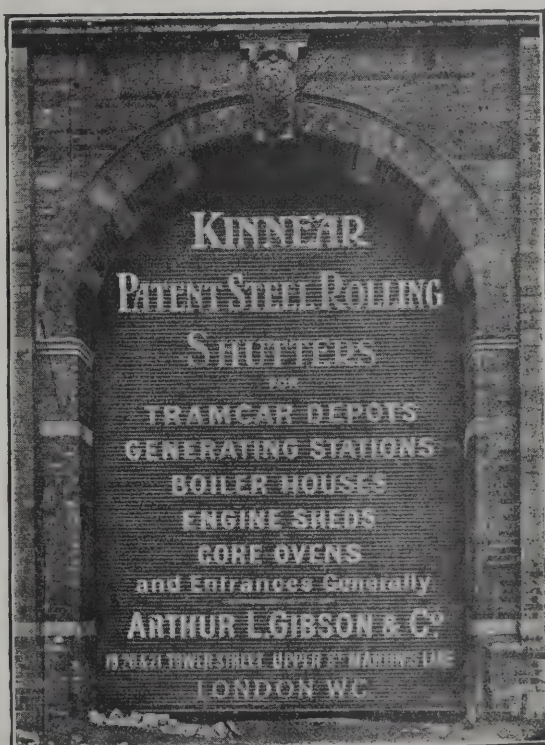
This is a fair description of the usual style of "model" block dwellings.

The cottage tenements usually consist of two floors—ground and first—giving accommodation for two families, separate entrance being provided for each family, and also in some cases, as at those excellent cottages built at

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Battersea (Latchmere estate), providing also a separate entrance to a back garden for each tenant, the cost being 7d. per foot cube and 61d. per room. These premises were built by direct labour, paying full wages, and include cost of artesian well, roads, sewers, &c. Everything here tended to run up the cost, and yet the scheme pays, with reasonable rents—10s. per week for four rooms with bath, scullery, and 7s. 6d. per week for three rooms and bath, scullery, the rentals being 2s. 6d. per room, and bath, scullery added in.

The accommodation provided on this estate is for about 200 people per acre, or, if you exclude the recreation ground, the accommodation is about 267 people per acre.

Why have block dwellings when there are hundreds of acres to sell, freehold, at 500l. per acre, within eight miles from the Marble Arch—if this is so in London, other large cities must be more fortunate—places served by at least three railways, with good train service and very cheap workmen's tickets?

The Acts allow the authorities to build outside their own district, and yet they will continue to build these "model" block dwellings in the heart of confined and unhealthy districts, providing no gardens (always remembering they do provide the miserable "playgrounds" 40 feet wide).

What would be the cost of a housing scheme within the distance above-mentioned?

For calculating purposes we may take the area as being an estate of 15 acres. Allowing three acres for recreation ground, we get the following figures:—

Capital Outlay—

15 acres of land at 500l. per acre	£7,500
300 tenement cottages each accommodating two families, cost of same being 400l. per house	120,000
Cost of roads, sewers, artesian wells, fences, &c.	9,000
Sundries	3,500

Total cost £140,000

Income—

300 houses (two tenements), each floor consisting of three bedrooms, living-room and bath, scullery and separate conveniences, let at 6s. per week per floor of four rooms and scullery = 12s. per house per week	£9,360
---	--------

Expenditure—

Repairs, loss of rent, insurance	6,000
Repayment of loan and interest, calculated at 4 per cent. for loan for sixty years. Rates, &c., at 6s. in the £	9,360
Collection, caretakers and superintendence	1,500

Income	£9,360
Expenditure	7,860
Net profit per year	1,500

Showing a good net profit, which is quite sufficient for municipal enterprise.

In the above figures I have taken the following broad principles, which I consider should govern all buildings for the working classes:—

1. Not more than 250 persons per acre of land.
2. No building should be more than two floors high.
3. Every tenement should have a garden adjacent to the house.

As shown above, no financial difficulty need arise, and there is no doubt that the present system of block dwelling is most unsatisfactory both from the physical and mental point of view, and the idea of providing small cottages with a plot of garden attached to each is an excellent one—or which ought to appeal to the mind of everyone.

It is much to be regretted that in these days, notwithstanding the rapid strides science has made, one of the three very essential factors for our existence in health, for some reason or other, is grossly neglected among many people—perhaps for the sake of supposed economy, but which however, in the long run proves to be otherwise.

One of the causes of consumption—the disease which accounts for thousands of deaths annually—is the want of this neglected factor—fresh air. It is true that a certain germ is the direct cause, but the predisposing cause is the lowered vitality of the individual. And yet how many do know that to this state a person must be brought before the disease can attack him? While fresh air is essential to the building of the tissues, and so increasing their power of resistance, impure air, on the other hand, acts conversely on the system, lowers the vitality of an individual, and

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renders him liable to all the various forms of disease of which this world is so full. The importance of fresh air cannot better be illustrated than the open-air treatment which is now being adopted all over the world in cases of consumption, and it is not much to say that in the treatment of all diseases fresh air is of prime importance.

It seems a false economy to erect block dwellings, which only serve as a breeding-ground for disease to supply the sanatoriums which are being built at enormous cost.

Fresh air is as much a necessity as food, but it cannot be obtained to one's best advantage in a house, no matter how ever well ventilated that house may be.

In view of the great important part alone which this nature plays, as already illustrated, the theory of a small garden should receive the unanimous support of all.

Moreover, the garden has some other part to play than to give us the wholesome air, for its delightful face of green mingling with the forms and colours of nature serves a new charm for us in our perception. The influence of the forms and actions in nature is so needful to man that, in its lowest functions, it seems to lie on the confines of commodity and beauty. To the body and mind which have been cramped by labour, nature is medicinal and restores their tone. The workman comes out from the confines of impure air, out of the din and craft of the street, to the open garden, where he breathes the reviving atmosphere, and sees the sky and works of nature, and is a man again. In their eternal calm he finds rest, refreshing to the body and pleasing to the mind. Again, to those who thirst for knowledge, as nature is the incarnation of a thought, it turns to thought again, every moment instructs, and every object, for wisdom is infused into every form.

It may be stated that the moral influence of nature upon every individual is that amount of truth that it illustrates to him.

Mr. Rider Haggard, in giving evidence before the select committee of the House of Commons on the Housing of the Working Classes Acts, stated that at a place near Waltham, Essex, twenty men had only a shed to sleep in, and lived winter and summer under an elm tree. Personally I could much prefer this system of "housing" to the block dwellings. The men living under the tree were healthy and strong. Pray, how many out of twenty men living in

block dwellings would be in so good a condition? It certainly does sound like housing on the lines that cattle are housed, but it is preferable to be thus accommodated than like so many bales of wool and other goods, stacked floor above floor, in every sense similar to a warehouse; no privacy, no home life, nothing to take an interest in and driving, as it of necessity must, the people to seek diversion in the gin-palaces and other undesirable places. To fully understand and appreciate the pleasures of living in block dwellings, one should spend at least twelve months there. You would find that existence is almost impossible without week-ends in the country and good long holidays.

No parks or public open places will ever make up for the lack of pure air and brightness immediately around the dwellings. They are most desirable and necessary. We must not, however, counteract the beneficial results arising from them by building unsuitable dwellings 50 to 65 feet high, with only 40-foot roads or "playgrounds."

There are some excellent examples of cottage tenements in addition to those already mentioned. Those at Camberwell are provided with a small garden. The Artisans, Labourers and General Dwellings Co., Ltd., have done some excellent work at Noel Park, Wood Green; the houses have small gardens, and it is pleasing to see that in some cases the elevations have received more consideration than usual. The Peabody Trust have also good examples (the pantries in some cases have no proper ventilation).

The L.C.C. have erected some good cottages at Tooting. Unfortunately the area at back is very small. (I must add here that the L.C.C. have certainly added to the architectural beauty of London by their model dwellings.)

At Southampton cottages have been built at a cost of 67l. per room, whilst their ugly, undesirable block dwellings cost over 116l. per room. The cottages have most satisfactory elevations.

At Eastleigh the L. and S.-W. Railway Company are providing houses for their employes. The gardens are most pleasing, but the elevations might have had some further consideration. (The food cupboards have no proper ventilation.)

As far as Manchester is concerned, every member here should take the opportunity of seeing the houses at Blackley Estate. It is particularly satisfying to observe that the

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elevations have had consideration; but why no proper ventilation to food cupboards?

Port Sunlight should be carefully examined as an excellent model for country housing. No one can realise the excellent work done by Mr. Lever, M.P., without an inspection of his work at Port Sunlight.

In conclusion, may I express my most sincere hope that block dwellings are a thing of the past? They can be conveniently converted into good warehouses. No money need then be wasted.

EXTENSION OF MESSRS. BRABY'S SHOW-ROOMS.

At the galleries of Messrs E. & C. Braby, 7 & 9 Grape Street, Shaftesbury Avenue, W.C. (New Oxford Street end), there is a very interesting exhibition of wares arranged as far as possible according to the Tudor, Jacobean, Georgian, Renaissance and other notable periods, so as to give visitors ample opportunity of inspecting the various suites of mantels, grates, curbs and hearths appertaining thereto, as well as the ornaments and accessories in keeping therewith.

Our representative was invited to attend the private view on Thursday, the 7th inst., and among the more important exhibits may be mentioned a fine specimen of a Louis XV Genoa green marble chimneypiece, richly carved, with an inlaid marble hearth; also two fine specimens in statuary marble—one of these fitted with a steel and brass grate—the whole having been specially designed by one of our most eminent architects. Then there is a striking original design of a Jacobean fireplace with bold yet simple lines, the main feature of which is a successful treatment of the chimney-breast, also showing the way in which a room may be panelled in an inexpensive manner. The interior is set in a margin of jasper marble, and a fine specimen of a dog grate of the period is placed on a raised marble hearth with an embossed hand-made copper curb and canopy.

Another noticeable specimen is an original design of a briquette hob fireplace, with special wrought-steel bars, the curbs and briquettes being of Dutch blue marl tiles, the upper part of which is arched over the fireplaces, the

mantels being of white wood. There are also several fine examples of bright steel dog and Georgian hob grates, reproduced from some characteristic designs. In the inner room a pleasing specimen of a Dutch fireplace with antique tiles is shown, set in dark-wood panelling, with a rich blue filling, the whole having a most restful effect; also three Tudor suites, each fitted with bright steel dog grates and specimens of the Georgian and Renaissance period, specially designed. On the first floor we noticed a unique exhibit of quaint ingle-nooks and cosy corners, suitable for hall, drawing and dining-rooms, specially designed for use in country cottages and bungalows. Separate show-rooms are reserved for "L'Art Nouveau" style, including specimens of the Glasgow school, and also for the more ordinary requirements of middle-class houses and offices. In the basement are specimen marble and tile-lined bath-rooms, fitted complete. An original and pleasing effect is given in the latter case, the floor and dado being of a rich red unglazed tile, and the upper part in non-reflective tiles of a delicate green tint, relieved with bands of orange.

Messrs. E. & C. Braby have been fortunate in securing the co-operation of the well-known firm of Messrs. J. Barker & Co., of Kensington, who have contributed greatly to the success of the exhibition in providing antique furniture and ornaments, thus imparting to the whole an artistic effect.

It is evident that great pains have been taken by a concerned in making the exhibition thoroughly representative, and visitors, who are cordially welcome, will have every facility offered them, we are assured, for inspecting the high-class goods referred to, which are adapted to the most varied tastes.

EXCLUSION OF GROUND AIR.

In the autumn, winter and spring months, and during the nights, even in summer, says Dr. Pettenkofer, the air in our houses is warmer than that contained in the soil beneath. The house acts like a suction-pump in such cases, sucking up the air within the soil, and with it the poisonous gases and germs with which it is infested. An explanation of the great prevalence in cities of epidemic diseases such as diphtheria, typhoid and scarlet fever, during the winter months, when the purity of the air is supposed to be

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test, is furnished by this simple induction. By in-
quiries conducted during a number of years, the
ctor has shown that the soil beneath our feet is saturated
h air, carbonic acid and microscopic life to a considerable
th. He has also discovered that the "ground air" and
organisms are constantly sucked up and that germs of
eases ripened in the earth may be brought into our
odes or exhumed and wafted for miles by the wind.

Basements should, therefore, says Mr. J. L. Smithmeyer
the *Inland Architect*, never be used as sleeping-rooms,
cause, aside from the detrimental effects of the ground air
erted most effectively in that portion of the house, the
es and moisture which during the day under the influence
the sun ascend to a considerable height, descend to the
face during the night, so that the atmosphere near the
l in great cities in the night time may be said to be
saturated with carbonic acid and such other gases of decay
sulphuretted and carburetted hydrogen, and sulpho-
drates of ammonia and other impurities, together with
nutely divided particles of living matter, capable of
minating and producing disease. These products taken
gether constitute what is now known and dreaded under
e name of "malaria."

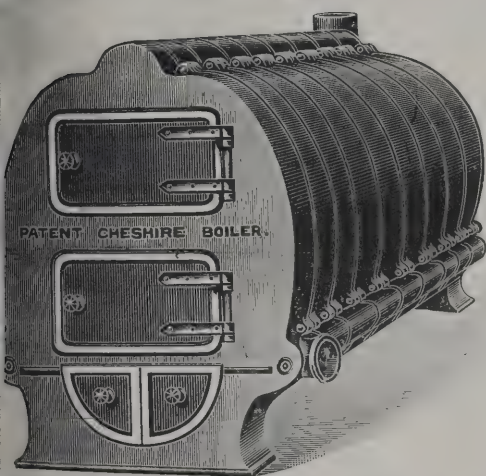
Dr. Wales, ex-surgeon-general of the United States
y, appointed in 1884 a board of doctors and scientists to
amine the site for the new Naval Observatory in
ashington, D.C., with regard to its sanitary aspects. The
ort of these gentlemen is very exhaustive, and in it
ey use this language, viz. :—"Extended observations have
en made by the board upon the composition of the
ound air, a department of sanitary surveys which has
t received a great deal of attention hitherto. Wherever
ter does not stand, as ground water, the interstices of
e soil are occupied by air, and as the ground water rises,
s air is forced up into cellars and basements and becomes,
aspiration into the warmer parts above, the air of our
uses. Should the soil contain tracts impregnated with
composed organic matter covered over by innocuous
rth, as is the case often in made lands, air charged with
ensive gases or deleterious organisms is likely to be
ced up in this way from considerable depths and may
count for the occasional occurrence of epidemics which
not otherwise be explained."

We know now that the soil to a considerable depth is a
perfect nursery of microscopic forms of life, and is constantly
charged with carbonic acid, and that by the suction exerted
by the currents of air in contact with the surface, this
ground air, with its myriads of organisms and its dele-
terious gases, is being constantly exhumed and brought into
our houses.

A striking illustration of the results of the incursion of
ground air into dwellings was published in New York City,
viz. :—

"In one of the most elegant quarters of the city of
Brooklyn, an instance occurred which attracted the atten-
tion of the medical profession to a wider extent than
generally happens in such cases. A gentleman by the
name of Rockwell, having amassed a fortune in business in
this city (New York), decided to erect a residence for his
family on Brooklyn Heights, which should be perfect in every
detail of convenience and sanitary arrangement. No expense
was spared; no modern appliance of plumbing or trapping
neglected; no device of sanitary engineering, as concerns
ventilation or sewerage, forgotten to render the 'Rockwell
mansion' a model to be copied by future residents on the
heights. The ground was naturally supposed to be dry and
apparently well drained, and so no measures were taken
either to abate the normal moisture of the soil or to cut off
and prevent the rising and percolation of the ground
air. The house was finished and the family, consisting of
Mr. and Mrs. Rockwell and two little girls, aged respectively
ten and twelve and a boy seven years old, moved into it,
anticipating many years of pleasure, ease and happiness.
Within one year every member of the family had been
conveyed to the 'Rockwell plot' in Greenwood, dying one
after the other in rapid succession of the disease easily
recognisable as directly produced by malarial poisoning.
A medical inquiry followed, and disclosed the fact that,
owing to the neglect of the fundamental precautions (against
the ground air) the very perfection of the appliances for
ventilation, by exerting a stronger suction on the ground
air and its gases than a less carefully constructed and
plumbed arrangement would have done, had precipitated
a catastrophe it was intended to avert."

That air, soil and water greatly influence the develop-
ment of various diseases, especially "typhoid fever, diph-



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theria, grip and cholera," is now universally accepted, and that the propagation of these diseases must be ascribed to the pollution of air, soil and water. The part which water takes in this important hygienic process is too vast to give it here more than a passing notice and an illustration.

Dr. Fodor's extensive experiments in the city of Budapest, Hungary, show the immediate detrimental effects which the overflows of the river Danube have upon the people who live in inundated districts. He also shows the striking correspondence between the varying heights of the river and the ground water in the adjacent soil, and the respective sanitary condition of the people during these periods, and he concludes from all this that the rise of the river checks the drainage of the ground water, sewers, &c., and forces it back to fill and pollute the wells and springs, and to permeate the entire inundated district with these organic substances, and to saturate this polluted soil to the extent of repletion. The ground water, when driven back, forces the organic and effete matter, unwholesome gases and disease germs to the surface, and forces the ground air out of the ground into the atmosphere or into our abodes, carrying with it a great deal of noxious moisture, gases, organic substances and disease germs.

Dr. Fodor has devoted many years to the study and investigation of the sanitary condition of Budapest, the capital of Hungary. He made many and very valuable discoveries, whereby he was enabled to solve some of the sanitary problems incidental to the appearance of certain diseases in certain localities, under certain conditions of the soil, and at certain periods of time.

Judging from the doctor's description of that city, we detect enough similarity between it and numerous cities in this country including Washington (the capital of the nation) to admit of our deriving high benefits from his investigations.

If the soil of a city or town is largely porous like that of Budapest, and a good portion of it lies low and close to rising and falling water, that portion is subject at times to partial and at times to total inundation, and naturally brings about the same conditions which exist in Budapest on the river Danube.

Every high rise of the adjacent water or excessive rains drive this decomposed organic matter (in the soil) to the

surface, and expels the "ground air," which thus escapes from this mass of deleterious substance into the atmosphere and into the dwellings of the inundated districts.

Enough has been said to prove the existence and harmful nature of the ground air. The question which presents itself to the architectural mind is, "How can the harm done by this air be reduced to its minimum?" The ready answer is, "By averting all contact with it as much as possible, especially in our abodes."

True, the laws of nature cannot be changed, but by the exercise of intelligent observation they may be made subservient to our purposes. Thus, by means of a simple and comparatively inexpensive device the "ground air" can be averted from entering our abodes, hospitals, schools, houses, &c., and its harm reduced to a minimum, if not wholly abated. Nor does this device require special skill or cost or attention; on the contrary, it is very simple, works continuously and automatically, and lasts as long as the building will last.

As the ground air (beneath our inhabited structures) follows the warmer air in the houses above it, there should be a suitable sized "air space"—an "air chamber"—interjected between the ground (from which this air emanates) and the basement floor. This air chamber should be provided with suitable air-tight ventilating flues "built" in the walls, starting at the bottom of these air chambers and extending as high above the top of the house as the chimneys, so as to carry this bad air (by aspiration) beyond the reach of harm. The effectiveness of this device will be greatly enhanced by building these ventilating flues adjacent to the smoke flues, or between. These ventilating flues will not only carry off the ground air but also the poisonous gases and odours from the leakage of "waste" and "sewer" pipes buried in the soil beneath our abodes, and will also greatly aid in keeping the house dry. Acting automatically (as they will) they will not require any attention to keep them in working order.

It is the duty of the architects and builders to bend their energies toward the erection of buildings (especially dwellings and hospitals) which would secure safety and comfort to their occupants as well as health, and it seems incumbent on the municipal authorities to make suitable regulations for the protection of its citizens from that source of harm.

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THE Architect and Contract Reporter.

FRIDAY, MARCH 22, 1907.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d.

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P. A. GILBERT WOOD,

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

NOTICE.

Next Friday being Good Friday, THE ARCHITECT will be published on Thursday. All advertisements intended for this Number must reach the Office not later than 4 P.M. on Wednesday, March 27.

No alteration of advertisement copy can be allowed after Saturday morning, March 23.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

FAILSWORTH.—March 28.—The District Council invite designs for a library (cost not to exceed 3,000l.) in Oldham Road. Premiums of 20l. and 10l. Deposit one guinea. Mr. H. C. Broome, clerk, Council Offices, Failsworth.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

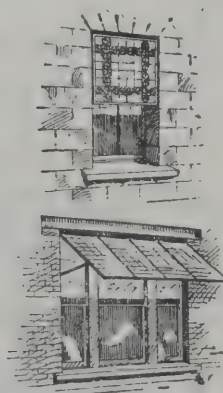
AMBLESIDE.—March 28.—For the whole of the various trades and works in connection with grammar school. Messrs. Walker, Carter & Walker, architects and surveyors, Windermere.

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ASHBOURNE.—March 30.—For all the works required in connection with the erection of a grammar school at Ashbourne, Derbyshire. Deposit 2*l.* 2*s.* Mr. E. M. Longsdon, architect to the Governors, Bakewell.

BARNSELY.—For the erection of a theatre of varieties, Barnsley. Messrs. North & Robin, architects, 203 Strand, London, W.C.

BARROW-IN-FURNESS.—March 27.—For the erection and completion of a 50-yards chimney, flue, &c., at the refuse destructor. The Borough Engineer's Office, Town Hall.

BEDLINGTON.—April 8.—For work of erecting a Council school, to accommodate 200 scholars, at Bedlington, Northumberland. Deposit 2*l.* 2*s.* Send names to Mr. C. Williams, secretary to the education committee, by March 28.

BELFAST.—March 28.—For the erection of a branch library on the Donegal Road. Deposit 1*l.* 1*s.* Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street.

BEWCASTLE.—March 30.—For the erection of a bridge at the Crook, in the parish of Bewcastle, Cumberland. Mr. James Murray, surveyor, Kirkcubright, Carlisle.

BLACKBURN.—March 26.—For the construction of a warehouse at Bolton Road goods yard, for the Lancashire and Yorkshire Railway Company. The Engineer's Office, Hunt's Bank, Manchester.

BLACKBURN.—March 28.—For alterations and extensions for the new out-patients' department, &c., for the Blackburn and East Lancashire Infirmary. Messrs. Simpson & Duckworth, architects, Richmond Terrace, Blackburn.

CARDIFF.—March 26.—For extensions of the Cardiff infirmary to form a new out-patients' department. Deposit 2*l.* 2*s.* Mr. Edwin Seward, architect, Queen's Chambers, Cardiff.

CARDIFF.—March 28.—For the erection and completion of a manual instruction centre at Splott Road Council school, Roath. Mr. W. Harpur, M.I.C.E., city engineer, City Hall, Cardiff.

CARDIFF.—April 3.—For the enlargement of the head post office. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

DONCASTER.—April 3.—For the erection of a wing at the Yorkshire Institute for the Deaf, Doncaster. Deposit 1*l.* 1*s.* Mr. E. Hall Ballan, architect, 19 and 20 Baxter Gate, Doncaster.

DORCHESTER.—April 3.—For building three cells at the town police station. The County Accountant's Office, Dorchester.

DUNDALK.—March 25.—For the erection of a sanitary convenience, gate piers and other works at town hall. Mr. M. Sellars, town surveyor, Town Hall, Dundalk.

EDINBURGH.—March 25.—For taking-down and re-erecting cattle byres and cowsheds at the cattle market, Lauriston. Mr. R. Morham, city architect, the Public Works Office, City Chambers, Edinburgh.

EDINBURGH.—April 4.—For the erection of the superstructure of Edinburgh Post Office extension. Deposit 1*l.* 1*s.* Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

ENFIELD.—March 27.—For the erection of a mortuary at workhouse, Chase Side. The Master, Enfield Workhouse, Chase Side, Enfield.

ERDINGTON.—March 26.—For the erection of a west wing to the No. 2 north pavilion at the workhouse, Erdington, near Birmingham. Send names and addresses to Mr. John North, clerk, Union Offices, Vauxhall Road, Birmingham, by noon on March 18. Deposit 5*l.* Messrs. C. Whitwell & Son, architects, 3 Newhall Street, Birmingham.

FATFIELD.—March 27.—For the building of sixty-four workmen's houses at Fatfield. The Lambton Colliery Company's Offices, Bunker Hill, Fence Houses.

GRIMSBY.—March 28.—For the erection of works at South Killingholme. Deposit 2*l.* 2*s.* Messrs. Bentley & Hall, architects, 1 Pelham Chambers, Old Market Place, Grimsby.

HALIFAX.—March 27.—For the extension of office block at Clark Bridge Mills. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HEMEL HEMPSTEAD.—March 27.—For the buildingwork in connection with the construction of an elevated water-tower at Felden, near Boxmoor. Deposit 5*l.* 5*s.* Mr. Lovel Smeathman, town clerk, Hemel Hempstead.

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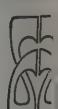
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HIGHBRIDGE.—March 26.—For the erection of a pumping-house with concrete walls, 14-h.p. National gas engine and 12-inches centrifugal pump, adjoining the Somerset and Dorset Railway at Highbridge, Somerset. Deposit 2*l.* 2*s.* Mr. F. W. Bishop, clerk to the Board, High Street, Highbridge.

HITCHAM.—March 26.—For the erection of house for the sewage works superintendent. Deposit 2*l.* 2*s.* Mr. A. Caldwell, engineer, 160 High Street, Slough.

HULL.—March 25.—For the erection of foundations and pavement, forming part of proposed shops on south side of Meson Street. Deposit 2*l.* 2*s.* Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

IRELAND.—March 25.—For building a parish church and rectory at Belgooly, Cork. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

IRELAND.—March 27.—For building villa at Victoria Park, Londonderry. Messrs. R. E. Buchanan & Co., architects, Castle Street, Londonderry.

IRELAND.—March 29.—For the erection of a manse on the Maxwell Road, Bangor. Mr. Ernest L. Woods, architect, Bangor, co. Down.

IRELAND.—April 2.—For the erection of three dwelling-houses near Wellington bridge, Cork. Messrs. W. H. Hill Son, architects, 28 South Mall, Cork.

KEIGHLEY.—March 27.—For the erection of a fence wall at Cophurst. Mr. Walter Fowlds, borough engineer, Keighley.

LEEDS.—March 26.—For the alterations to business premises, Briggate, for the purpose of an exchange, café, offices, &c. Deposit 1*l.* 1*s.* Mr. Percy Robinson, architect, Yorkshire Post Chambers, 53 Albion Street, Leeds.

LEYLAND.—March 23.—For reconstructing a road-bridge over Mill Brook, in Slater Lane. Mr. Wilkinson, surveyor to the Council, Public Hall Buildings, Leyland, Lancs.

LONDON.—March 26.—For repairs and alterations to 64 Denmark Hill, Ruskin Park. Mr. G. L. Gomme, clerk, County Hall, Spring Gardens, S.W.

LONDON.—April 3.—For the erection of pavilion "D" at the Hackney Union Infirmary, High Street, Homerton,

N.E. Deposit 5*l.* Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LUDGERSHALL.—March 30.—For the erection of a session hall at Ludgershall, constructed of wood and galvanised iron on brick foundations. Deposit 2*l.* 2*s.* Mr. A. Dryland, county surveyor, Trowbridge.

MACCLESFIELD.—April 8.—For secondary schools for 250 girls to be erected in Fence Avenue. Deposit 1*l.* Mr. H. Beswick, county architect, Newgate Street, Chester.

MARAZION.—April 5.—For the erection of a police constable's dwelling-house at Marazion, Cornwall. Mr. Oliver Caldwell, architect, County Offices, Bodmin.

MILFORD HAVEN.—April 3.—For the erection of cookery and laundry-rooms at the Milford Haven County school. Messrs. D. E. Thomas & Sons, architects, Victoria Place, Haverfordwest.

MITFORD BRIDGE.—March 23.—For widening the Mitford bridge, Northumberland. Mr. J. A. Bean, county surveyor, the Moothall, Newcastle-on-Tyne.

NEWCASTLE-UPON-TYNE.—April 4.—For additions and alterations at the Westmoreland Road Council schools. Deposit 2*l.* 2*s.* The City Property Surveyor's Department, Town Hall.

NEWCASTLE-ON-TYNE.—April 13.—For construction of a coal shed at the city asylum, Coxlodge. Deposit 2*l.* 2*s.* The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

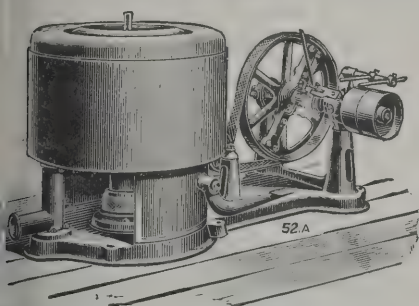
NEWTON ABBOT.—April 2.—For the erection of piggeries at the workhouse and removing partitions, &c., at scattered homes. Mr. S. Segar, Newton Abbot, Devon.

OVENDEN.—March 28.—For the various trades in erection of a Sunday school at Ovenden. Messrs. Chas. F. L. Horsfall & Son, architects.

ORMSKIRK.—April 3.—For the erection of a pavilion and the extension of the main infirmary block at the Ormskirk workhouse, Lancs. Mr. J. Dod, architect, 116 Exchange Buildings, Liverpool.

PAXTON.—March 28.—For the erection of a U.F. church. Messrs. Gray & Boyd, architects, 2 Ivy Place, Berwick-on-Tweed.

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PENDLETON.—April 8.—For erecting a school to accommodate about 1,120 children at Halton Bank, Pendleton, Salford. Deposit 1*l.* 1*s.* Mr. John H. Woodhouse, architect, 100 King Street, Manchester.

RAMISCOMBE.—March 29.—For the erection of a dwelling-house at Ramiscombe, in the parish of Botusfleming, Cornwall. Messrs. J. Kittow & Son, surveyors, &c., Launceston.

ST. ALBANS AND BISHOP'S STORTFORD.—April 9.—For the erection and completion of a new County Council school, Fleetville, St. Albans, and for the carrying-out of additions and alterations to the technical school, Bishop's Stortford. Deposit 2*l.* 2*s.* each. Hertfordshire County Surveyor's Office, Hatfield.

SCOTLAND.—March 25.—For executing the mason, carpenter, glazier, smith, plumber, plasterer and slater's work of proposed additions and alterations, Methlick public school. Messrs. Kelly & Nicol, architects, 367 Union Street, Aberdeen.

SCOTLAND.—April 1.—For the construction of a stone lifeboat house for the Royal National Lifeboat Institution, on a site adjacent to the foreshore in Port Logan Bay, near Stranraer. Deposit 1*l.* 1*s.* Mr. W. T. Douglass, the engineer and architect to the Royal National Lifeboat Institution, 15 Victoria Street, Westminster, S.W.

TWEEDMOUTH.—March 25.—For additions to the premises of the Tweedside Industrial Co-operative Society. Messrs. Gray & Boyd, architects, 2 Ivy Place, Berwick-on-Tweed.

WALES.—March 23.—For the rebuilding of (1) Cross Keys hotel, Briton Ferry; (2) Eaglesbush inn, Melynrythan, Neath. Mr. J. Cook Rees, architect, Neath.

WALES.—March 23.—For extensions to the Brynmawr County schools. Deposit 2*l.* 2*s.* Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.

WALES.—March 25.—For a proposed detached residence and outhouses on the Egwysilan Road, Pontypridd. Deposit 1*l.* 1*s.* Mr. T. E. Richards, architect, Market Square Chambers, Pontypridd.

WALES.—March 26.—For the erection of new premises Station Road, Port Talbot. Deposit 1*l.* 1*s.* Mr. Richard O. Clark, architect and surveyor, Fort Talbot.

WALES.—March 27.—For the laying of foundations for temporary County school buildings at Mountain Ash Glamorgan. Mr. T. Mansel Franken, clerk, County Council Offices, Westgate Street, Cardiff.

WALES.—March 30.—For pulling-down and rebuilding business premises in Market Square, Pontypridd. Messrs. W. M. Lewis & Morgan, architects and surveyors, Market Square, Pontypridd, or 55 Dunraven Street, Tonypandy.

WALES.—April 2.—For making certain alterations and additions to vestry of Jerusalem Welsh Calvinistic Methodist chapel, Ton Pentre, Rhondda Valley. Deposit 1*l.* 1*s.* Mr. W. D. Morgan, M.S.A., architect, Post Office Chambers, Pentre.

WEST MALLING.—March 26.—For the erection of a caretaker's cottage at the sewage farm. The Sanitary Surveyor, The Limes, West Malling.

WICKFORD.—March 25.—For the erection of a new classroom and other alterations and additions to the Wickford school, Essex. Mr. F. Whitmore, architect, 73 Duke Street, Chelmsford.

WRANGLE.—March 27.—For an addition, alterations and repairs to the Wesleyan chapel, Wrangle, and also for re-seating in the chapel. Mr. Jas. Rowell, architect and surveyor, Church Lane, Boston.

WITTON-LE-WEAR.—April 2.—For alterations at the school. The County Education Committee's Architect, Shirehall, Durham.

Mr. H. R. HOOPER, C.E., held an inquiry at Chorley on behalf of the Local Government Board in respect of an application of the Town Council to borrow 27,000*l.* on account of money already spent in connection with the gas-works and overdraft to the treasurer and for supplying the township of Coppull with gas. The town clerk explained that the expenditure had been going on since 1875 until a sinking fund was established about four years ago. The inspector severely commented on this unbusinesslike method.

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TENDERS.

AMMANFORD.

For the erection of Council schools. Mr. W. D. JENKINS, F.S.I., M.S.A., county education architect, Carmarthen. Quantities by Mr. T. BRIDGEWATER JONES, Corporation Street, Birmingham.

Brown	£12,180	0	0
Thomas & Jones	11,090	0	0
Thomas & Sons	11,000	0	0
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Jenkins	10,750	0	0
Meredith	10,613	0	0
Lewis Davies	10,287	0	0
Davies & Griffiths	10,177	0	0
Mercer	10,000	0	0
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Daniel Davies	8,250	0	0
D. W. Davies	8,192	0	0
Howells & Son	7,699	0	0
JONES BROS., Tirydail, Ammanford (accepted)	7,445	6	0

AMWELL.

For construction of coal bays, for Metropolitan Water Board.

Docwra & Son	£996	15	5
Shurmur & Sons	989	0	0
Wilkinson & Co.	979	6	3
Ewart	824	1	11
Muirhead & Co., Queen Victoria Street, E.C. (recommended)	799	19	4

BLYTH.

For laying and jointing water-pipes, &c. Mr. FAWCETT, surveyor.

Hornsby	£601	2	6
Moffett	575	15	0
Carr	493	15	0
Best	482	14	6
Archibald	475	3	4
Lant	462	1	6
McKinnon	461	5	0
Johnson	314	15	0
ROBSON, Heaton, Newcastle-upon-Tyne (accepted)	307	17	6

CHELTENHAM.

For construction of outfall sewer about one and two-thirds mile long at Hatherley. Mr. J. S. PICKERING, borough engineer, Cheltenham.

	Brick.	Pipe.
Binns	£9,732 10 2	£7,122 3 0
Dickson	9,500 5 11	7,755 19 5
Bell & Sons	9,145 13 9	7,530 16 3
Macdonald	8,699 18 4	6,111 4 9
Smart	8,887 1 11	8,499 2 1
Firth & Co.	8,581 7 9	6,466 15 2
Kirkwood, Kerr & Co.	8,444 8 9	6,725 12 5
Walkerdine	8,207 19 6	6,515 11 7
Lovell	7,989 0 0	7,769 0 0
Sutherland & Thorpe	7,971 7 0	7,573 9 3
Riley	7,812 14 5	6,092 6 1
Lock	7,575 8 7	7,183 5 2
Meredith	7,490 0 0	7,320 0 0
Johnson & Langley	7,422 13 4	6,994 2 7
Chick, Carden & Co.	7,400 10 0	6,948 17 11
Wright & Co.	7,288 2 8	6,962 13 6
Cunliffe	7,190 6 3	6,179 3 9
Neal	6,997 0 0	5,934 0 0
WILLIAMS & Co., Cheltenham (accepted)	6,759 1 7	5,817 4 0
Rutter	6,705 11 6	6,567 14 4
Lock, Andrews & Price	6,487 7 5	6,236 12 1

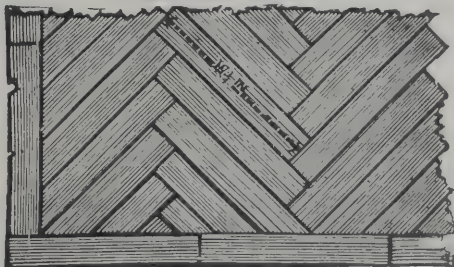
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Flooring with special joint to conceal nails as above at the following low prices:—

	Wainscot.	P. Pine.
1 1/2" x 4 1/2" quarterd.	59s. 6d. per sq.	
1 1/2" x 4 1/2" plain	37s. 6d.	
1 1/2" x 4 1/2" quarterd.	44s. 0d.	
1 1/2" x 4 1/2" plain	30s. 0d.	

Please apply for further particulars to VIGERS BROS., Timber Merchants.

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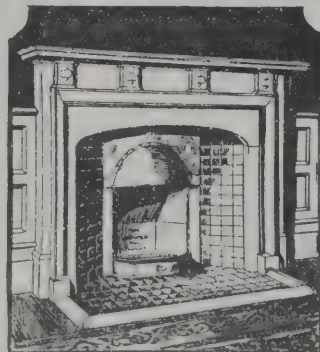
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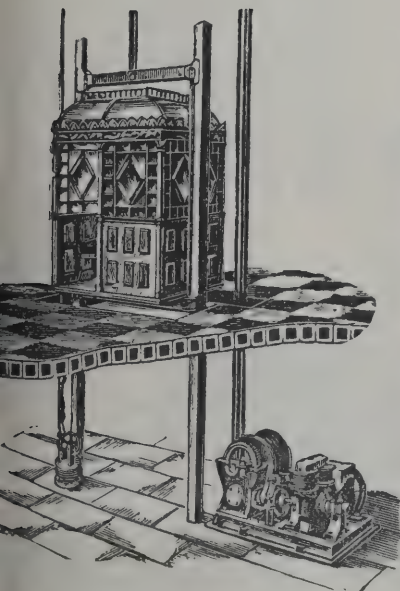


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For Index of Advertisers, see page x.

BRIDGNORTH.

For the erection of laundry and alterations at workhouse.

Mr. E. TREVOR, architect, Bridgnorth.

Poulton & Co.	£557	10	0
Foxall	547	0	0
Guest & Son	503	0	0
Smith	494	18	0
Head & Son	491	16	0
LAY, Bridgnorth (accepted)	480	14	0

BRIGHTON.

For enlarging the dressing-room at the Cricket Ground in Preston Park.

Ayling & Sons	£235	0	0
Nye	215	0	0
Barnes & Sons	209	0	0
Saunders Bros.	206	15	0
Oliver	190	0	0
Sattin & Evershed	179	0	0
Penfold	177	0	0
J. & W. SIMMONDS, 2 Ashford Road (accepted)	149	0	0

CARLISLE.

For construction of Stanwix sewerage works.

Accepted tenders.

Mackay (Contracts 1 and 2)	£8,174	0	0
Batey (Contract No. 3)	4,191	0	0

CHISLEDON.

For rebuilding the Elm Tree inn. Messrs. BISHOP & FISHER, architects, Swindon.

Williams	£1,372	7	0
Tarrant	1,169	15	0
Chambers	1,117	19	0
Edwards & Son	1,056	0	0
Leighfield	1,053	12	0
Tydemans Bros.	1,049	15	0
Tunley	1,041	10	0
Colborne	1,022	10	0
Norman	1,015	5	6
Spackman	1,003	0	0
CHICK, CARDEN & Co., Highworth (accepted)	995	5	5

GREAT YARMOUTH.

For the erection of grand stands on the racecourse, South Denes. Mr. J. WM. COCKRILL, borough surveyor.

Kirk & Randall	£5,180	0	0
Youngs & Son	4,916	0	0
Moore & Son	4,796	0	0
Spencer, Santo & Co.	4,750	0	0
Pattinson & Sons	4,737	0	0
Carter & Wright	4,720	0	0
Cork	4,699	0	0
Hardingham	4,679	0	0
B. G. Beech	4,679	0	0
G. W. Beech	4,673	0	0
Barnes	4,650	0	0
Gunns	4,567	0	0
Read	4,523	0	0
HARMAN, sen., Great Yarmouth (accepted)	4,330	0	0

GUISBOROUGH.

For tar-macadamising about 2,600 super yards in Westgate.

Mr. R. H. KILBURN, surveyor.

Brook	£552	10	0
Barton Limestone Co.	533	5	0
Ellison	491	11	8
Bradley Bros.	476	16	8
Edge & Co.	471	12	1
South Bank Tar Macadam Co.	462	1	3
CRADOCK-ALLISON, Eaglescliffe, R.S.O. (accepted)	430	0	0

HARROW-ON-THE-HILL.

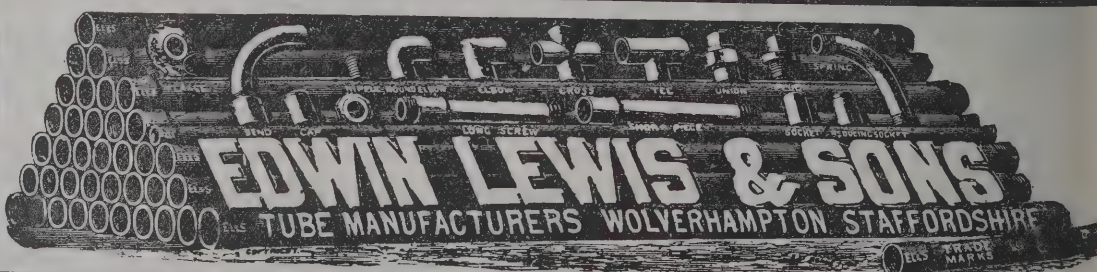
For making-up Greenhill Crescent and Wellesley Road.

Mr. J. PERCY BENNETTS, engineer, Harrow.

	Greenhill Crescent.	Wellesley Road.
Champliss	£1,271 2 6	£1,167 11 7
Bower Bros.	1,147 8 6	1,157 13 4
Powdrill	1,088 6 7	1,134 7 1
Wimpey & Co.	1,086 0 0	1,105 0 0
FREE & SONS, Maidenhead (accepted)	1,034 2 6	1,038 7 5

The "MASTA" Patent Improved**PARTITION BLOCKS AND CEILING SLABS**Are manufactured chiefly of Stourbridge Fireclay, making them absolutely **Fireproof and Sound-proof**, and **Exceptionally Light in Weight**. **Fibrous Ceilings** made of same material.

Full Particulars sent on Application.

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AND
FITTINGS****THE DELTA METAL CO., LTD.**
EAST GREENWICH,
LONDON, S.E.

HELMSHORE.

For works in connection with bridge over Ogden river. Mr J. SINGLETON GREEN, borough surveyor.

Lomax	£495	0	0
Tattersall	483	0	0
Moore Bros.	478	10	0
Etheridge & Clark	422	3	8
PLATT & CASTLE, Ramsbottom (accepted)	401	6	0

HULL.

For alterations and additions to the Constable Street school Mr. J. H. HIRST, city architect, Hull.

Simpson & Son	£2,329	0	0
Fenwick	2,320	0	0
Arnott	2,303	10	0
Houlton & Son	2,250	0	0
Panton	2,245	0	0
Goates	2,229	0	0
Greenwood	2,139	0	0
Knowles	2,126	15	6
Harper	2,098	15	0
SINGLETON, Hull (accepted)	2,069	10	6

KIDWELLY.

For alterations and additions to Morfa Calvinistic Methodist chapel. Messrs. W. JONES & W. D. MORGAN, joint architects.

D. & T. Stevens	£2,379	2	8
Thomas & Sons	2,138	0	0
Evans & Williams	2,043	2	6
Thomas & Son	2,037	16	6
Thomas & Jones	2,000	0	0
Brown, Thomas & John	1,999	17	6
J. Williams	1,997	13	0
Bennett Bros.	1,980	0	0
Mercer	1,958	0	0
M. Williams	1,848	18	11
Morgan	1,846	0	0
Davies & Sons	1,839	0	0
HOWELL & SON, Llanelly (accepted)	1,765	0	0

KETTERING.

For supply of cast-iron pipes, &c., for sewage-disposal works. Mr. T. R. SMITH, engineer.

Cochrane & Co.	£371	13	7
Needham & Sons	366	15	6
Clay Cross Iron Co.	355	9	10
Oakes & Co.	348	12	9
Stanton Ironworks Co.	343	1	6
Holwell Iron Co.	340	12	2
BUTTERLEY Co., Derby (accepted)	332	0	2

KINGSTOWN.

For swimming and reclining baths at Kingstown, co. Dublin, for the Urban District Council. Messrs. KAYE PARRY & Ross, engineers.

Thompson	£14,124	0	0
Hull & Co.	13,730	0	0
Collen Bros.	12,600	0	0
Martin	11,971	0	0
Hemmingway	11,679	0	0
Pemberton & Sons	11,585	0	0
McKee & McNally	11,400	0	0
Good	11,400	0	0
McLaughlin & Harvey	11,300	0	0
FRAZER (accepted)	10,300	0	0

LEICESTER.

For construction of roads, sewers and bridge, &c., on the Ashfield estate. Messrs. TAIT & HERBERT, architects, Leicester and Coventry.

Wellerman Bros.	£5,425	14	0
Stimpson & Rollston	4,061	0	0
Higgins	3,970	0	0
Smedley & Co.	3,920	0	0
HUTCHINSON & SON, Leicester (accepted)	3,800	0	0

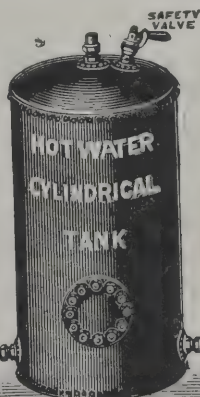
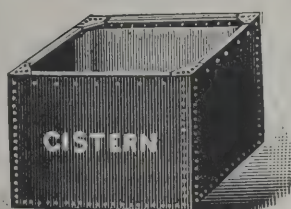
LONDON.

For kerbing, channelling, paving, making-up, &c., of Daubeney Road. Mr. NORMAN SCORGIE, borough engineer, Hackney.

Grounds & Newton	£1,099	9	9
Porter	1,066	9	3
Griffiths & Co.	1,005	6	3
Adams	991	5	8
BLOOMFIELD, Tottenham (accepted)	916	5	6

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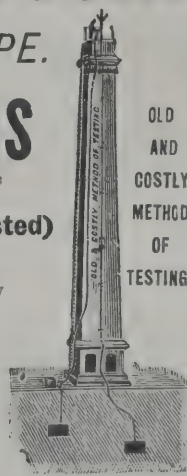
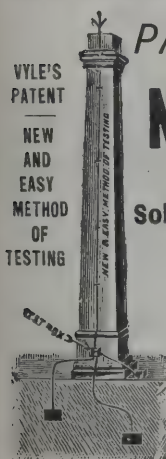
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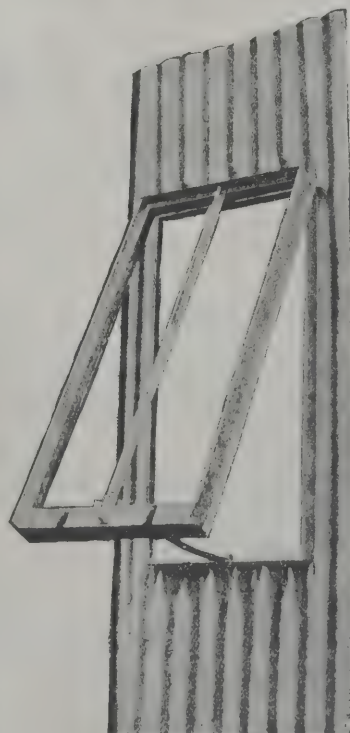
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ANY LENGTH OF SHEET TO 12 FT. LONG.
GUARANTEED WATERTIGHT.

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LOUGHTON.

For erecting girls' secondary school to accommodate 200 pupils at Alderton Hall Road. Mr. H. TOOLEY, architect, Buckhurst Hill.

Robins.	£9,986	0	0
Warriner	8,740	0	0
Sheffield Bros.	8,050	0	0
Patman & Fotheringham	7,963	0	0
Hawkey & Oldman	7,766	0	0
Brown.	7,748	0	0
Holliday	7,680	0	0
Craknel	7,656	0	0
Winch.	7,614	0	0
Young & Son	7,546	0	0
McKay	7,528	0	0
Thomas & Edge	7,360	0	0
Nightingale	7,354	0	0
Lawrence & Son	7,284	0	0
Willmott	7,236	0	0
Westgate	7,208	0	0
Davey	7,187	0	0
Coulson & Lofts	7,176	0	0
Oak Building Co.	7,142	0	0
Paul	7,098	0	0
Fitch & Cox	7,077	0	0
Wisdom Bros.	6,828	0	0
FOSTER & SONS, Loughton (accepted)	6,560	0	0

NORTH SHIELDS.

For proposed new wing at the infirmary, Spring Gardens. Mr. J. W. MEADOWS, surveyor, North Shields.

Pelton	£1,207	0	0
Sheriff	1,200	0	0
Tait	1,198	14	4
Robson	1,115	5	0
Park	1,115	3	0
Laverick	1,099	0	0
Middlemis Bros.	1,090	0	0
Miller	1,077	8	3
Fisher	1,070	0	0
Carruthers	1,068	3	0
Bell & Co.	1,065	2	10
Ritchie	1,017	10	0
DOBINSON, North Shields (accepted)	1,001	12	2

NOTTINGHAM.

For enlargement of the post-office.

Parker & Son	£6,572	0	0	Credit.
Flint	6,487	0	0	£100 0 0
Hutchinson & Son	5,700	0	0	130 0 0
Harrell & Son	5,692	0	0	57 0 0
Pask & Thorpe	5,603	0	0	320 0 0
Fish & Sons	5,450	0	0	149 0 0
Vickers & Son	5,444	0	0	162 0 0
Messom	5,400	0	0	117 15 0
PILDATT (accepted)	5,350	0	0	88 0 0
				155 0 0

PEMBREY.

For general repairs to school. Mr. W. D. JENKINS, F.S.I., M.S.A., county education architect, Carmarthen.

Williams	£185	19	0
Wales & Co.	182	0	0
Lewis	179	1	0
DAVIES, Ffairfach, Llandilo (accepted)	175	0	0

SLOUGH.

For various works for sewerage. Mr. W. W. COOPER, surveyor, Slough.

Free & Sons	£796	19	9
Bowyer	671	0	0
Deverell	654	13	4
Langley & Johnson	622	11	11
HARDY, BATES & Co., Slough (accepted)	596	0	2

TENBY.

For the erection of cookery and laundry classroom and manual instruction room, &c.

Heatherley & Co.	£885	0	0
Beynon Bros.	787	0	0
Thomas	757	10	0
DAVIES & GRIFFITHS, Pembroke Dock (accepted)	732	0	0

TUNBRIDGE WELLS.

For sewerage, widening, kerbing, paving, fencing, &c., St. John's Road improvement. Mr. W. H. MAXWELL, borough engineer.

FREE & SONS, Maidenhead (accepted)	£4,804	10	1
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WINCHMORE HILL.

For extension of two pavilions at isolation hospital. Mr. R. COLLINS, surveyor, Enfield.

Lee & Son	£2,904	10	0
Hardy Bros.	2,760	0	0
Monk	2,275	0	0
Fitch & Cox.	2,274	0	0
L. & W. H. Patman	2,220	0	0
ALLEN, FAIRHEAD & SON, Enfield (accepted)	2,039	0	0
Jackson	1,995	0	0
Almond & Son	1,940	0	0

WOKINGHAM

For abutments of bridge over Emm brook.

Lee	£950	0	0
Ellis	864	0	0
Hill	849	0	0
Batten Bros.	825	0	0
Redhouse	822	0	0
Allen	800	0	0
Foster	774	0	0
Stimson	739	0	0
Lewis	712	0	0
TUCKER, Reading (accepted)	638	0	0

For rebuilding Tanhouse bridge.

TUCKER, Reading (accepted)	£638	18	6
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TRADE NOTES.

MESSRS. JENRICK & Co., of No. 23 Bucklersbury, E.C., in the City of London, and Ringstead Works, Catford, Kent, shop-fitters, shop-front builders and decorators, request us to state that they are still trading at above addresses and that they are in no way connected with any other firm who have been recently trading in any name similar to above.

A LARGE clock is to be erected in the tower of Kirklington Church, Yorkshire, striking the hours and showing time upon one dial. The order has been placed with Messrs. J. B. Joyce & Co., Whitchurch, Salop, who are just about to ship two large clocks to Bucharest.

THE "Carron" steam-cooking apparatus has been adopted for the Addenbrook hospital, Cambridge.

THE recent additions to the Willerby asylum have been warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, Manchester grates and special inlet and outlet ventilators, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

THE new automatic fire protection system of Messrs. Merryweather & Sons, Ltd., which secures an efficient supply of water to the highest floors of a building, has been adopted at Messrs. Smith & Son's new premises, Kingsway. On Thursday the system was examined by several experts.

THE Borough Council of Deptford have been unable as yet to avail themselves of Mr. Carnegie's gift of 18,000*l.* for the building of a public library, as a site was not obtainable. There are now hopes, however, that one may be secured shortly.

At Erendon, Warwickshire, a building for parochial purposes, costing 600*l.*, is to be erected as a memorial to the late Marchioness of Hastings.

IN connection with the Census of Production Act, the President of the Board of Trade has appointed a general committee to advise upon the general scope of the census and the lines upon which the information required shall be obtained. Other committees, who will consider the special requirements of particular trades, will shortly be appointed, consisting of leading manufacturers and nominees of their associations. Committees for the building, iron and steel, cotton, woollen and worsted, engineering and shipbuilding trades are at present in course of formation.

At the Central Police Court, Glasgow, last week, Police-Judge Martin heard a complaint against one of the Corporation servants in regard to the smoke nuisance. Alexander Gerrard, works manager of the Coplawhill Tramway works and stores, was charged with having, between the hours of twelve noon and one P.M. on February 26 caused or allowed smoke of unnecessary density to be emitted from the works. He pleaded guilty, and was fined 10*s.*, with the alternative of seven days' imprisonment.

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Sample Gallons, 2/6 each. Tins Free.

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BRADFORD.

MONK'S PARK
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40 IMPERIAL BUILDINGS,
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SUMMER DRIED SEASONED BATH STONE FOR WINTER USE.

CORRESPONDENCE.

A Durable Building Stone.

SIR,—As I have had considerable experience as regards the durability of stone in the Midlands and North Wales, I must say that I consider if Hollington and Alton stones are able to withstand the chemically-laden atmosphere of the Midlands they are capable of withstanding anything. It hardly seems to be borne in mind by your correspondent that both Hollington and Alton stones are quarried in three colours, viz. mottled (shaded), red and white. In the post office at Hanley, recently erected, I believe white Hollington was used.

I quite agree with your correspondent, Mr. Booker, as regards the open specifications now existing in the market of York stone, and I am thankful to hear one York stone firm has had the good sense to put architects in touch with the stone they quarry.

F. M. SILVERS KENT,
Building Material Specialist.

SIR,—May we be allowed a space in your valuable paper, in justice to Mr. Tunstall and ourselves, to correct the statement of Mr. George Booker, quarry agent, Driffold, Sutton Coldfield, in your issue of March 15, stating that there are several firms owners of mottled Hollington stone quarries, knowing perfectly well, as Mr. Booker does, that we are the sole proprietors of the mottled and red Hollington stone. We have practically inexhaustible deep beds of this fine-grained red and mottled stone, which is being very extensively used, especially in the Burton-on-Trent district, and if these stones can withstand the acids of this most destructive district surely there is no further proof of their durability necessary. We shall be delighted to have the opportunity of submitting samples, together with a list of jobs we have supplied, to anyone interested.

—Yours faithfully, JNO. STEVENSON & SONS.

Hollington, near Tean, Stoke-on-Trent:

March 18, 1907.

SIR,—Would you kindly permit me to add the following to my letter of the 13th inst? In correcting Mr. Tunstall's statement I referred to Alton stone, which is in the neighbourhood of Hollington, the strata and geological formation

being the same as Hollington, one of the finest examples of mottled Alton being the restoration of Hereford Cathedral under Mr. J. O. Scott. Messrs. Stevenson wish me to state they are the sole proprietors of the mottled Hollington referred to. In making the statement I did my wish was not to disprove Messrs. Stevenson's statement, but to draw attention to a similar stone in the neighbourhood for the benefit of the readers of your paper.

Driffold, Sutton Coldfield:

GEORGE BOOKER.

March 21, 1907.

VARIETIES.

THERE will be a performance by the Royal Choral Society at Albert Hall on Good Friday, at 7 P.M., of Handel's "Messiah" (with original accompaniments). The band and chorus will number 1,000, under the leadership of Sir F. Bridge, M.V.O.

THE Stepney Borough Council declined by 30 votes to 16 to adopt a minimum wage of 30s. for all the able-bodied workmen employed by the Council. The estimates of the Council for the year 1907-8 show a decrease of 14,789l., as compared with the previous estimates.

MR. THOMSON, burgh engineer for Dundee, has been instructed to prepare sketch plans in connection with the proposed town hall, embodying the idea of retaining the present building, but extending it east to Tyndal's Wynd and west to Crichton Street, and providing a new city hall at the back. Shops may also be provided.

THE Glasgow Liberal Club on Friday accepted plans for new premises to take the place of the present buildings at the corner of St. George's Place and Buchanan Street. The plans show a building six storeys in height, built in a simple form of Renaissance in white freestone. The premises will be occupied entirely by the club. At present the floor accommodation extends to 17,164 square feet, while in the new building it will be 32,804 square feet. The cost is estimated at 22,000l. by the architects, Messrs. Campbell Douglas & A. N. Paterson, St. Vincent Street, Glasgow.

THE medical officer for the Northwich urban district in his annual report says that to house the nation properly

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Section Books & Stock Lists on Application

ILLUSTRATIONS.

SESSIONS HOUSE, OLD BAILEY, E.C.—ELECTROLIER ON FIRST FLOOR, CENTRAL HALL—DETAIL OF DOORWAY—REFRESHMENT ROOM.

FIELD PLAIN PUBLIC LIBRARY.—FIRST PREMIATED DESIGN.

THEATRAL SERIES.—CARLISLE: EXTERIOR FROM SOUTH-EAST.

ld decrease the mortality by more than half; it would ease infectious disease by three-fourths, would sweep away nearly all the anæmic, undersized, scrofulous beings crowd the slums, almost stamp out tuberculosis and very much at one stroke to elevate the moral and mental element of the bulk of the people and lessen the need of workhouses, prisons, asylums, sanatoria, epileptic colonies and hospitals. He adds that slums cannot be got rid of until better houses are provided, and that the remedies for slumdom are to reform existing houses, to break the erection of slums by the jerry-builder and to provide houses of a proper character for those who need them. Private enterprise having failed to house the people, public organisations must undertake it. The preliminary step is to obtain land, and then it would be immaterial who built the houses, provided their erection was supervised. LORD SALVESEN last week closed the record in an action for the instance of William Pollock, contractor, 166 London Street, Glasgow, against the Eastern District Committee of County Council of Dumbartonshire. The pursuer asks for 10,649*l.* 18*s.* 11*d.*, said to be due to him in connection with the construction of the Bearsden sewage scheme, completed by him in July 1897. The contract price was 7,162*l.* 6*s.* 3*d.*, but the pursuer avers that in the course of carrying out the scheme the original plans were materially departed from by the defenders. The sum sued consists of (1) 8,034*l.*, the balance of the sum brought in the measurement after allowing for payments on account amounting to 7,479*l.*; (2) 500*l.* deposited by the pursuer in security of his carrying out the contract; (3) interest on that sum, 15*l.* 18*s.* 11*d.*; and (4) 2,100*l.*, being the total of various additional claims. The defenders plead that the pursuer, having assigned all his claims under the

contract, has no title to sue the present action. They admit that during the progress of the work certain alterations were from time to time made in particular portions of it as occasion arose, but they say that none of these alterations constituted a material divergence from the work specified in the specification and tender. In October 1903 the defenders offered to the pursuer 1,000*l.*, and also the amount in the deposit receipt, 500*l.*, in full settlement of his claims. This offer is repeated on record under reservation of all their rights and pleas. The case was sent to the procedure roll.

For visiting Holland and Germany during the Easter holidays the Great Eastern Railway Company's British Royal Mail Hook of Holland route offers exceptional facilities. Passengers leaving London in the evening and the northern and midland counties in the afternoon arrive at the chief Dutch cities the following morning. A corridor train with vestibuled carriages, dining and breakfast cars is run on the Hook of Holland service between London and Harwich. From the Hook of Holland through carriages and restaurant cars run in the North and South German express trains to Cologne, Bâle and Berlin, reaching Cologne at noon, Bâle and Berlin in the evening. Special tickets at reduced fares have been arranged by the Harwich-Antwerp route for passengers wishing to visit Brussels for the Field of Waterloo. For the convenience of passengers, tickets dated in advance can be obtained at the Liverpool Street station continental inquiry or booking offices. The Danish Royal Mail steamers of the Forenede Line of Copenhagen will leave Harwich for Esbjerg (on the west coast of Denmark) on Monday, March 25; Thursday, March 28; Saturday, March 30; returning Tuesday, April 2; Wednesday, April 3. The General Steam Navigation Company's steamers will leave Harwich on March 28 and 30, returning March 31 and April 3.

To the vast numbers who with jaded nerves and flagging energies are seeking resuscitation in the way of restful and health-giving change from the activities of city life during the ensuing Easter recess the A.B.C. Easter programme just issued by the Great Central Railway Company will strongly appeal. Within its covers are conveniently tabulated an almost unlimited choice of resorts suitable for all tastes and requirements. On Wednesday, March 27,

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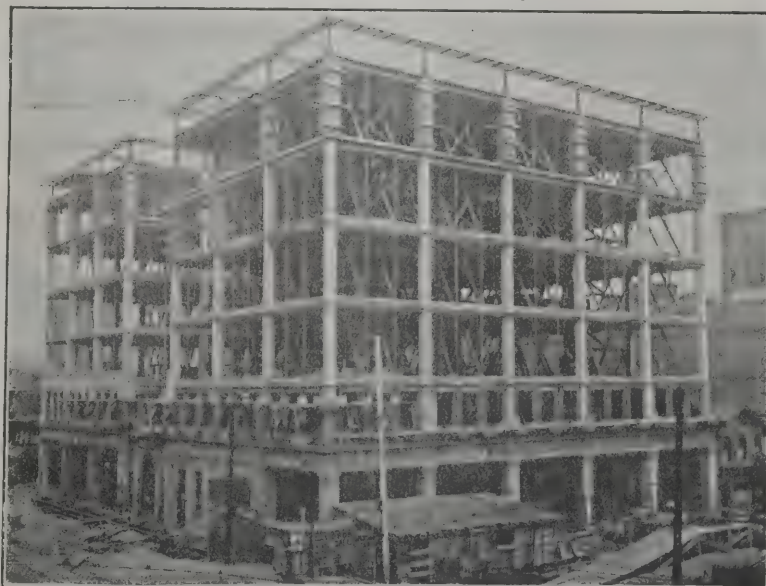
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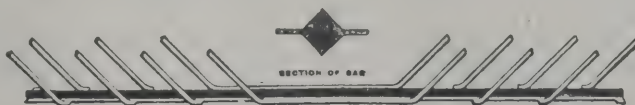
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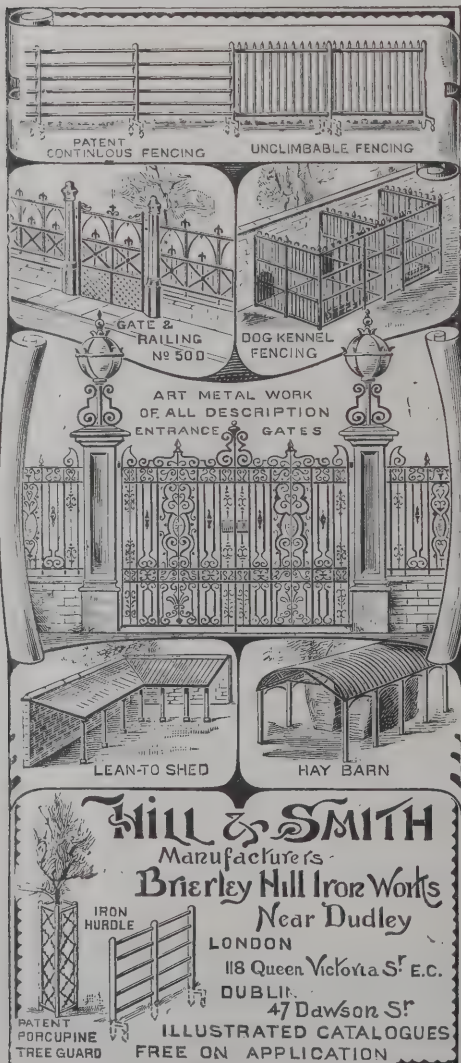
excursion facilities are announced to over sixty Irish ports and inland towns. The arrangements for Thursday, March 28, cover nearly 250 seaside and inland resorts extending through the Midland Counties, Yorkshire, Lancashire, Lincolnshire, North-east and North-west coasts and North of England generally. The trains are equipped with buffet cars, enabling meals to be served on board at a most reasonable tariff. The special expresses leave Marylebone at convenient times and arrangements have been carefully made to shorten the journey of the long-distance traveller by bringing his destination as near London as possible in point of time. For those who cannot leave until late on Thursday an extra fast train is provided, departing from Marylebone at 12.5 midnight. Special trains will also be run on Good Friday, Saturday, Sunday and Monday (Bank Holiday). Other noticeable features of the programme are the issue of Saturday to Monday week-end tickets; frequent day and half-day facilities to the beauty spots of Middlesex, Herts and Bucks; bicycle and pedestrian tour tickets; extension of the week-end ticket arrangements, &c. Copies of this comprehensive publication may be obtained at Marylebone station, company's suburban stations, town offices or agencies, or from Publicity Department, 216 Marylebone Road, N.W.

MESSRS. FARNHAM, LTD., of Caxton House, Westminster, have been awarded a contract for the cleaning of the frontage of the older portion of the Glasgow Stock Exchange facing Buchanan Street and St. George's Place, and for the subsequent treatment of this frontage, and of the frontage of the new portion of the building, by the Farnham patent paraffin wax process. Considerable decay has taken place in the stonework of the older portion of the building, and signs of commencing decay are already showing on the new frontage, which was only completed a few years ago. Glasgow architects will no doubt watch with interest this first important piece of work in their city which is being carried out by Farnham, Ltd. There has been so much evidence in recent years with regard to the deleterious effects of the Glasgow atmosphere on stonework, and so many efforts have been made, without much success, to preserve stonework in Glasgow from the action of the atmosphere, that the result of the Farnham treatment will,

no doubt, be carefully watched by all Glasgow architects interested in the subject. The treatment consists in the drying out of all moisture from the stonework and filling the pores of the stone to a considerable depth with pure molten paraffin wax, which sets hard in the pores of the stone, and remains permanently unaffected by acid or alkali. No moisture can again penetrate the stone, and therefore the cause of decay is removed. After the paraffin-wax treatment the surface is cleaned off by the Farnham sand blast process, so that the fabric is clean and no deposits remain on the surface.

NEW CATALOGUES.

ANYTHING relating to the productions of Messrs. Peckett & Sons, of Bristol, cannot fail to be interesting, for the works of these shops are models. When so many businesses are in the hands of temporary directors, it is satisfactory to have one on a grand scale which is under the direct supervision of the proprietors. In consequence Messrs. Peckett can claim many improvements in their engines. The principle of standardisation which is now so much recommended as if it were a discovery of a commission, has been long adopted in the Atlas Works, for all parts of the engines "are made to standard gauges and templets, every locomotive being interchangeable with all others of the same size and class. As Messrs. Peckett have many customers among contractors, with whom time is money and who cannot have relays of locomotives to meet contingencies, they felt themselves bound to create supplies which would be equal to every demand. The views of the works are enough to give confidence to everyone who invests in a locomotive and thinks of accidents to it. Locomotives have to sustain more wear and tear than those in the service of contractors, and in consequence the coming from Messrs. Peckett are pictures of strength as well as of simplicity of construction. It is hardly necessary to say many other varieties are produced in addition to those for contractors. Some are used on branch lines and light railways, and the qualities of Messrs. Peckett's locomotives are put to the test in quarries, collieries, gas works, &c. The catalogue presents photographs of several types



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ocomotives, and there are also views of the different departments of the Atlas Works. As a thorough English business for the supply of genuine and substantial locomotives, Messrs. Peckett's is entitled to preference before foreign establishments.

A new catalogue descriptive of their hand lifts has been issued by Messrs. R. Waygood & Co., Ltd. Those who suppose that hand-power is very limited will be surprised to find what can be accomplished by it when aided by ingenious mechanical aids. A warehouse lift is equal to 10 cwt. to 10 feet, while a slanting lift for cellars can lift from 12 cwt. to 20 cwt. along the sides of steps to a vertical height of 10 feet. But weight lifting is not the only consideration. Steadiness is often the most important quality, as in hospital and infirmary lifts, lifts for invalids, passengers, furniture, dinners, &c. A common nuisance in the streets arises from the clumsy and tedious manner of rolling down beer-barrels to public-houses. For 12l. 10s. Messrs. Waygood can supply a portable lift which would finish the inconvenience to passers-by. The use of this apparatus should be made compulsory by local authorities. There are also lifts for raising pianos, carriages from basements, and, in fact, Messrs. Waygood have adapted appliances to suit all requirements, whether commercial, manufacturing or domestic.

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The directors' report for the year ending December 31, 1906, states that the net balance at credit of profit and loss account, after providing for bad and doubtful debts, directors' fees, percentage of surplus profits due to managing directors and certain officials, and including the balance from last year of 4,482l. 19s. 11d., is 66,654l. os. 3d. Deducting therefrom the year's interest on Debentures, 6,750l.; amount transferred to depreciation account, 7,500l.; and to reserve fund, making it 70,000l., 17,500l.—31,750l.—there remains a balance of 34,904l. os. 3d., from which the directors recommend the payment of the dividend on the Preference shares 6 per cent., absorbing 9,000l.; dividend of 6 per cent. per annum on the Ordinary shares, absorbing 9,000l.; the payment

of a surplus dividend of 3 per cent. on both the Preference and Ordinary shares, absorbing 9,000l., leaving a balance to carry forward to next year of 7,904l. os. 3d. The dividends will be payable in two equal instalments on March 30 and September 30 next. The works, machinery and plant of the company have been upheld during the year, and all renewals and repairs charged against revenue. The directors regret to report the loss since the last general meeting, through death, of their colleague Mr. James M. Blair, who had occupied the position of a director since the formation of the company. The directors have appointed Mr. Grahame H. Thomson, a son of the former deputy-chairman, a director of the company. The directors retiring are Mr. J. Hamilton Turner and Mr. Grahame H. Thomson, who offer themselves for re-election.

BUILDERS' ACCIDENT INSURANCE.

The twenty-sixth annual meeting was held on the 6th inst. Mr. T. F. Rider presided. The secretary, Mr. C. M. Brown, having read the minutes of the last general meeting, the Chairman said that since 1898 they paid in claims between 130,000l. and 140,000l., besides returning some 28,000l. to insurers in rebates, and the fact that the funds now available are over 22,000l. shows a record with which the directors have a right to be satisfied. The increased and extended liability under the Workmen's Compensation Act, 1906, is receiving the most careful consideration of the directors with a view to arriving at an estimate of the increased cost, and with the experience of twenty-five years under the present and previous Acts to guide them, they feel sanguine of being able to fix rates of insurance which will be satisfactory to their members. The Chairman moved the adoption of the report and accounts.

The resolution was seconded by Sir John Mowlem Burt. On the motion of Mr. Thos. Hall (Hall, Beddall & Co.), seconded by Mr. Woolf (J. & H. Cocks, Ltd.), the retiring directors, Mr. Woodman Hill, Mr. A. Krauss, Mr. Wm. Nicholson and Colonel G. H. Trollope, V.D., were unanimously re-elected.

Mr. Wall moved that the directors' fees be 600l. for last year, as in previous years.

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The motion was seconded by Mr. F. G. Minter, and agreed to unanimously.

Mr. Chas. Fox, F.C.A., was re-elected auditor of the company.

Mr. Sharman proposed a vote of thanks to the Chairman, which Mr. Thomas Hall seconded. Mr. Charles Wall supported, and it was carried by acclamation.

The Chairman returned his thanks.

Mr. Bartlett (Messrs. Perry & Co.) proposed a vote of thanks to the secretary and the staff.

Mr. Sapcote (Birmingham), as representing the provinces, seconded the resolution.

Mr. C. M. Brown (secretary) returned thanks for himself and the staff.

GRANITE-TOP MACADAM.*

UP to the year 1899, Oak Park had been striving to get a street pavement which would fill the conditions for a residence suburban town as to cost, general appearance and durability. Prior to the above date pavements had been constructed of limestone macadam, cedar block in the business district (which has since been displaced by brick), and two streets of asphalt. The curbing used in a majority of the above pavements consisted of limestone in 6-foot lengths, 30 inches in depth, hammer-dressed to 12 inches on the face and 6 inches on the back, and to a thickness of 4 to 6 inches.

The difficulties arising from the pavements existing at that time was mainly this:—The limestone macadam streets were constructed with insufficient crown and ground up rapidly under the action of traffic, and were exceedingly dusty if not properly sprinkled. Cedar block pavement was expensive at almost any cost, and especially so at 1 dol. per yard, when the life of the pavement did not exceed seven years, and the abutting property was compelled to stand a second assessment to replace the old cedar block. It may be well to state at this point that at that time the Board of Local Improvements of Oak Park refused to consider any

* A paper read before the Illinois Society of Engineers and Surveyors by R. A. Carpenter.

petition from property owners for paving with cedar block. Asphalt pavement, while desired by a few residents, did not meet with general approval from the fact of its being too expensive and a possibility in a very few years of being badly cracked up, this giving the street a very untidy appearance and also lessening the life of the pavement.

Under the conditions as herein briefly set forth, the first ordinance was drafted for paving Euclid Avenue, a distance of 2,200 feet, with a granite-top macadam pavement. The roadway on this avenue was paved to a width of 30 feet between face of curb and included the gutter flags, which were combined with the curb.

The curb and gutter was constructed on a bed of cinde 8 inches in thickness. The curb was 7 inches in thickness with an average height of 12 inches, and combined with gutter flag 18 inches wide and 6 inches thick. The curb exposed at the summits of the gutter was 4 inches, and 8 inches at the outlets of the gutters. The combined curb and gutter was constructed from Portland cement, fine granite screenings and crushed granite in proportions of one part of cement, two parts of granite screenings and four parts of crushed granite. One inch on top of gutter flag and roadway face of curb was composed of one part cement and one part of fine granite screenings. The curb and gutter was laid in 6-foot sections, and the corners of street intersections were rounded to a radius of 6 feet and at all public alleys rounded to a radius of 1½ foot.

The roadway between the gutter flags was excavated to such a depth and in such a manner that after the subgrade had been thoroughly rolled with a steam-roller of not less than 10 tons weight, and after the different courses of material had been placed thereon, the finished pavement in the centre of the roadway would be 6 inches above the top of the curb, giving an average crown of 1 foot in 30 feet.

On the sub-grade the first course was composed of macadam limestone bonded with limestone screenings, and measured 8 inches in depth over the entire roadway between gutter flags after rolling. On top of the 8-inch course macadam was placed a layer of medium limestone bonded with limestone screenings, measuring not less than 4 inches in depth over the entire roadway after rolling.

On top of the 4-inch limestone course was placed a layer of medium crushed granite, on top of which was

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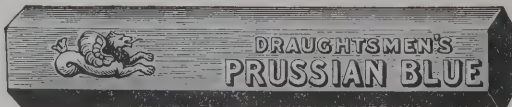
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placed sufficient bonding gravel to thoroughly fill all interstices, and as the rolling was in progress the roadway was thoroughly drenched with water and the rolling continued until all water placed upon the pavement would seek the gutter, indicating a thoroughly bonded pavement. The course of granite measured not less than 3 inches over the entire pavement after rolling.

On top of the bonded granite course was placed a layer of pea granite $\frac{1}{2}$ inch in thickness over the entire roadway and the whole roadway thoroughly rolled, compressing so far as possible the pea granite into the bonding gravel. The gutters were then thoroughly cleaned by brooms and the entire street barricaded for one week to thoroughly dry out and harden. At the expiration of one week the avenue was thrown open to traffic, and for seven years has required no maintenance further than cleaning and sprinkling, and has always been perfectly satisfactory to the abutting property owners who paid for the improvement.

At the time the Euclid Avenue paving was completed there were many residence streets in Oak Park ready for improvement. A large majority of the petitions received by the Board of Improvements for paving streets in Oak Park since that time have been for granite-top macadam, with the request that the specifications be the same as Euclid Avenue. Many streets up to the present have been paved in this manner, approximating 250,000 dols., including those constructed by special assessment and private contracts.

Experience has shown there are a number of points to be observed in constructing granite-top macadam pavements in order to give the best results.

First, it is advisable, where it can be done, to make a system out of each special assessment and pave all streets, both ways within the district comprising the system, and thus avoid so far as possible the mud from unimproved streets being deposited on the pavement. A single paved macadam street extending into a district where all the cross streets are unimproved will be injured more from the mud of the cross streets being deposited on the paved streets than from all the traffic on the street in ordinary dry weather. It will further be found where a single street is paved in an unimproved district, traffic (both heavy and light) will in nearly all instances go considerably out of the

way in order to take advantage of a paved street, which is unfair to the owners of abutting property who have paid for the improvement.

Second, one of the very important questions in constructing granite-top macadam streets is to give plenty of crown, 12 inches on a 30-foot roadway is none too much, and also to be sure that the rolling is continued long enough on the granite course to insure the street being thoroughly bonded.

Third, one of the mistakes that is often made in constructing streets of this character is in using too much bonding gravel. A great deal of care should be exercised in spreading the gravel (and especially so when the gravel is wet and chunky), otherwise it will be found patches will appear where the gravel is greatly in excess and other places where there is an insufficient amount to receive a bond. Any overplus of gravel on a street when opened for traffic will cause the pavement to mud up badly during wet weather and dust in dry weather. The least amount of gravel that can be used and still have all interstices filled will give the best results, and cause the least trouble on maintenance in the future.

The average estimated cost per square yard on granite-top pavements in Oak Park is 1.35 dols., and granite curb and gutter 70 cents per lineal foot.

ART TRAINING OF THE POTTER.

A MEETING of the Midland Association of Headmasters of Schools of Art was held at Burslem last week. The members of the Association who attended first paid a visit to the pottery of Messrs. Doulton & Co., Ltd., where they were given an opportunity of inspecting the various processes in connection with pottery manufacture. Subsequently they assembled in the lecture theatre of the Wedgwood Institute, where Mr. Stanley Thorogood (headmaster of the Burslem School of Art) read a paper on "The Art Training of the Potter."

According to the *Staffordshire Advertiser*, he said probably there was no craft dealing with the arts which was more fascinating, interesting, and so full of difficult problems as that of potting. Here they had to deal with a plastic material that might be treated in an endless variety of ways ;

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it might receive the roughest treatment or the most delicate handling imaginable, and practically all the known forms of expression might be embodied in one work. It provided scope for the scientist, artist, modeller and designer, and the processes—both scientific and artistic—were so numerous that one would indeed have to be a genius to master them all in a lifetime. Although the scientist was always making discoveries, the problem of firing and the effect of varying temperatures were so intricate that they were never thoroughly solved and were always a source of anxiety to the potter. Possibly there was no district in the country where there was greater need for a school of art from a practical point of view than in the Potteries. They were surrounded by craftsmen and young people whose very livelihood depended on a knowledge of art in some form or another, and he was pleased to say that within recent years many advances had been made in the direction of recognising the importance of the art training given in their schools. As illustrating the general awakening to the importance of art education in the district, he might point to the co-ordination of the elementary and art schools which was taking place in each of the five Pottery towns, but while this system could not fail to have a beneficial effect on the workers in the staple trade, he hoped that the day was not far distant when authorities and public alike would look more broadly on art education.

In this age of machinery and commercialism, it was impossible to deal with this subject without first of all considering what was demanded of those they were called upon to train. One felt that the great work of the twentieth century, so far as many of the artistic crafts were concerned, was to educate students in the principles of art, to inculcate a practical knowledge of the manufacturing conditions imposed by machinery, and to endeavour to introduce artistic beauty into machine-made productions. However distasteful to the artist, they must accept the commercial conditions, for machinery had come to stay. Lovers of pure handicraft might regret to learn that quite 90 per cent. of the products of the Potteries were machine made, but it nevertheless was a fact. Take, for instance, that interesting craftsman, the thrower. While he might have the opportunity of being a great artist, commercial conditions almost turned him into a machine. Many might imagine that

students studying form and designing shapes might take a piece of clay and evolve a shape directly on the wheel, and this no doubt would be an ideal method, and one that would appeal to the artistic craftsman, but he feared it was impracticable and to a certain extent useless in a school of art. In the first place, to throw a shape that was practicable, in other words one that would fire, was one of the most difficult feats imaginable and one that required years of practice in order to become expert. Then, further, few throwers for first-class work were required in the Potteries, and even their work was almost entirely confined to throwing from shapes already designed for them on paper. Unfortunately, however facile a thrower he might be, he was rarely if ever called upon to design shapes directly on the wheel, and this was regrettable, seeing how suggestive of fine form was this means of production.

Again, in the case of the ordinary pottery modeller, many of his methods were mechanical and required extreme care. The pottery decorator, however, dealing with first-class hand-painted work, was, in one sense, not so limited. It was true he must know his palette, and it required some years of experience to become an expert in the application of colour and to learn the effects of the fire, but an unerring draughtsman and colourist had endless opportunities of applying his knowledge in every conceivable way. There was practically little limit to his modes of expression, and in spite of the difficulties with certain colours, very charming colour schemes were obtainable. In face of commercial conditions, they had a difficult task in the matter of teaching and applying correct methods, for one feared that, with few exceptions, there was at present little demand for work representative of the best principles.

They had not yet produced a public that had the taste to appreciate it or the knowledge to distinguish between good and bad in art. They might be offended and bewildered by the motley conglomeration of forms and styles and incongruous colour schemes to be met with on many articles of utility, and also by the free use of cheap, gaudy naturalistic transcripts from nature that were strewn over shapes, regardless of the contour, but they were told that the public created the demand and that the manufacturer must cater for it. While it must be admitted that improvement in public taste was necessary in order to advance

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pottery design, yet it could not be denied that if the manufacturers were more prone to place before the public pottery of a more artistic character, the demand would in time be created. At the present time one was able to find furniture, wall-papers, hangings, tiles, carpets and other requisites for the equipment of the house of really artistic merit, and one could only assume that the better taste in this direction had been influenced by manufacturers persistently producing work of a higher artistic order than heretofore. Amongst the more important of those requiring artistic education in the potting industry were tile draughtsmen and designers, pottery decorators, modellers, designers, engravers, moulders and turners, and the question arose what was the best and most efficient educational means of training such craftsmen, taking into consideration their limited amount of time and having regard to the commercial conditions. This led to the all-important question of technical instruction in their schools of art.

It was true that some few years ago they might have been accused of not sufficiently applying their studies to the various artistic crafts, but he feared they might soon have to consider if the pendulum had not swung back a little too far. In their eagerness to be practical were they not in grave danger of overlooking the fact that, in the first place, good draughtsmanship and a good general art training were of vital importance to the craftsman in whatever craft he might be engaged? Certainly the very nature of the requirements of the art worker in the Potteries demanded, first and foremost, that he should have a liberal education in all matters relating to art, and, above all, that he should be a good draughtsman. This being the case, it meant that the first four or five years of the student's time at school should be devoted entirely to the study of art and draughtsmanship in general, independent of any specialising and he thought the same should apply to every craftsman. Given a student who had devoted his time to serious study, and was well acquainted with plant and animal life, the laws and principles of ornament, the history of art and architecture, and who had learnt to become a good draughtsman, and, in other words, had received the liberal education which it was the first duty of a school of art to give, he would soon turn his hand to any craft, whatever it might be. There were many workers who were extremely skilful

—as far as their technical work was concerned—in their own narrow sphere, but the two things they lacked were knowledge and good draughtsmanship.

In saying this, he did not underestimate the importance of craftwork, for it was manifestly essential that students designing for any process should be thoroughly acquainted with their material before attempting to design in it. But craftwork was undoubtedly popular, and to many afforded a royal road. This tended to make the student feel that he could run before he could walk, and was analogous to the art student who desired to paint difficult subjects before he could draw. Much of the so-called craftwork executed under these conditions was amateurish and feeble, and as useless as a factor in art education as the copying from lithographs, which was common in some schools of art years ago. It would be understood that they had abundant opportunities of taking up technical work in their schools in the Potteries, and they did their utmost to apply their teaching to the staple industry, as was evidenced by the amount of potterywork they executed in material. But the exceptionally intricate technical nature of potting made it very difficult to carry out work in its entirety in a school of art, particularly in connection with the firing of large works. Again, while many of the processes were easily taught in a school, it must be remembered that the majority of workers to whom a knowledge of processes would be useful were fairly well acquainted with them, and indeed had spent practically the whole of their time on the technical side in the factory. Consequently, what they required from the school of art was the training he had endeavoured to indicate.

In consideration of the fact that they were surrounded by factories and that the manufacturers were willing to help them, it was a question if it would be advantageous to go in for any elaborate system, as without doubt the ideal situation for a school of art, so far as its technical work was concerned, was really on the factory. One of the most important questions they had yet to deal with in that district, as in many others, was with regard to apprentices. It was somewhat unfortunate that the old system of apprenticeship was not now in vogue, as it placed many obstacles in the way of their training, and again, the fact must not be overlooked that the majority of them were

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wage-earners from the moment they left school. With a few exceptions, the whole of the apprentices' time in the day was devoted to the technical side, leaving only the evenings for their special artistic training, with the result that they rarely had the opportunity to study the very branches of work which would be most useful to them, such as plant and animal life and colour harmonies. An ideal system of training would be for apprentices during the first few years of their apprenticeship to devote half their time to the school of art, studying in a similar manner to students at the art trade schools of the Continent. Certainly, it would give them an opportunity of receiving a good groundwork in subjects which it was impossible to teach in the factory. He feared that if anything was to be done a system of scholarships would have to be devised, and it would have to be looked upon from a national point of view if they were to have any permanent arrangement. Certainly advances would have to be made in this direction if we were to compete with other nations. At the conclusion of his paper, Mr. Thorogood gave demonstrations of various ceramic processes, principally in connection with the production of tiles.

ELECTRICITY IN EDINBURGH.

A LECTURE was delivered last week by Mr. F. A. Newington, resident electrical engineer, on "The Electricity Supply of Edinburgh." He began by tracing the development of electricity, noting the first arc lamp of Sir Humphry Davy in 1813, and the simultaneous production in 1880 of the incandescent lamp in this country and America. Of the incandescent lamps with filaments made of some of the rarer metals the best known were the Nernst and the Santalum lamps, and the latter, or something similar, would, he believed, be the lamp of the near future. By it he demonstrated the light could be increased 44 per cent. with a reduction of about 8 per cent. in one's bill. The development of electrical apparatus for heating, cooking and other domestic uses was noted, and the lecturer afterwards proceeded to trace the progress of the Edinburgh undertaking. For the first two years the price for electricity for power purposes was 3d. or 3½d. per unit, but at that rate electricity

was not able to compete with steam or gas-engines. As soon as the price was reduced to 1½d. per unit people quickly realised that the electric motor was an exceedingly convenient machine for producing mechanical power. For the first year (1895) only 68 horse-power was in use, whereas now the amount was 8,200 horse-power, an increase of about 120 times in eleven years. Speaking of the electricity undertaking of the city, he said that the machinery first erected at Dewar Place station amounted to 1,700 horse-power, and the increase in the demand for electricity had continued with fair regularity ever since. In 1906 the horse-power installed amounted to 20,000—that meant that the machinery had increased nearly twelve times in eleven years. The buildings at M'Donald Road station as they stood at present would contain about 18,000 horse-power of machinery, but the site was sufficient for double that amount. After describing the plant at the two stations he said that at the present time there were about 35 miles of feeders, 110 miles of distributing mains and 50 miles of high-tension mains throughout the city. Arc lamps were largely used for lighting the streets of the city, the number at present in use being 1,137. The length of streets so lighted was about 40 miles. At the commencement the price charged was 20d. per lamp per annum, but the rate had been reduced year by year until now it was only 9d. That price included supplying and erecting the lamp and post, trimming and maintenance, and electricity. He thought that was about the lowest rate in Great Britain. The quantity of electricity used for street lighting now amounted to about 1,500,000 units a year. Dealing with the progress made during the twelve years of working, he pointed out that in 1895 there were 479 consumers, and now they numbered 10,000. In 1895 the lamps connected were 57,400, and now they were 431,000. For lighting, in 1895 electricity cost 6d. per unit, and at present it was 3d. per unit. The price for power in 1895 was 3½d. per unit, and it had fallen steadily to the present rate of 1½d. per unit. The total surplus up to May 15, 1906, amounted to 118,600l., of which 90,600l. had been invested as a reserve fund, and the remainder, 28,000l., had been used in the reduction of the general rates of the city. On the motion of the Chairman, cordial thanks were awarded to Mr. Newington for his lecture.

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In no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

One of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

DUDLEY.—March 30.—For a free library in St. James's Road. Competitors must be practising within 50 miles of Dudley. Mr. H. C. Brettell, town clerk, Town Hall, Dudley.

SUNDERLAND.—March 30.—New church and halls for the Presbyterian Church of England in the Side Cliff Road, Roker, Sunderland. Premiums of 25l. and 15l. respectively. Lithographed plans of site, &c., on application to Mr. George W. Bain, 46 John Street, Sunderland.

CONTRACTS OPEN.

ASHBOURNE.—March 30.—For all the works required in connection with the erection of a grammar school at Ashbourne, Derbyshire. Deposit 2l. 2s. Mr. E. M. Longsdon, architect to the Governors, Bakewell.

BARTON-UPON-IRWELL.—April 5.—For decoration of the interior of St. Catherine's Church, Barton-upon-Irwell. Mr. N. Hartley Hacking, architect, 50 Blackfriars, Manchester.

BEDALE.—April 11.—For restoration of Bedale Church, Yorkshire. Mr. G. R. Boreham, quantity surveyor, 24 John Street, Sunderland.

BEDLINGTON.—April 8.—For work of erecting a Council school, to accommodate 200 scholars, at Bedlington, Northumberland. Deposit 2l. 2s. Send names to Mr. C. Williams, secretary to the education committee, by March 28.

BELFAST.—March 29.—For additions and alterations to Salem Methodist church, York Street. Deposit 1l. 1s. Mr. W. D. R. Taggart, architect, 2 Wellington Place, Belfast.

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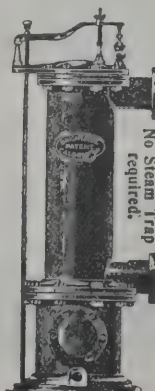
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BORDON CAMP.—April 9.—For the erection of a post office at Bordon Camp, Petersfield. The Secretary, H.M. Office of Works, &c, Storey's Gate, London, S.W.

BRISTOL.—April 5.—For the erection of a mortuary at the Stapleton workhouse. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

CARDIFF.—April 3.—For the enlargement of the head post office. Deposit 1*l.* 1*s.* H.M. Office of Works, &c, Storey's Gate, S.W.

CARLTON.—April 17.—For the construction of the 75-foot span masonry bridge known as Carlton bridge, carrying a district road over the river Aire at Carlton, within the urban and rural districts of Skipton, and situate 1½ mile south-west of the town of Skipton. Deposit 1*l.* Mr. F. C. Carpenter, West Riding surveyor, County Hall, Wakefield.

COCKTON HILL.—April 9.—For the erection of Council school at Cockton Hill. The County Education Committee's Architect, Shire Hall, Durham.

DERBYSHIRE.—April 4.—For the erection of Council school, Hasland. Deposit 1*l.* 1*s.* Mr. George H. Widdows, architect to the committee, County Education Office, St. Mary's Gate, Derby.

DONCASTER.—April 3.—For the erection of a wing at the Yorkshire Institute for the Deaf, Doncaster. Deposit 1*l.* 1*s.* Mr. E. Hall Ballan, architect, 19 and 20 Baxter Gate, Doncaster.

DORCHESTER.—April 3.—For building three cells at the town police station. The County Accountant's Office, Dorchester.

EDINBURGH.—April 4.—For the erection of the superstructure of Edinburgh Post Office extension. Deposit 1*l.* 1*s.* Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

FALKIRK.—April 10.—For the work of administrative block and porter's lodge to be erected at fever hospital. Mr. David Ronald, burgh engineer, Burgh Buildings, Falkirk.

HARROGATE.—April 5.—For the erection of a villa-dence on the St. James's Park Estate, Harrogate. Mr. Clement Williams, architect, 29 Southgate, Halifax.

IRELAND.—March 29.—For the erection of a mans the Maxwell Road, Bangor. Mr. Ernest L. Woods, architect, Bangor, co. Down.

IRELAND.—April 2.—For the erection of three dwellings near Wellington bridge, Cork. Messrs. W. H. & Son, architects, 28 South Mall, Cork.

LITTON.—For the erection of a club at Litton, Buxton. Mr. W. R. Bryden, F.R.I.B.A., architect, 10 Street, Buxton.

LONDON.—April 3.—For the erection of pavilion "1" the Hackney Union Infirmary, High Street, Home N.E. Deposit 5*l.* Mr. W. A. Finch, architect, 76 Fins Pavement, E.C.

LONDON.—April 4.—For the erection of a pair of cottages at Hendon. The Secretary of the Way and Works Committee, Midland Railway, Derby.

LONDON.—April 27.—For the erection of dwelling for the working classes, on a site known as Brantome Hill. Messrs. Joseph & Smithem, architects, 83 Queen Street, Cheapside.

LUDGERSHALL.—March 30.—For the erection of a school hall at Ludgershall, constructed of wood and galvanized iron on brick foundations. Deposit 2*l.* 2*s.* Mr. A. Dryden, county surveyor, Trowbridge.

MACCLESFIELD.—April 8.—For secondary schools for 250 girls to be erected in Fence Avenue. Deposit 1*l.* 1*s.* H. Beswick, county architect, Newgate Street, Chester.

MARAZION.—April 5.—For the erection of a police station's dwelling-house at Marazion, Cornwall. Mr. C. Caldwell, architect, County Offices, Bodmin.

MILFORD HAVEN.—April 3.—For the erection of cottages and laundry-rooms at the Milford Haven County School. Messrs. D. E. Thomas & Sons, architects, Victoria House, Haverfordwest.

NEWCASTLE-UPON-TYNE.—April 4.—For additions and alterations at the Westmoreland Road Council school. Deposit 2*l.* 2*s.* The City Property Surveyor's Department, Town Hall.

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NEWTON ABBOT.—April 2.—For the erection of piggeries, workhouse and removing partitions, &c., at scattered places. Mr. S. Segar, Newton Abbot, Devon.

OLDHAM.—April 8.—For the erection of Council infants' school in Richmond Street. Mr. Thomas Hilton, architect, Lion Street, Oldham.

ORMSKIRK.—April 3.—For the erection of a pavilion and extension of the main infirmary block at the Ormskirk House, Lancs. Mr. J. Dod, architect, 216 Exchange Buildings, Liverpool.

OSWALDTWISTLE.—April 3.—For the building of two houses situate in Cross Street and Holly Street, Oswaldtwistle. Misses E. & S. Catlow, Cross Street.

PENDLETON.—April 8.—For erecting a school to accommodate about 1,120 children at Halton Bank, Pendleton, Lancs. Mr. John H. Woodhouse, architect, 100 King Street, Manchester.

POCKLINGTON.—April 12.—For the erection of a Council school to accommodate 250 children at Pocklington, Yorks. Mr. John Bickersteth, clerk to the East Riding Education Authority, County Hall, Beverley.

RAMISCOMBE.—March 29.—For the erection of a dwelling-house at Ramiscombe, in the parish of Botusfleming, Wiltshire. Messrs. J. Kittow & Son, surveyors, &c., Wootton Bassett.

ST. ALBANS AND BISHOP'S STORTFORD.—April 9.—For the erection and completion of a new County Council school, St. Albans, and for the carrying-out of additions and alterations to the technical school, Bishop's Stortford. Deposit 2*l.* 2*s.* each. Hertfordshire County Surveyor's Office, Hatfield.

SANDBACH.—April 1.—For the erection of slaughterhouse at Sandbach. Messrs. Alfred Price & Son, architects, North, Sandbach.

SCOTLAND.—April 1.—For the construction of a stone boat house for the Royal National Lifeboat Institution, at a site adjacent to the foreshore in Port Logan Bay, near

Stranraer. Deposit 1*l.* 1*s.* Mr. W. T. Douglass, the engineer and architect to the Royal National Lifeboat Institution, 15 Victoria Street, Westminster, S.W.

SCOTLAND.—April 5.—For the work of house to be erected in Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Fraserburgh.

SKIPTON.—April 5.—For the mason, joiner, plumber, &c., slater and plastererwork to be done in nine houses in Pendle Street, Skipton. Messrs. J. & G. Aldersley, Park Avenue, Skipton.

STOCKPORT.—April 3.—For the erection of schools in Newbridge Lane. Messrs. Cheers & Smith, architects, Blackburn and London.

SWINESHEAD.—April 5.—For the erection of new Wesleyan church at Swineshead, Lincs. Mr. A. E. Lambert, architect, 22 Park Row, Nottingham.

UCKFIELD.—April 10.—For alterations and additions to the public hall, Uckfield. Messrs. Overton & Scott, architects and surveyors, Public Hall, Uckfield.

WALES.—March 30.—For pulling-down and rebuilding business premises in Market Square, Pontypridd. Messrs. W. M. Lewis & Morgan, architects and surveyors, Market Square, Pontypridd, or 55 Dunraven Street, Tonypandy.

WALES.—April 2.—For making certain alterations and additions to vestry of Jerusalem Welsh Calvinistic Methodist chapel, Ton Pentre, Rhondda Valley. Deposit 1*l.* 1*s.* Mr. W. D. Morgan, M.S.A., architect, Post Office Chambers, Pentre.

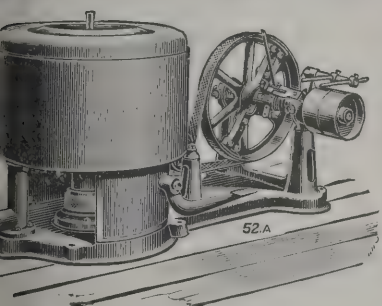
WALES.—April 3.—For the erection of a workmen's institute in Commercial Street, Aberbargoed. Deposit 2*l.* 2*s.* Plans and specification may be seen at the offices of Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—April 4.—For the erection of parish hall at Treharris. Mr. William Dowdeswell, architect, Treharris.

WAREHAM.—May 1.—For the erection of almshouses, boundary walls and fences, &c., at Wareham, Dorset. Mr. G. Clavell Filliter, North Street, Wareham, Dorset.

WITTON-LE-WEAR.—April 2.—For alterations at the school. The County Education Committee's Architect, Shirehall, Durham.

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TENDERS.

ABERCARN.

For the erection of subsidiary sewers. Mr. J. WILLIAMS, engineer and surveyor.

Nunn	£2,974	6	4
Parfitt	2,848	0	0
Sayers	2,450	0	0
Jones	2,432	6	7
Dyson, Parfitt & Co.	2,329	2	6
Rossiter	1,962	3	9
Rees, Jones & Co.	1,904	14	9
Barnes, Chaplin & Co.	1,881	5	8
MACNAB, Newport (accepted)	1,280	0	0

ALDERSHOT.

making-up Coleman and Institute roads under the Private Street Works Acts. Mr. F. C. UREN, surveyor.

Coleman Road.

Kemp	£264	0	0
Martin, Wells & Co.	259	0	0
Ripley, Strong & Co.	199	0	0
NORRIS, Hale (accepted)	198	0	0

Institute Road.

Kemp	259	0	0
Martin, Wells & Co.	252	0	0
Norris	196	0	0
RIPLEY, STRONG & CO. (accepted)	192	0	0

BASLOW.

For the erection of a new house for Mrs. Stockdale, at Baslow, near Sheffield. Mr. F. HOULTON WRENCH, A.M.I.C.E., architect, 217 Upperthorpe, Sheffield.

Longden & Son, Ltd.	£6,314	11	0
W. & A. Forsdike	6,200	0	0
Ash, Son & Biggin, Ltd.	6,041	12	9
Fidler, Ltd.	5,912	0	0
Boot & Son	5,760	0	0
Holmes	5,670	0	0
G. Sheldon	5,634	12	0
D. & G. SHELDON (accepted)	5,550	0	0
Allsop & Son	5,491	0	0

CARDIFF.

For the erection of stores at Trade Street depôts. Mr. HARPUR, city engineer.

Blake	£756	17
Gough	725	0
Hatherley & Co.	677	0
Blacker Bros.	672	0
Dunn	668	8
Beames	667	10
Hallett	662	16
Turner & Sons	626	15
Williams	622	19
Symonds & Co.	622	0
Davies & Son	620	11
Cox & Bardo	616	3
Morgan	599	0
Small	598	0
Allan	586	11
Evans Bros.	579	15
Bond	579	4
KNOX & WELLS, Cardiff (accepted)	558	6

CARISBROOKE.

For a sewer at Cemetery Hill, for the Isle of Wight Rural District Council. Mr. H. NEWLAND, surveyor.

Barton & Co.	£447	10
Barton	259	0
Hayter	238	10
Ball & Son	229	0
Quinton	227	0
SCOTT, Newport (accepted)	220	0

CHATHAM.

For erecting laundry building and bakery. Mr. E. FARLE COBB, architect, Rochester.

Accepted tenders.

Skinner, Chatham, laundry	£2,190	0
Phillips, Gillingham, bakery	920	0

For the painting of the outside wood and ironwork of the cottage homes, staff house and school buildings, for the Guardians of the Medway Union.

SWAIN & STANLEY, 212 Canterbury Street, Gillingham (accepted)	£54	13
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DARTFORD.

cleaning and painting at Gore Farm (convalescent) fever hospital. Mr. W. T. HATCH, engineer-in-chief.
 Wright & Co. £727 12 6
 Fin 527 15 0
 Essey 439 0 0
 Zak 431 15 0
 Doctor & Son 418 0 0
 LINGHAM & SONS, Dartford (accepted) . . . 364 0 0

DARTMOUTH.

carrying-out repairs and alterations to their hospital ship *Mayfly*, for the Dartmouth and Totnes Port Sanitary Authority.
 Edge & Woolacoft £13 15 0
 Tatts 11 5 0
 Jack 10 18 6
 LIS, Clarence Street (accepted) 9 10 0

EDINBURGH.

the erection of municipal art school in Lauriston. Mr. J. M. DICK PEDDIE, architect, Albyn Place, Edinburgh.

Accepted tenders.

erard & Son (with Locharbriggs stone) . £14,390 0 0
 (Whom failing, Turner & Son, 14,450/.)
 . & J. R. Watson, joinerwork 9,086 0 0
 (Whom failing, J. & F. Forrest, 9,418).
 Bird, plasterwork 2,864 15 9
 (Whom failing, trustees of P. F. Cavanagh, 3,065/.)
 unro & Son, plumberwork 2,730 0 0
 (Whom failing, Knox & Sons, 2,756/.)
 ather & Son, steel and ironwork 1,682 14 0
 (Whom failing, Little & Sons, 1,717/ 18s.)
 obson & Son, slate and asphaltwork 1,357 0 0
 (Whom failing, Ogilvie, 1,372/.)
 awson, glazierwork 1,100 0 0
 (Whom failing, Coutts & Co., 1,138/ 8s.)

Additional works £33,210 9 9
 7,500 0 0

CHATHILL.

For the erection of four houses at Sea Houses, Chathill, Northumberland. Mr. GEORGE REAVELL, jun., architect, Alnwick.
 FORAY, Sea Houses, Chathill (accepted) . . £974 1 8

GLASGOW.

For the outfall sewer contract No. 2A in connection with the Southern District sewage scheme.
 Kinnear, Moodie & Co. (recommended) . £45,381 9 0
 For substructures at Shieldhall in connection with sewerage works.
 Good & McKinnon (recommended) . . . £22,526 1 0

GREAT YARMOUTH.

For pulling-down and rebuilding shop, King Street. Messrs. A. R. CALVERT & WILLIAM R. GLEAVE, architects, Nottingham.
 HOPEWELL & SONS, Nottingham (accepted) . £4,490 0 0

GREENOCK.

For the erection of Roman Catholic school at junction of Main Street and Stanners Street. Messrs. COWAN & WATSON, architects, Glasgow.

Accepted tenders.

Aitkenhead & Sons, Greenock, mason.
 Allan & Baxter, Glasgow, joiner.
 Somerville, Glasgow, plumber.
 Donnelly & Sons, Glasgow, plasterer.
 P. & W. Maclellan, Ltd., Glasgow, iron and steelwork.
 Graham, Greenock, glazier.
 Phillips & Sons, Greenock, slater.
 M'Culloch & Co., Glasgow, painter.

HASLEMERE.

For the erection of club, for Conservative Association. Mr. J. H. HOWARD, architect.
 Smith £1,050 0 0
 Chapman, Lowry & Puttick 1,000 0 0
 Holden 936 0 0
 Doughton 930 0 0
 Haslemere Builders, Ltd, Haslemere (recommended) 850 0 0

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HANDSWORTH.

For building and other works at the tramway dépôt, Birchfield Road, for the Handsworth Urban District Council:—(a) For raising and reconstructing iron roof of the car-shed, rebuilding walls, erecting steel stanchions and other work; (b) for drainage, alterations to inspection pits and other work. Mr. H. RICHARDSON, surveyor.

Contract A.

Hill & Smith	£1,257	0	0
Elvins.	1,215	0	0
Moorhouse	1,199	0	0
Webb & Son	1,175	0	0
Garfield	1,150	0	0
HULBERT & LADBURY, Finch Road (accepted)	1,018	14	4

Contract B.

Aird & Son	374	16	1
Moorhouse	348	0	0
Garfield	347	0	0
Wood	310	0	0
Holloway	287	0	0
HULBERT & LADBURY (accepted)	242	15	6

HEREFORD.

For alterations and additions to 40 and 41 Commercial Road, Hereford, for Mrs. H. Haunt. Mr. HERBERT SKYRME, architect, 138 Widemarsh Street, Hereford.

Davies	£216	0	0
Lewis & Co.	190	0	0
Hiles	157	0	0

IRELAND.

For the erection of a dwelling-house on Circular Road, Downpatrick. Mr. E. P. NOLAN, architect.

Gordon & Son	£835	0	0
Gilmore	798	10	0
McDONALD, Downpatrick (accepted)	795	0	0
Flynn & McNeill	747	0	0

LEWISHAM.

For cleaning and painting works at the Park fever hospital, Hither Green. Mr. W. T. HATCH, engineer-in-chief.

Hussey	£447	0
Fenn	432	0
Miskin	420	0
Johnson	385	0
Proctor & Son	348	0
Sabey & Son	313	0
Bostel & Sons	297	0
Kent	287	0
KINNAIRD, 2 St. Ann's Road, Brixton, S.W. (accepted)	223	0

LONDON.

For painting, colouring and cleaning work proposed to be done at the branch school, 253 King Street, Hammsmith, W.

CHUDLEIGH BROS., Shepherd's Bush Road, W. (accepted) £152 0

For sewerage and combined drainage and other drainage works, 18 to 34 Clarendon Gardens. Mr. E. B. NEWTON, borough surveyor.

Paterson, Ltd.	£721	18
Bell & Sons	686	0
Pedrette	586	13
Jackson & Co.	408	14
Soan	400	19
Bonny	389	1
Neave & Son	363	0
ROGERS & Co., North Kensington (accepted)	308	0

For alterations and additions to Archbishop Tenison school, Lambeth, for the trustees. Messrs. WARING NICHOLSON, architects, 38 Parliament Street, Westminster.

Hooper & Son	£2,980	0
Appleby & Sons	2,900	0
Laphorne & Co.	2,878	0
Marsland & Son	2,755	0
Ansell	2,727	0
Holliday & Greenwood	2,615	0
SMITH & SON (accepted)	2,565	0

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LONDON—continued.

For supply of low-tension switchboards for (a) the Islington, Holloway, Hackney and Clapton sub-stations and additional switchboards for the Limehouse, Shoreditch and Holborn sub-stations on the north of the Thames, and (b) the Lewisham, Forest Hill, Stockwell and Tooting sub-stations on the south of the Thames, and also small switch panel to be used in connection with the supply by the Woolwich Borough Council of electric energy for the Woolwich tramways.

	Northern Sub-stations.			Southern Sub-stations.		
Universal Electrical Manufacturing Co.	£5,908	0	0	£4,334	0	0
British Westinghouse Electric & Manufacturing Co.	4,966	8	0	3,495	11	0
Ferranti	4,807	13	6	3,731	0	0
Electric Construction Co.	4,665	8	0	3,612	11	0
Kelvin & White	4,396	11	2	3,441	8	10
General Electric Co.	4,141	15	9	3,100	19	3
Cox-Walkers	4,057	0	0	2,940	0	0
Dixon & Son	3,755	13	3	2,966	11	9
Johnson & Phillips	3,749	8	4	2,877	10	8
Whipp & Bourne	3,744	2	2	2,885	8	8
Evered & Co.	3,711	17	0	2,851	16	0
Eckstein, Heap & Co.	—	—	—	2,850	0	0
Thomas	3,698	0	0	2,737	7	0
Edison & Swan Co.	3,655	9	2	2,897	10	9
SPAGNOLETTI & Co., London (recommended).	3,336	0	0	2,620	0	0

For manufacture, delivery and erection of twelve water-tube boilers for use in the second portion of the Greenwich electricity generating station.

Thames Ironworks, Shipbuilding and Engineering Co.	£29,846	0	0
Clarke, Chapman & Co.	28,761	0	0
Stirling Boiler Co.	28,632	0	0
Babcock & Wilcox, Ltd., London (recommended).	27,846	0	0
Rowland & Co.	27,004	0	0
Danks & Co.	24,137	0	0

LONDON—continued.

For supply of new switch panels, &c., required at the Elephant and Castle sub-station.

British Westinghouse Electric and Manufacturing Co.	£1,188	0	0
Eckstein, Heap & Co.	1,005	6	0
Thomas	877	16	0
Evered & Co.	874	6	0

For installing additional plant at the Battersea, Brixton, Clapham, Streatham and Wandsworth tramways sub-stations.

Dick, Kerr & Co.	£646	0	0
Ferranti, Ltd., Hollinwood, Lancashire (recommended).	562	18	6

For supply of cables, cleats, &c., for fixing motor generators in their permanent positions.

British Insulated and Helsby	£953	10	2
Siemens Bros.	927	5	3
Henley's Telegraph Works Co.	924	17	2
Western Electric Co., London (recommended).	900	2	4

For laying-out forecourt garden at Briscoe Buildings, Brixton Hill.

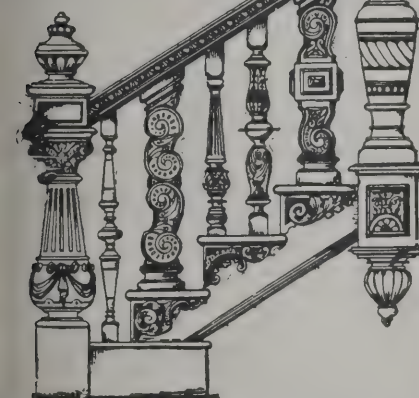
Holloway Bros.	£245	0	0
Goad	230	0	0
F. & H. F. Higgs	212	0	0
J. & C. Bowyer	210	15	0
HARDING & SON, Brixton (recommended).	206	10	0

For pulling-down and rebuilding 39 Great Windmill Street. Mr. EDGAR H. SELBY, architect. Quantities by Messrs. CORDEROY & CORDEROY.

Patman & Fotheringham	£1,783	0	0
Higgs & Hill	1,744	0	0
Lea	1,625	0	0
Chessum & Sons	1,623	0	0
Greenwood	1,594	0	0
Higgs	1,579	0	0
Colley & Sons	1,563	0	0
Rice & Sons	1,549	0	0
Southern Building Co.	1,545	0	0
Sheffield Bros.	1,535	0	0
MATTOCK & PARSONS (accepted).	1,525	0	0

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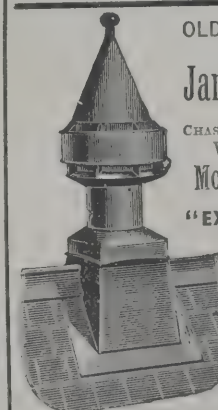
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LONDON—continued.

For the manufacture, supply and delivery of stoneware cable-ducts required in connection with the reconstruction of certain existing tramways, and the construction of some new lines for electric traction.

	Per 1,000 Ducts.
Sharp, Jones & Co.	£18 10 0
Crankshaw & Co.	17 0 0
Woodward	15 0 0
Wragg & Sons	15 0 0
Stanley Bros.	15 0 0
Skey & Co.	15 0 0
Tugby & Co.	15 0 0
Sutton & Co.	15 0 0
Mansfield	15 0 0
Robinson & Dowler, Overseal, near Ashby-de-la-Zouch (<i>recommended</i>)	15 0 0
Gibbs & Canning, Tamworth (<i>recommended</i>)	15 0 0
Ensor & Co., Ltd., Woodville, near Burton-on-Trent (<i>recommended</i>)	15 0 0
Doulton & Co., Ltd., London (<i>recommended</i>)	15 0 0
Donnington Sanitary Pipe and Fire Brick Co., Ltd. (<i>recommended</i>)	15 0 0

For laying of stoneware cable-ducts in connection with tramway construction and reconstruction works now in hand, or proposed shortly to be commenced, north of the Thames and south of the Thames.

	North of Thames.	South of Thames.
Moran & Son	£49,239 13 5	£46,000 0 0
Greig & Matthews	44,234 2 7	33,901 2 3
Mowlem & Co.	—	28,486 0 0
Muirhead & Co.	38,994 0 0	28,115 0 0
Paterson	36,974 4 2	30,217 0 9
Reid Bros.	36,513 4 0	26,623 0 0
Ewart (<i>recommended</i>)	35,240 11 8	27,173 2 9

For fitting-up shop No. 2 Chadworth Buildings, Garden Row estate.

Haskins	£135 0 0
Sage & Co.	127 10 0
Wall	85 0 0
LASCELLES & Co. (<i>accepted</i>)	82 0 0

LONDON—continued.

For cleaning and painting at the Brook fever hospital Shooter's Hill. Mr. W. T. HATCH, engineer-in-chief.

Proctor & Son	£499 0 0
Mills	486 0 0
Martin	415 0 0
Sabey & Son	402 0 0
Fenn	327 18 0
WRIGHT & Co., 150 Brixton Hill, S.W. (<i>accepted</i>)	255 0 0

For repairs to the Worthington pumping-engines at the Abbey Mills pumping-station.

Thames Iron Works Co.	161 7 6
Hunter & English	156 0 0
Seagers, Ltd., Dartford (<i>recommended</i>)	132 0 0

For manufacture, supply and erection of fourteen induction motor generators, &c., at the Clapton, Hackney, Forest Hill and Lewisham sub-stations.

Mather & Platt	£25,805 0 0
Dick, Kerr & Co.	25,374 0 0
Siemens Bros.	24,515 10 0
Phoenix Dynamo Manufacturing Company	23,407 0 0
British Thomson-Houston Company	22,494 14 0
British Westinghouse Electric and Manufacturing Company	21,575 0 0
Electric Construction Company, Wolverhampton (<i>recommended</i>)	21,434 10 0
British Electric Plant Company	20,534 0 0
General Electric Company	19,907 0 0

OXENHOPE.

For the erection of new Council offices at Oxenhope, Yorks. Messrs. JOHN HAGGIS & SONS, architects, North Street, Kieghley.

Accepted tenders.

Waddington Bros., mason	£330 15 0
Wright, joiner	102 0 0
Raw, plumber	33 18 0
W. Tidswell, Denholme, slater	25 0 0
W. Tidswell, plasterer	16 7 2
Whitaker, painter	11 10 0

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"Standard" Porcelain Enamel Ware is moderate in cost, beautiful in its finish and extremely durable. Absolute freedom from cracks or crevices assures the maximum sanitary protection. A bathroom fitted with "Standard" Ware greatly increases property value.

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NEWPORT.

For new premises, High Street, Newport, for Mr. W. Burt. Messrs. HABERSHON, FAWCKNER & Co., architects, 41 High Street, Newport, and Cardiff.

Brownscombe & Son	£2,150	0	0
Blackburn	2,145	0	0
Morgan & Co.	2,110	0	0
Moore	2,100	0	0
Jewell & Sons	2,038	0	0
Reed	2,027	0	0
Linton	2,000	0	0
Shopland	1,999	0	0
Moon (accepted)	1,998	0	0
Charles	1,995	0	0
Smith Bros.	1,950	0	0
Williams	1,949	0	0

NORTH KEYHAM.

For erecting sections of St. Thomas's Church. Messrs. HINE, ODGERS & MAY, architects, Plymouth.

Pethick Bros.	£4,444	0	0
Pearn Bros.	3,998	0	0
Lethbridge & Son	3,985	0	0
Cockerell	3,958	15	6
Andrews	3,920	0	0
Wakeham Bros.	3,828	0	0
Stanbury	3,781	0	0
Turpin	3,737	0	0
Roach & Lovell	3,688	0	0
Paynter	3,580	0	0
MATCHAM & Co., LTD., Plymouth (accepted)	3,445	0	0

PENZANCE.

For laying-out and making-up the main and back roads on the Richmond building estate. Mr. H. MADDERN, architect, 13 Clarence Street, Penzance.

Tregenza	£1,000	0	0
Runnalls	942	10	0
Pidwell	865	10	0
BURNETT & SON, 9 Penare Terrace, Penzance (accepted)	775	12	9

SHEFFIELD.

For water storage reservoir, valves, screens, &c. (Contract No. 41, Neepsend Power Station). Quantities by Mr. S. E. FEDDEN.

Yorkshire Hennebique Contracting Co.†	£4,918	0	0
Wellerman Bros.*	4,686	14	0
Bentley*	4,619	0	0
Fidler, Ltd.*	4,596	18	0
Ashley*	4,314	0	0
Cunliffe*	4,221	12	2
Eshelby & Son*	4,186	10	2
Craig*	4,167	17	7
Wilkinson & Son*	3,879	10	0
Taylor, Blackpool (accepted)	3,538	13	0

† This firm have included their own special material, and the tender is not comparable with the others. * Add 130l. for work omitted from quantities.

SURBITON.

For reconstructing the drains at 47 to 54 Cleveland Road, Surbiton, for the Surbiton Urban District Council.

Rice & Son	£142	6	10
McDonald Bros.	139	10	0
Johnson	126	0	0
Gaze & Sons	125	10	0
H. & A. C. Soan	125	0	0
Reading	123	4	3
Butcher	119	0	0
R. Scase & Son	113	14	0
E. Scase	112	10	0
Lane	112	7	0
Turner	108	1	0

ROBERTS, Hampton Lodge, Hampton Hill (accepted) 88 17 0

For the construction of two public conveniences at the Victoria Recreation Ground in the Balaclava Road, Surbiton. Mr. HENRY T. MATHER, surveyor.

Hyde & Co.	£264	0	0
Turner	252	2	0
McDonald Bros.	245	0	0
Farley	239	10	0
Raines	185	15	9
LIMPUS & SON, Surbiton (accepted)	228	0	0

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132 CROSVENOR RD, PIMLICO.

MANCHESTER
TRAFFORD PARK.

WALES.

For erecting a minister's house at Salem (C.M.) chapel.
Messrs. RICHARD DAVIES & SON, architects, Bangor.

Jones & Son	£780	0	0	A.
R. & J. Williams	753	0	0	—
O. T. Williams	721	0	0	—
MORRIS (accepted)	690	0	0	£580 0 0
Roberts	680	10	0	611 12 0
Pierce	673	0	0	626 0 0
Griffiths	665	0	0	620 10 0

A. With reductions.

WALSALL.

For execution of alterations and additions to the Congregational church, Ryecroft. Messrs. BAILEY & McCONNAL, architects, Bridge Street, Walsall.

Wistance	£489	0	0
Kendrick & Son	478	10	0
Setts & Airston	478	3	0
Brockhurst & Wood	442	0	0
Hall & Son	426	0	0
Insley	425	0	0
S. Wootton	424	10	0
J. & F. WOOTTON (accepted)	388	5	6

WARMINSTER.

For building additions to the Buries, Warminster, for Mr. GRATNEY R. Z. ERSKINE. Messrs. LONG & GLASS, architects, Market Place, Warminster.

Long & Son	£1,840	0	0
Amery	1,769	0	0
Downing & Rudman	1,760	0	0
Curtis & Son	1,719	0	0
Moore	1,705	0	0
Parsons Bros.	1,627	10	0
Moody	1,600	0	0
Colborne	1,588	10	0
Ponton	1,560	0	0
Linzey	1,470	0	0
BUTCHER & SON, Warminster (accepted)	1,377	14	0

NEW CATALOGUE.

THE interesting brochure issued by the National Fireproofing Company on "The Correct Construction of Fireproof Buildings" is an explanatory and illustrated catalogue of their system. The numerous photographs suggest the variety of conditions under which the system can be applied. An essential feature is the use of porous terra-cotta hollow tile blocks of various shapes, which serve for the construction of floors and for the protection of the girders. The two photographs showing the effect of fire on girders and other steelwork which were not protected are a most effective argument than can be expressed in words of the risks incurred by an excess of confidence in steel by itself. The strength of the material may not be increased by any covering as regards the sustaining of loads, but as a covering either prevents or delays the contact between flames and metal, in that way there is an important gain. If girders and cross-bearers once succumb the fate of a building is not far off. The appreciation of the National Fireproofing Company's system by insurance offices is suggested by one building which used to be charged as if it were in a large measure made of wood, but when reconstructed was charged at the low rate of 16 cents. In that case there was little steel introduced, for the hollow-tiled blocks can be made to serve for floors by their unaided strength.

THE annual meeting of the Association of Municipal Corporations is announced to be held at the Guildhall on Thursday, April 17.

THE Birmingham City Council having agreed to erect cottage baths in certain wards of the city, it has been decided to build a suite in Coventry Street as an experiment. A site 197 yards in extent has been acquired adjoining the land presented by Sir Alfred Gooch for the purposes of a playground. The baths will comprise six for men and five for women, and the estimated cost of the suite is about 2,000*l*. If the experiment is successful baths will be erected without delay in other districts.



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DENCE, NEAR LEWES, SUSSEX—PROPOSED COTTAGE RESIDENCE
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COTTAGES, SOUTHOVER, SUSSEX—DESIGN FOR HOUSE AT CROW-
BOROUGH, SUSSEX—DESIGN FOR WEEK-END RESIDENCE (CASTLE
SCENE ESTATE), HYTHE, KENT—DESIGN FOR HOUSE ON THE
SOUTH DOWNS—HOUSE AT SUTTON, SURREY—DESIGN FOR
MUSEUM AT LEWES.

TRADE NOTES.

THE new Council schools, Gosport, are being warmed
and ventilated by means of Shorland's patent Manchester
stoves, the same being supplied by Messrs. E. H. Shorland
Brother, of Manchester.

WE are informed that the Carron Company of Carron
Shire, have obtained the contract for supplying the
whole of the catering departments at the forthcoming Irish
International Exhibition to be held at Dublin with their
"Carron" gas, steam and coal-cooking apparatus.

A NEW edition of Haworth's "Practical Timber
Measurer and Timber Buyers' Tables" has appeared.
Although it costs only a shilling, it contains the tables and
data which are most often required in transactions with
timber and other materials.

WITH the object of more clearly defining the different
interests of the members of the firm, and with a view to
further development, Messrs. Oetzmann & Co. are regis-
tering their business as a joint-stock company with a
nominal capital of 100,000*l.* There will be no initial public
issue, but should any of the capital be offered to the public
at a future date, preference will be given to customers. To
ensure continuity of the policy which has been so success-
ful during the past sixty years, the company will retain the
services of the partners of the firm as directors.

ACCORDING to the annual report the business of Sir
William Arrol & Co., engineers and contractors, has been
satisfactory. The net profits earned last year amounted to
3,841*l.*, as against 32,081*l.* for 1905, on the company's

capital of 300,000*l.* The dividend is maintained at 10 per
cent., and over 11,000*l.* is allowed for depreciation and
reserve, while the carry-forward is again over 8,000*l.*

VARIETIES.

THE Edinburgh Town Council have agreed to the
recommendation of the electric-lighting committee that
application be made to the Secretary for Scotland for
consent to borrow 85,000*l.* for capital works for the two
years to May 15, 1908.

THE Town Council of Galashiels have given notice of
their intention to apply to the Secretary for Scotland for a
provisional order for the purpose of dealing with the drain-
age of the burgh, &c. It is estimated that the scheme will
cost from 60,000*l.* to 70,000*l.*

LORD KELVIN has been nominated as president-elect of
the Institution of Electrical Engineers for the session
1907-8. The Council has also elected Professor J. J. Thomson,
Cavendish Professor of Experimental Physics at Cambridge
and Professor of Physics at the Royal Institution, London,
an honorary member of the institution.

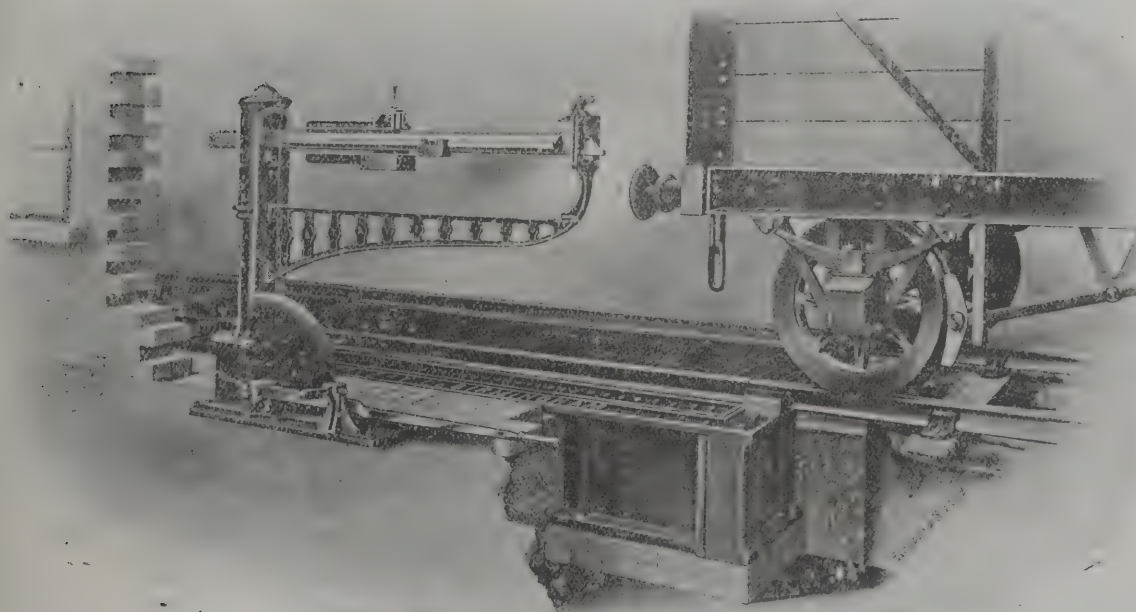
THE carpenters, bricklayers and painters in Coventry
recently applied to their employers for an augmented rate
of wages and an alteration of their rules of working. The
subject has been under consideration by the Masters' Asso-
ciation, and it was decided last week that it should be
referred to arbitration.

THE housing committee of the Battersea Borough Council
report that the local municipal housing estates are not pay-
ing their way, although nothing was paid for the sites and
the houses were erected by the Council's works depart-
ment. It is proposed to raise the rents of three-roomed
tenements from 7*s* 6*d.* to 8*s* per week, and of five-roomed
houses from 11*s* 6*d.* to 12*s* per week. The total estimated
receipts from the Council's two estates are 8,165*l.*

THE Croydon Gas Company has repeated an offer made
two years ago to light a section of the town with gas free of
charge for six months, in order to demonstrate that the
town can be saved a penny rate as against the arc electric
system. The semi-official reply of the Corporation's elec-



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tricity committee is that the new form of electric lamps coming into use will eventually mean a reduction of the cost of that form of lighting by one-half.

A DEPUTATION of slate manufacturers and others from North Wales waited on Mr. McKenna and Mr. Lloyd George at the House of Commons last week. The deputation was introduced by Mr. Ellis Davies, who referred to the serious loss of employment in the district owing to the giving up of the use of slates in many schools. Mr. McKenna, replying, reminded the deputation that the case was not so simple as it appeared, for they had to deal with the report of the inspectors, who, he said, generally reported against the slates. He sympathised with the manufacturers, and he promised to give the matter further consideration to see what could be done, and the inspectors would also be asked to reconsider the question. He thought, perhaps, something might be done, especially as regards rural schools, where the sanitary objection did not apply as in the large city schools.

THE annual general meeting of the shareholders in the Stancliffe Estates Company, Ltd., was held at the registered offices of the company at Stancliffe last week, Mr. H. C. Heathcote, J.P., C.C., the chairman of the Board, presiding. Among the directors present were Mr. J. H. Dawson (managing director), Mr. Tom Wright, J.P., Mr. B. Morton, J.P., Mr. C. H. Glossop, J.P., and Colonel H. Brooke-Taylor. This was the eleventh ordinary meeting of the Company, and the directors, in submitting their report, had the pleasure of announcing continued success and prosperity, and the declaration of a dividend at the rate of 5 per cent. per annum, free of income-tax, besides the carrying forward to current account of over 2,000l. The report was unanimously adopted. The retiring directors were Mr. H. B. Taylor and Mr. C. H. Glossop, who were unanimously re-elected. Messrs. Marshall, Gibbon & Co., of Manchester, were re-elected auditors. On the motion of Mr. C. E. Dawson, seconded by Mr. M. W. Smith, a cordial vote of thanks was unanimously passed to the directors for their services during the past year.

THE British Consul in Morocco states that the country requires roads, bridges, telegraphs, railways and canals; in the past many attempts have been made by individuals and

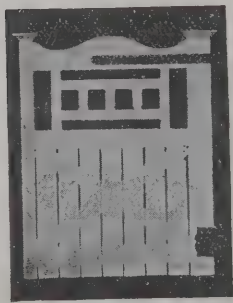
corporations to secure contracts for such work, but they were unsuccessful because they were suspected of concealing political designs under the guise of business. The Algeiras conference has unlocked the door of Morocco to enterprise, and has made it clear that all public works are to be tendered for in the open market, and a State bank is to be established, which will watch over the administration of finances. There is to be no favouritism, and it follows that contracts will go to those people who have gone to the expense and trouble of making themselves thoroughly acquainted with the labour character, climate and other conditions of Morocco. Private individuals are likely to build extensively in the near future, and everything appertaining to the building trades may find a market, but the orders are not likely to go to the United Kingdom unless the trades concerned combine to send out shrewd and tactful experts to take stock of local requirements and conditions, and to make acquaintance with the men on the spot who could assist them to obtain business. Catalogues alone will not attract orders.

BATH STONE FIRMS.

STONE from different quarries belonging to the Bath Stone Firms, Ltd., has been employed in various buildings now in progress. The extensive additions to the master's house at Eton College are in Monk's Park stone. For the memorial building to Old Etonians, stone from the Combefield quarries, Portland, is used. The New Post in Newport is also of their Portland stone. The walls of St. Paul's Presbyterian church, Enfield, are built of Kentish rag with Monk's Park dressings. For the Carnegie Library, Bridgend, South Wales, Monk's Park stone is used, as well as for the County Court and Inland Revenue offices, Swindon, St. Luke's Church, Well Hall, Eltham, the Wesleyan church, Cheam Road, Sutton, and the Wesleyan chapel and schools, Penarth. The Royal Exchange Building, of which Messrs. Ernest George & Yeates are architects, is of the firm's Portland stone. Their Corsham Down stone is to be seen in St. Paul's Church, Leyton, while Monk's Park and St. Aldhelm Box ground was employed for the Presbyterian church and schools, Kensington, Liverpool.

Entrance and Wicket Gates.

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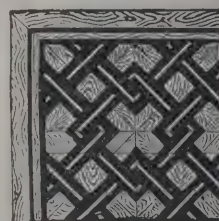
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THE METRIC SYSTEM.

THE Decimal Association have received a letter signed by Mr William Mather on behalf of Mather & Platt, Ltd., of the Salford Ironworks, which says:—"We are strongly in favour of the general, and in time the universal, use of the metric system, and believe that its adoption will be of great benefit to the trade of the country, not merely on account of commercial relations with other countries using the metric system, but also because we regard it as a more scientific and exact system of weights and measures, and therefore leading to greater accuracy in thought and greater precision in calculation, which so largely concern all engaged in engineering developments. But we think that the measure making adoption of the system compulsory within a short time, under severe penalties, would be a source of no little hardship to many businesses, and lead to it probably to resistance and temporary dislocation of trade. Less draconic measures and persistence in endeavours to enlighten the public will, we believe, more readily attain the end in view, and without the drawbacks which must accompany drastic legislation.

"We think the most practical steps are to urge the Government to adopt the metric system in the national arsenals and dockyards and in such businesses as the Post-office. The effect would be far-reaching and immediate. In the second place, we would urge that greater prominence should be given to the metric system in the teaching in our elementary and secondary schools; and lastly, that all possible steps should be taken to co-ordinate such movements in this country with similar endeavours in the United States. We have no sympathy whatever with the schemes which have been discussed of late to decimalise our present standards. . . . We introduced the metric system in its entirety in our works in 1901 for all new lines of work and have adhered to it since."

The new Baptist church at Market Harborough was opened on Monday, 25th inst. The building, which is designed in Late Gothic, accommodates 543 persons. The joinery is of fumed oak. The architects are Messrs. George Jones & Son, 5 Clement's Inn, Strand, London, W.C., and the builders, Messrs. H. Herbert & Sons, of Leicester.

A NEW FIRE-DETECTOR.

EVERY device which is a means of preventing fire and therefore safeguarding loss of life and the destruction of property should be welcomed. A new instantaneous fire-detector is being manufactured by the Leslie Walker Fire Alarm Company, Gamage Buildings, Holborn, E.C. This alarm has numerous points of superiority over the thermostatic alarms hitherto in use. It reports a flame at the earliest possible stage and gives a second alarm if the burning continues; at the same time being quite immune from false alarms, it automatically compensates for slow normal variations of temperature, whereas no abnormal rise of temperature can occur without instantly causing the instrument to give the alarm. To take an example. Supposing this detector is installed in a place which is often heated up, but is at present cold—say a few degrees below freezing-point: if something catches fire suddenly raising the temperature to freezing-point, the signal will already be rung although the detector is ice cold. A thermostat of the ordinary type, on the other hand, in a like instance, would have to wait till the fire extended and warmed up the thermostat's sensitive part to a pre-determined degree (generally 130 degs. to 160 degs.) before it would act.

In any building installed throughout with the Leslie Walker system, should a fire, even so small as may be caused by the burning of a newspaper in any part of the premises occur, a warning is instantly given locally and sometimes at a distance on a bell, and the exact spot where the fire has occurred is shown on an indicator. This first call is termed the "caution call."

Should the fire not at once be extinguished, then a second call is given either on a gong or gongs outside the building, and also, where permitted, direct to the fire-station. This signal is called the "danger alarm." The action of the instrument will, however, be better understood if we refer to the engravings, figs. 1 and 2 above. In these fig. 1 illustrates the detector as it appears complete and fixed to the ceiling of a room. Fig. 2 shows the apparatus in an inverted position with the outer case or covering removed. At the lower part of the engraving is the base for fixation to ceiling and furnished with terminals to which the conducting wires are connected, and which also secure the

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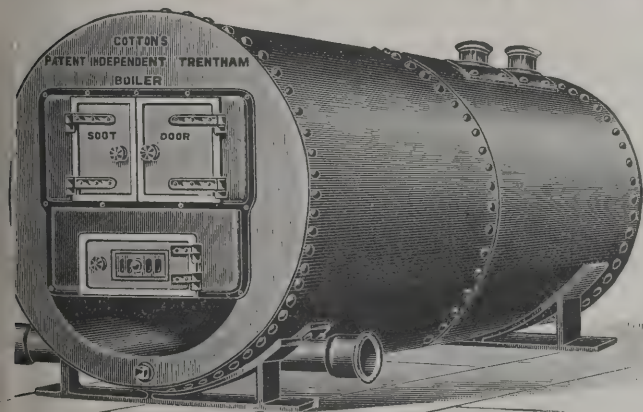
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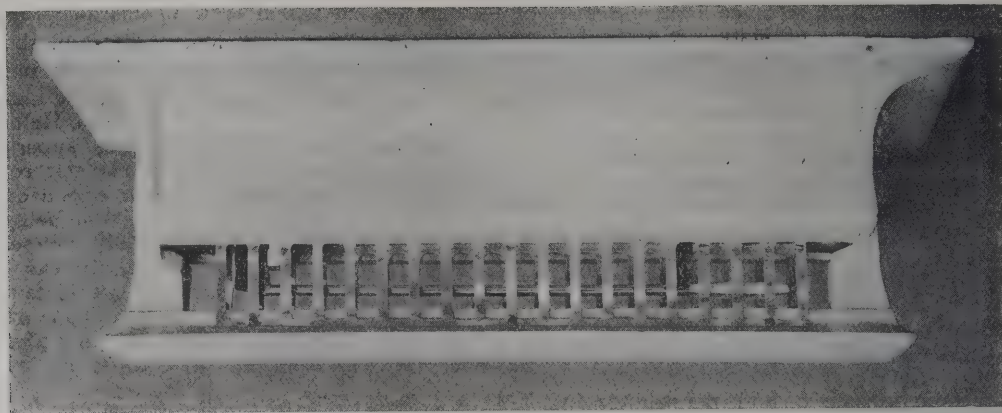


FIG. 1.

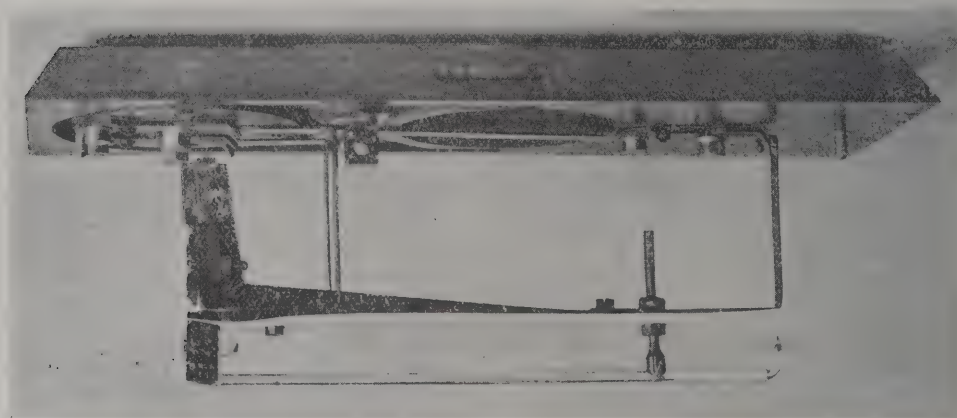


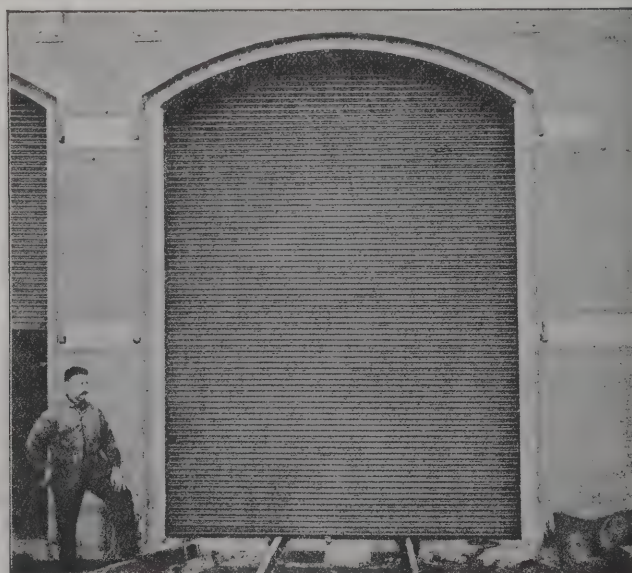
FIG. 2.

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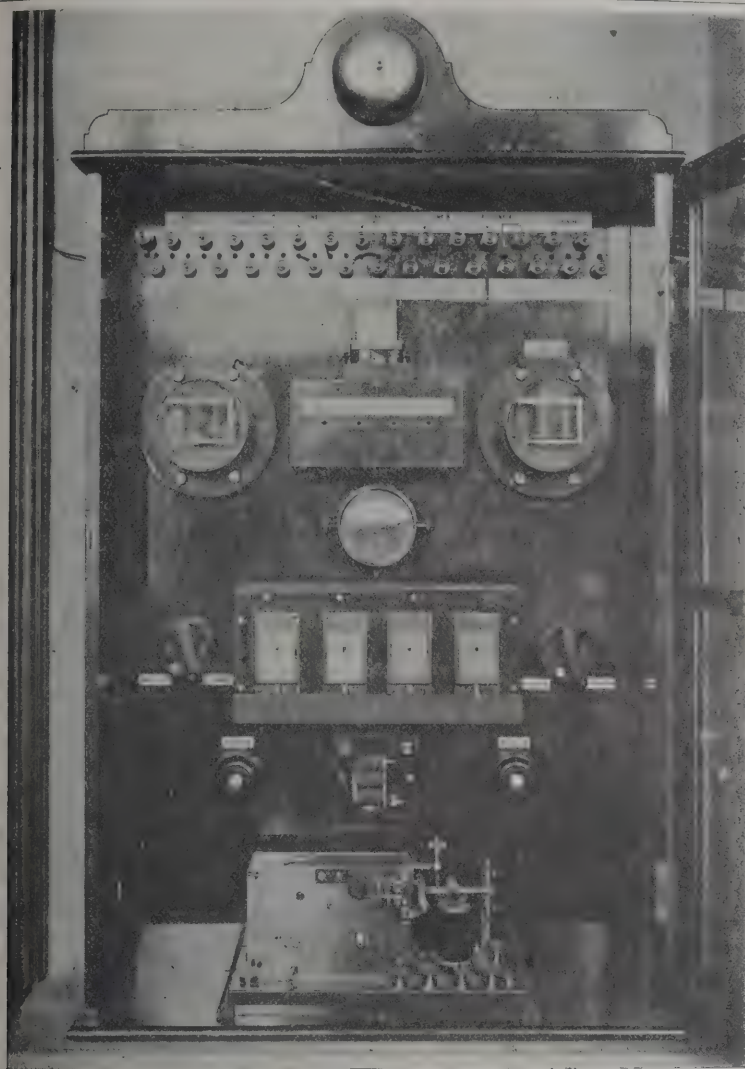


FIG. 3.

rectangular springs which carry a cradle on which is attached the vital part, viz. a mercurial instrument with a horizontal bulb described in detail below. The latter appears in the upper part of this engraving. The three springs mentioned serve the double purpose of conveying the current to and from the contacts of detector and also of forming buffers which it is claimed entirely protect the instrument from harm, rendering it invulnerable to concussions or vibration.

The tube is shown in detail in fig. 3, referring to which the bulb A, with very thin walls, is filled with mercury and exposes a large surface to the atmosphere. The part B is a very fine capillary tube, which conveys the mercury from A to the compensating chamber C, this chamber being partly filled with mercury. At the point D a platinum wire is fused into the tube A and is always in contact with the mercury, and at E and F are two platinum wires fused into the normally empty contact-tube, which tube and all the connecting wires are embedded in plaster-of-Paris.

Now under normal conditions the mercury in the tube A expands and contracts with varying temperatures. These varying temperatures may be due to summer and winter conditions, to artificial heating or lighting or any such-like cause. When the expansion due to rises of temperature from these causes takes place, the mercury in the tube A is relieved of the pressure upon it by flowing through the fine tube B into the chamber C, the reason for this preference being that mercury does not readily flow into an empty tube of small bore, and so long as the carrying capacity of the tube B is not exceeded, the mercury will flow into the chamber C, through B, rather than travel up the empty contact-pipe. It is possible to regulate the flow through the tube B by making the tube more or less fine, and the severest normal conditions can therefore be satisfied.

If, however, the expansion of the mercury in

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A be so rapid that it cannot pass through B, it is then forced up the contact-tube, comes in contact with the platinum wires and gives the necessary alarm. A fall of temperature in the mercury does not cause a shrinkage below D, but the mercury descends in C. The margin between danger and safety is, therefore, the gap between the constant level of the mercury at the point marked D and the contact-wire E; and, whatever normal conditions prevail, the margin is not altered, for the mercury only enters the contact-tube under the abnormal pressure.

If a smouldering fire starts and continues so slowly to spread that only a normal rate of increase of temperature is caused the flow of mercury through the capillary tube B continues until an abnormal degree of temperature is reached; at this point the chamber C is found to be completely filled with mercury, and there being now no other means of relieving the pressure in the bulb A the mercury perforce enters the contact-tube and immediately bridges the contacts. It may be here remarked that the margin between the contact D and the contact E need only represent a fraction of a degree. In this lies the secret of the instantaneous action of the detector when an abnormal flame appears.

The compensating tube described above absolutely prevents, it is claimed, the possibility of false alarms. Where exceptional conditions are met with, such as in a foundry, a bakehouse, or a drying-stove, a detector which will compensate much more rapidly than the ordinary device is fixed, thus leaving a large margin of safety against false alarms. To quote further:—

The act of removing the outer casing causes a special contact to be made and a distinctive call to be at once given, so that any interference with the instrument is impossible. The mercury being sealed in a vacuum, should the tube be accidentally or intentionally broken, the mercury will be at once forced into the contact-tube and connect the wires D, E and F simultaneously, by which means a distinctive call will also be given. An additional advantage of the mercury being in a vacuum is that it cannot deteriorate, and the contact is therefore always perfect.

By the ingenious system of wiring the whole of the circuits may be tested night and morning by simply pressing a button at the indicator-board; and furthermore, should

a wire be accidentally cut or broken, and should a fire break out when such a fault has occurred, the alarm would still be given. Of course, the battery must be kept in order or the instrument will become inert.

We had the opportunity some little time ago of witnessing the effect of lighting a newspaper in one corner of a room where one of these detectors was installed, and were struck by the rapid way in which the alarm was given, the time being only a few seconds. We also understand that not long ago a demonstration was given in a room about 45 feet square by 45 feet high. In this case the lighting of a newspaper in the room was signalled in 15 seconds. In a hall 150 feet long, and 70 feet wide by 80 feet high, at the Glasgow University, three detectors were installed and a newspaper lighted at one end of the room. A call was in this case given in 20 seconds, all three detectors coming into action.

Although the system has not been long before the public, and only recently been put upon the market, it has already detected outbreaks of fire—one at Harrow and another in the engineers' quarters at the Houses of Parliament.

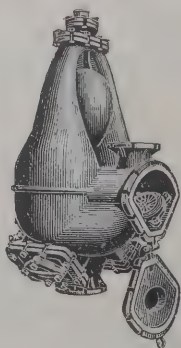
VICTORIA FALLS BRIDGE.

At the ordinary meeting of the Institution of Civil Engineers on Tuesday, March 19, Sir Alexander Kennedy, LL.D., F.R.S., president, in the chair, the paper read was "The Victoria Falls Bridge," by G. A. Hobson, M.Inst.C.E. The following is an abstract of the paper:—

The Victoria Falls of the river Zambesi are situated on the boundary which divides the administrative provinces of North-Western and Southern Rhodesia in the territory governed by the Chartered Company of British South Africa. The railway reached the bank of the river in May 1904, the distance from Cape Town being 1,641 miles and from Beira, on the east coast, 950 miles. The choice of the site for the bridge was due in the first instance to the late Mr. Cecil Rhodes, and was finally governed by the natural formation of the walls of the chasm, advantage being taken of the minimum distance to be spanned, combined with the soundest foothold obtainable. The position fixed upon is about 700 yards below the cataract.

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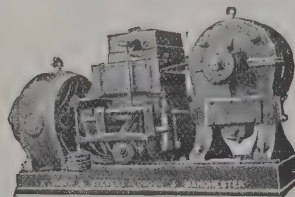
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The rock being very hard, the bridge was designed to fit the profile of the gorge with as little expenditure in excavation as possible. Several types of bridges were considered, but the nature of the situation and the purpose of the work made it obvious that a two-hinged spandrel-braced arch was the one which most completely answered all the requirements of the case. These may be summarised as handsome appearance, rigidity, economy, erection (cantilever-wise) without scaffolding.

The author briefly discusses the merits of three-hinged and braced-rib arches.

The bridge was designed to carry two lines of way of the usual South African gauge, 3 feet 6 inches. The existing line from Cape Town to the bridge (with unimportant exceptions) is a single track, but a width sufficient for a double line was necessary across the bridge in order to provide sufficient lateral stability.

In addition to the dead load the forces which the bridge is calculated to sustain are:—(1) A train on each line of way, consisting of two engines followed by heavy trucks, the weight of the whole train averaging 1.4 ton per lineal foot; (2) Temperature stresses caused by a 60 degs. Fahr. variation above or below the mean; (3) Wind-stresses due to a wind-pressure of 30 lbs. per square foot on the train and bridge, or 45 lbs. per square foot on the bridge alone. The pressure is calculated on the entire area of both arches, and stresses due to unequal distribution of such pressure are allowed for.

The bridge consists of three spans. The end span on the left bank of the river is 62 feet 6 inches and the other 37 feet 6 inches. These spans are composed of braced girders of ordinary type, with horizontal upper and lower chords 12 feet 6 inches deep and divided into square panels. The girders are fixed 20 feet apart. Connected with the end posts of the central span, they unite it with each bank of the river in a direct and simple manner. The deck is horizontal, and is laid on the top chords throughout.

The central span is 500 feet between centres of bearings, with a rise of 90 feet. The curvature of the arched rib is parabolic. The panels, twenty in number, are 25 feet in length. The depth of the girder at the crown is 15 feet, and at the abutment 105 feet. Each main girder stands in a plane at an inclination of 1 in 8 from the perpendicular.

The width between the centres of the girders is 27 feet 6 inches at the top and 53 feet 9 inches at the springing-level, and between the parapets 30 feet.

To facilitate erection and secure accuracy in alignment, a turned steel pin was inserted at the point of intersection of each vertical and diagonal member with the top chord and arched rib. The pin was designed to be of the least possible weight; as it was not intended to carry an accumulated stress, but only that due to the weight of a single panel, with the addition of a portion of the erecting plant, its weight did not exceed 30 lbs. Time in erection was thus saved and—once the pin was in its place—confidence in the accuracy of the work so far done was at once established. Reinforcement of the pin by rivets or service-bolts was a matter that could be attended to when all the members constituting one panel were in place, and it was not necessary to wait for the insertion of all the rivets in one particular panel before proceeding with the work of erecting the next.

At the intersection of the end post with the top boom and the first diagonal tie, a large steel pin is inserted through all the plates which compose these members. The pin is 7 inches in diameter and 7 feet long, its outer ends being held by means of short links attached to the top-booms. To this pin were attached the anchorage cables during the erection of the bridge. The entire bridge, with the exception of the main bearings, weighs approximately 1,500 tons.

The author describes fully the design and functions of the hinged bearings. The hinge pin is 12 inches in diameter by 5 feet 10 inches in length; it is made from a solid steel forging accurately turned all over, and a bolt-hole is drilled through the axis. Regarded in front elevation, the whole bearings, the pins especially, appear to be of very small dimensions compared with the superstructure they carry. But they are of solid construction and made of the strongest and toughest materials practicable. The pin itself is subjected to no greater pressure than $2\frac{1}{2}$ tons per square inch.

It is essential, in order that the arch may fall and rise and the top chord expand and contract with perfect freedom through great variations of temperature, that the hinges be set square to the axis of the bridge. If the pin had no other function to perform but that of supporting the load, it might

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be set at right angles to the axis of the arch rib, but were this done, the pin and its fellow in the opposite bearing would not then lie, as they must, in the same straight line, like the hinges of a box-lid.

Scarcely inferior to the bearings in importance is the question of the joining of the two arms of the bridge at the centre. Each half of the arch was designed to meet the other with a butt-joint in the arch rib, and when in course of erection the two half-arches met at this joint their temporary character of cantilevers ceased to be and the structure was transformed for the moment into a three-hinged arch, the top chord having a clearance or gap left in it of several inches. In order to secure the proper distribution of stress in all members due to the complete structure, it was necessary to impart the stress artificially.

The engineering interest which attaches to the execution of this work is due in a large measure to the remoteness of the site. At the outset it was realised by the engineers that there were many possible risks which would be shunned alike by the British contractor and his workmen, and on the engineers' advice, as far as it was possible to do so, the unknown, doubtful and incalculable factors were eliminated from the task which contractors were to be invited to undertake. Throughout the preparation of the design the question of erection was considered of primary importance and every detail was devised to simplify the procedure. In designing the details, consideration had also to be given to the available means of transport by sea and rail, and particularly to the fact that the parts for one half of the bridge would have to be conveyed across the great chasm by means of some temporary expedient. The means adopted are described by the author.

The bridge was constructed in accordance with the designs and specifications of the author's firm, Sir Douglas Fox & Partners, and Sir Charles Metcalfe, Bart.

The contractors were the Cleveland Bridge and Engineering Company, Darlington.

MESSRS. PATMAN & FOTHERINGHAM, LTD., of 100 and 102 Theobald's Road, London, have obtained the contract for the alterations and renovations to be carried out at the Palace Theatre in Shaftesbury Avenue. Mr. J. Emblin-Walker is the architect.

LABOUR ACCIDENTS IN FRANCE.

A FRENCH workman injured in the course of his employment has by law the right to choose his own doctor and dispensary. The General Confederation of Labour, as the central organisation of the trade unions is called, has determined to take advantage of this privilege and to supply medical assistance to injured workmen. This new departure is being taken at the Labour Exchange to succour all members and non-members who may meet with accidents while at work. The necessary rooms have been fitted up with all the most up-to-date scientific appliances, including the X-rays, and medical men and surgeons, specialists in their departments for the treatment of accidents, will be available at almost all hours for consultation, and in case of necessity certificates are gratuitously given.

By the French law on accidents the injured operative has—1. The right to choose his doctor. 2. The employer is bound to pay the fees, and in no case can the employer impose his medical man on the operative. 3. The doctor of the insurance company has no special right to attend to the injured or to give a certificate of the accident, which latter may be given by the doctor selected by the injured person. 4. No particular hospital or dispensary can be imposed on the operative. 5. The document given to a workman at the time of his injury, permitting him to go to the company's doctor, had no special value, and could be destroyed or lost without prejudicing the worker's rights. 6. The domicile of the injured operative was inviolable. No doctor, with the exception of the one authorised by the magistrate, can enter without his consent.

THE list of claims in respect of damage caused by subsidence in the Northwich salt compensation area has been issued. Ninety-five claimants seek to recover 3,340*l.*, the highest individual claim being for 600*l.* Under the special Act of Parliament which provides for the levying of a tax upon all the brine pumped a maximum charge of 3*d.* per 1,000 gallons may be made. Last year the brine pumped was 486 million gallons, and the rate levied was 1½*d.*, the lowest on record.

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EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITION OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

CONTRACTS OPEN.

ACCRINGTON.—April 15.—For Congregational school chapel, Higher Antley Street. Messrs. Haywood & Harrison, architects, Post Office Chambers, Accrington.


ALPHINGTON.—April 6.—For erecting an infants' school for 120 children at Alphington, near Exeter; also for work in connection with remodelling the offices of the existing school, alterations to drainage, playgrounds, &c., for the Devon County Education Authority. Deposit 17. 1s. Names to the Architect, 1 Richmond Road, Exeter.

ASHTON-UNDER-LYNE.—April 6.—For erection of a conservatory in Stamford Park. Mr. John Neal, secretary to the Stamford Park joint committee, Town Hall, Ashton-under-Lyne.

BAGWORTH.—For building block of six cottages in Bagworth Village, Desford Coal Co. Desford Colliery, Bagworth, Leicester.

BATH.—April 16.—For the mason and tile fixer, carpenter, painter, plumber and general contractor's work at the several bathing establishments, for the hot mineral baths committee of the Bath Corporation. Mr. Alfred J. Taylor, architect, 18 New Bond Street, Bath.

BEDALE.—April 11.—For restoration of Bedale Church, Yorkshire. Mr. G. R. Boreham, quantity surveyor, 24 John Street, Sunderland.



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BEDLINGTON.—April 8.—For work of erecting a Council school, to accommodate 200 scholars, at Bedlington, Northumberland. Deposit 2*l.* 2*s.* Mr. C. Williams, secretary to the education committee.

BORDON CAMP.—April 9.—For the erection of a post office at Bordon Camp, Petersfield. The Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

CARDIFF.—April 10.—The Glamorgan County Council invite tenders for the following works, viz.:—(1) Erection of a mixed and infants' school at Rhos, Cilybebyll; (2) erection of a girls' school at Nanttyffyllon, Maesteg; (3) erection of an infants' school at Tyderwen, Maesteg; (4) erection of a school at Porthcawl; (5) extensions and alterations at the girls' county school at Cowbridge; (6) forming new roads, &c., at the school site at Abertridwr; (7) levelling playground, erection of playshed, coalshed, &c., at the Council school at Tondy. The County Offices, Cardiff.

CARLTON.—April 17.—For the construction of the 75-feet span masonry bridge known as Carlton bridge, carrying a district road over the river Aire at Carlton, within the urban and rural districts of Skipton, and situate $1\frac{1}{2}$ mile south-west of the town of Skipton. Deposit 1*l.* Mr. F. C. Carpenter, West Riding surveyor, County Hall, Wakefield.

CHWYMAA.—April 17.—For improvements the Chwymaa Council school, Somerset. Mr. William F. Bird, Midsomer Norton.

COCKTON HILL.—April 9.—For the erection of Council school at Cockton Hill. The County Education Committee's Architect, Shire Hall, Durham.

COVENTRY.—April 22.—For alterations and additions to the Earlston Council school. Deposit 1*l.* 1*s.* Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry.

DARENTH.—April 17.—For the erection of industrial workshops at Darent Asylum, near Dartford, Kent. Deposit 1*l.* Mr. W. T. Hatch, engineer-in-chief, The Metropolitan Asylums Board, Embankment, London, E.C.

DEARHAM.—April 20.—For proposed alterations and additions to the Dearham Council school, Cumberland. Mr. Joseph Forster, Clerk of Works, 13 Earl Street, Carlisle.

FALKIRK.—April 10.—For the work of administrative block and porter's lodge to be erected at fever hospital. Mr. David Ronald, burgh engineer, Burgh Buildings Falkirk.

GOOLE.—April 10.—For the erection of a house, Clifton Gardens. Mr. H. B. Thorp, architect and surveyor, Goole.

HERNE.—April 8.—For general repairs at the isolation hospital, West End. Mr. H. Elliott, sanitary inspector, Rose Cottage, Herne Street, near Canterbury.

KENDAL.—April 15.—For additions and alterations to 1, 2 and 3 Denmark Terrace, Kendal Green. Mr. John F. Curwen, architect and sanitary engineer, 26 Highgate Kendal.

LEAVENING.—April 8.—For the erection of a Council school for 100 children. The Building Surveyor, County Hall, Beverley.

LONDON.—April 18.—For engine foundations and builder's work at the electricity works, Hackney. Deposit 5*l.* Mr. Robert Hammond, M.I.C.E., consulting engineer, 64 Victoria Street, Westminster, S.W.

LONDON.—April 27.—For the erection of dwellings for the working classes, on a site known as Brantome Place. Messrs. Joseph & Smithem, architects, 83 Queen Street, Cheapside.

LOUGHBOROUGH.—April 16.—For the construction of a concrete retaining wall to the electricity station site, and erection thereon of wrought-iron fencing, &c. Mr. A. H. Walker, borough surveyor, Town Hall, Loughborough, Leicester.

MACCLESFIELD.—April 8.—For secondary schools for 250 girls to be erected in Fence Avenue. Deposit 1*l.* Mr. H. Beswick, county architect, Newgate Street, Chester.

NELSON.—April 6.—For the erection of an assembly hall, Vernon Street. Names to Mr. Abm. Nutter, architect, 23 Nicholas Street, Burnley.

NEW BARNET.—April 12.—For the erection of a telephone exchange. Deposit 1*l.* 1*s.* Mr. J. Rutherford, H.M. Office of Works, Storey's Gate, Westminster.

NEWCASTLE-ON-TYNE.—April 13.—For construction of coal shed at the city asylum, Coxlodge. Deposit 2*l.* 2*s.* The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

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OLDHAM.—April 8.—For the erection of Council infants' school in Richmond Street. Mr. Thomas Hilton, architect, 7 Union Street, Oldham.

PENDLETON.—April 8.—For erecting a school to accommodate about 1,120 children at Halton Bank, Pendleton, Salford. Mr. John H. Woodhouse, architect, 100 King Street, Manchester.

POCKLINGTON.—April 12.—For the erection of a Council school to accommodate 250 children at Pocklington, Yorks. Mr. John Bickersteth, clerk to the East Riding Education Authority, County Hall, Beverley.

PORTLAND.—April 11.—For building boiler-house and chimney-shaft and supplying and setting Lancashire boiler at the steam laundry. Mr. Samuel Jackson, M.S.A., architect and surveyor, Bridge Chambers, Weymouth.

REDCAR.—April 18.—For the erection of a police-station, with boundary-walls, drill-yard, &c. Mr. Walter H. Brierley, county architect, 13 Lendal, York.

ST. ALBANS AND BISHOP'S STORTFORD.—April 9.—For the erection and completion of a new County Council school, Fleetville, St. Albans, and for the carrying-out of additions and alterations to the technical school, Bishop's Stortford. Deposit 2*l.* 2*s.* each. Hertfordshire County Surveyor's Office, Hatfield.

SCOTLAND.—April 8.—For erection of a temporary timber footbridge about 130 yards long by 8 feet wide across the river Ayr, adjoining the Auld Brig. Mr. John Young, town surveyor, Town Buildings, Ayr.

SCOTLAND.—April 10.—For the carpenter, joiner, slater, plasterer and plumber's work in connection with the erection of cottages on Tyneholm estate, Pencaitland. Mr. R. Baillie, builder, Pencaitland.

SCOTLAND.—April 12.—For mason, joiner, slater, plaster and painter's work of new public school at Eaglesfield, one mile from Kirtlebridge station. Deposit 2*s.* 6*d.* Mr. F. J. C. Carruthers, architect, 35 Buccleuch Street, Dumfries.

SCOTLAND.—April 15.—For the concrete and drainage and carpenterwork of shop and stores to be erected in Commercial Road, Buckie. Messrs. R. Tindall & Sons, ironmongers.

SOUTH CHURCH.—April 9.—For alteration to the South Church Council school, Durham. The Education Committee's Architect, Shirehall, Durham.

THORNTON.—April 13.—For alterations and repairs at the Council school, Thornton, Lancashire. Deposit 1*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

UCKFIELD.—April 10.—For alterations and additions to the public hall, Uckfield. Messrs. Overton & Scott, architects and surveyors, Public Hall, Uckfield.

WALES.—April 9.—For the erection of two houses and a shop at Froncysyllte. Mr. E. Vaughan Edmunds, architect and surveyor, Llangollen.

WALES.—April 13.—For the erection of a new C.M. orphanage at Bontnewydd, near Carnarvon. The Cartref, Bontnewydd.

WALES.—April 13.—For proposed alterations to Bontnewydd C.M. chapel. Mr. R. B. Ellis, Bronant, Carnarvon.

WALES.—April 20.—For the erection of a new laboratory, workshop and cookery room at the St. David's County school. Mr. Hugh Thomas, architect and surveyor, 9 Victoria Place, Haverfordwest.

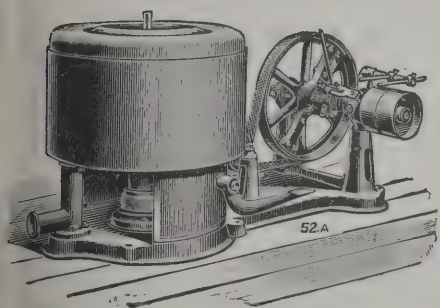
WAREHAM.—May 1.—For the erection of almshouses, boundary walls and fences, &c., at Wareham, Dorset. Mr. G. Clavell Filliter, North Street, Wareham, Dorset.

WHITEHAVEN.—April 12.—For building two semi-detached residences at Mountain View. 53 Church Street, Whitehaven.

YORKS.—April 8.—For the erection of a Council school for 100 children at Leavening. Mr. John Bickersteth, clerk, County Hall, Beverley.

An approximate estimate of expenditure under the Military Works Loan Acts of 1897, 1899, 1901 and 1903 is given in a Parliamentary white paper. The total sums provided in the schedules amounted to 20,810,500*l.* The actual expenditure to March 31, 1906, was 14,610,385*l.*, and the estimated expenditure for 1906-7 is 650,000*l.*, and for 1907-8 600,000*l.* It has been decided not to proceed up to the full extent of the amounts provided under the Acts.

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Rigby	£5,133	0	0
Pennington & Sons	4,858	13	7
Kearsley & Gee	4,661	8	1
Winnard & Taylor	4,432	4	7
Cowburn & Son	4,419	12	1
J. & F. Lomax	4,290	0	0
WEBSTER & WARSTANLEY, Wigan (accepted)	4,201	14	11
P. & S. Kearsley	4,127	11	10

ASH.

For building a pair of cottages, Firacre Road. Messrs. FRIEND & LLOYD, architects, Aldershot.

Yates	£572	0	0
Parsons & Allen	523	15	6
King	510	0	0
Stilwell	510	0	0
Galsworthy	496	0	0
Poulter Bros.	482	0	0
Knight	475	0	0
Irwin	453	0	0
Hunt	450	0	0

BARNET.

For the erection of nurses' home at the workhouse. Messrs. WHITE, SON & PILL, architects, Barnet.

Thomas & Edge	£1,613	0	0
Hyde & Co.	1,495	0	0
Willmott & Sons	1,492	0	0
Fitch & Cox	1,422	0	0
Mattock & Parsons	1,379	0	0
Dumpleton	1,298	0	0
Sharpe	1,296	0	0
Harris	1,290	0	0

BARNET—continued.

Ekins & Co.	1,280	0	0
Pearson & Son	1,223	0	0
Stewart	1,220	0	0
Fairhead & Son	1,220	0	0
Butcher	1,210	0	0
Wade	1,196	0	0
Myall & Upson	1,180	0	0
Wallis & Sons	1,150	0	0
Warboys	1,147	0	0
Pasterfield & English	1,146	0	0
F. & G. Foster	996	0	0
Weibking & Co.	975	0	0
Winter & Sons	975	0	0
Behrend	973	0	0

BRADFORD.

For circular brick chimney, 50 yards high, at the Union hospital. Mr. FRED HOLLAND, engineer and architect, Hustlergate, Bradford.

BOOTH & SON, Bradford (accepted) £626 0 0

CARDIFF.

For the erection of a manual instruction centre at Splott Road Council school, Roath. Mr. W. HARPUR, M.I.C.E., city engineer.

Griffiths & Son	£1,280	10	0
Thomas & Co.	1,218	6	10
Williams	1,166	0	0
Evans	1,165	12	7
Leather & Co.	1,156	0	0
D. W. Davies	1,141	9	0
Beams	1,120	0	0
Turner & Sons	1,816	12	9
D. Davies	1,116	1	1
Cox & Bardon	1,115	16	10
Allan	1,060	9	5
Williams & Shirley	1,044	2	2
Gough Bros.	1,027	0	0

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Evans Bros.	995	16	2
Knox & Wells	987	0	0
Morgan	975	0	0
SMALL (accepted)	966	10	0
City engineer's estimate	1,024	1	10

CHELTENHAM.

For building shop and dwelling-houses at Bishop Street and Henrietta Street. Mr. D. CONROY, architect, Londonderry.

Maultsaid	£883	0	0
Sweeney	745	0	0
Smyth	733	0	0
Hughes	705	0	0
Stuart Bros.	661	0	0
Shannon & Routledge	632	0	0
COOKE, Bishop Street (accepted)	583	0	0

DONCASTER.

For erecting a retort-house and coal-store extension, with iron-trussed roofs, at the gasworks. Mr. R. WATSON, engineer.

Beastall & Sons	£3,300	0	0
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EARL STONHAM.

For the erection of a classroom and other alterations to Earl Stonham V. schools. Mr. H. G. BISHOP, architect, Stowmarket.

Marriott	£365	0	0
Chapman	345	17	0
Murray	335	0	0
Gooding	331	16	4
Cundall	314	16	0
Gibbons	312	0	0
Scales & Robins	298	0	0
Death	293	0	0
E. & L. Plummer	278	10	0
Gosling	278	5	6
Meekings	277	17	6
Theobald	270	0	0
ELLIOTT, Earl Stonham (accepted)	265	13	6

EAST ADDERBURY.

For sewerage works, for the Banbury Rural District Council. Messrs. WILLCOX & RAIKES, engineers, Birmingham. Contract No. 1.

Bloxham	£5,140	0	0
Barry	4,916	12	6
Booth & Son	4,850	0	0
Bowen	4,810	0	0
Orchard & Son	4,697	0	0
Kimberley	4,400	0	0
Rowell & Sons, Chipping Norton (accepted)	4,282	18	10
Mitchell & Son	4,113	11	6
Riley	3,999	7	10
Macdonald	3,896	8	0
Westwood	3,741	19	10

EXETER.

For carrying-out works at the Royal West of England Institution for the Deaf and Dumb. Mr. J. JERMAN, architect, Exeter. Quantities by architect.

Luscombe & Son	£4,989	0	0
Stanbury	4,792	0	0
Smale	4,404	0	0
Westcott, Austin & White	4,400	0	0
Brealey	4,389	0	0
Speller & Sons	4,250	0	0
Mudge	4,225	0	0
Coles	4,220	0	0
Woodman & Son	4,189	0	0
Ham & Passmore	4,170	0	0
Bunclarke & Stephens.	4,110	0	0
Blake	4,080	0	0
Herbert	4,079	0	0
Stephens & Son	3,988	0	0
SETTER, Exeter (accepted)	3,850	0	0

GREAT YARMOUTH.

For the erection of new boot-room and men's offices, for "Palmer's." Messrs. GEORGE BAINES & SON, architects, 5 Clement's Inn, Strand, London, W.C. LEGGETT, Great Yarmouth (accepted) £474 6 11

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LEGGETT, Great Yarmouth (accepted) . . . £2,310 0 0

For King Street Congregational church. Messrs. GEORGE BAINES & SON, architects, 5 Clement's Inn, Strand, W.C.

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Estimate No. 5.

CHASTENEY & Co., Great Yarmouth (accepted) . . . 19 0 0

For Decorative Work.—Estimate No. 2.

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Rushmer 198 0 0

GOFFIN, Great Yarmouth (accepted) . . . 192 0 0

HAUGHLEY.

For the erection of a classroom and other alterations to the Haughley V. Schools, Suffolk. Mr. H. G. BISHOP, architect, Stowmarket.

Grimwood & Sons £648 0 0

E. & L. Plummer 629 0 0

Murray 595 0 0

Borley 593 0 0

Death 580 0 0

Gosling 579 17 6

SCOTT, Old Newton (accepted) . . . 547 0 0

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For the various street works required in the improvement of Smithies Lane, &c. Mr. F. LANGLEY, engineer and surveyor.

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Sidebottom & Brown 827 17 7

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For alterations to the Ship inn. Messrs. C. & W. H. PERTWEE, architects, Chelmsford.

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Martin	250	0	0
Mowlem & Co.	243	0	0
Woodham & Sons	239	0	0
Fry Bros.	234	0	0
Pearce (recommended)	208	0	0

For constructing a 4 feet by 2 feet 8 inches brick and concrete sewer in Sydenham Road, Lewisham.

Greig & Matthews	£9,810	0	0
Watson, jun.	8,175	0	0
Muirhead & Co.	7,342	0	0
Mowlem & Co.	6,924	0	0
Johnson & Langley	6,554	0	0
Bell & Sons	6,193	0	0
Kelletts, Ltd.	6,180	0	0
Pearce	5,800	0	0
Woodham & Sons	5,776	0	0
Moran & Son	5,700	0	0
Fry Bros.	5,698	0	0
Iles, jun. (recommended)	5,559	10	0

MARKET DEEEPING.

For pulling - down farmhouse and erection of house. Messrs. J. G. STALLEBRASS & SON, architects, Peterborough.

SMITH, Peterborough (accepted)	£397	17	0
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MARSHFIELD.

For alterations and additions to Lockwood. Mr. W. H. DASHWOOD CAPLE, architect, 2 Church Street, Cardiff.

Small	£360	0	0
Charles	321	0	0
Totterdel	278	5	0
Evans	277	18	3
Williams	276	17	9
Fursey & Harris	250	0	0
Williams	237	10	0
LEADBETER, Newport, Mon (accepted)	215	13	0

MORLEY.

For alterations and extensions to Peel Mills. Messrs. T. A. BUTTERY & S. B. BIRDS, architects, Morley.

Accepted tenders.

Spensley, mason and joiner	£1,270	0	0
Morley Engineering and Pulley Co., iron-founders	401	10	1
Fawcett, plumber	150	0	0
Wilson, plasterer and concreter	130	0	0
Rogerson, slater	88	0	0

ORSETT.

For hot-water supply and cooking apparatus at Orsett Union, Essex. Mr. CHRISTOPHER M. SHINER, architect.

Benham & Sons	£792	16	0
Wenham & Waters	740	7	0
Barford & Perkins (recommended)	733	16	0

REIGATE.

For fire escape staircases at Union workhouse. Messrs. BAKER & PENFOLD, architects, Reigate.

Anderson & Duffield, Ltd.	£589	3	4
Mullings	565	10	0
Goad & Co.	537	12	0
Moorwood, Sons & Co., Ltd.	532	0	0
Richmond & Co.	520	0	0
Clarke	512	0	0
Ellis	501	8	0
Wright	495	0	0
King & Son	495	0	0
Weekes & Son, Ltd.	475	0	0
Hayward Bros. & Eckstein, Ltd.	469	0	0
Fireproof Co., Ltd.	468	0	0
Hall & Son, Ltd.	460	0	0
Jukes Coulson, Stokes & Co.	448	0	0
Jones & Co.	436	0	0
Stone	427	0	0
Lockerbie & Wilkinson	425	0	0
Yates, Haywood & Co.	425	0	0
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Grassmarket, EDINBURGH.

REIGATE—continued.

Jordan	£405	0	0
Sands & Son	402	15	0
Pierson & Co.	398	10	0
Edwards & Co.	398	0	0
Herring & Son	397	0	0
Harrison & Colmer.	386	5	0
Bridgwater & Co.	375	0	0
Fox.	354	0	0
Mason	342	15	0
Wilmer & Son	340	0	0
Page & Son	312	0	0
Norton Bros. & Co.	298	6	0
Universal Engineering Co.	277	0	0
MULLINER & Co., St. Leonards-on-Sea (ac- cepted).	275	0	0
H. & G. Measures	240	0	0

SAWLEY.

For sewerage and sewage-disposal works, for the Shardlow Rural District Council. Messrs. WILLCOX & RAIKES, engineers, Birmingham.

Sharp & Sons	£9,843	0	0
Barry	9,630	0	0
Tabor	9,278	7	7
Johnson & Son	8,820	4	7
Byrom, Ltd.	8,816	0	0
Dawson	8,564	9	1
Johnson & Langley	8,550	0	0
Lane Bros.	8,507	16	0
Wright & Co.	8,402	5	0
Bentley & Son	8,180	8	0
Smart	8,177	15	1
Ward & Tetley	7,988	5	0
Cunliffe	7,969	0	0
Oakes	7,959	4	5
Willmott	7,859	0	0
Firth & Co.	7,755	19	3
Lock, Andrews & Price	7,750	0	0
Cottle	7,722	9	9
Thraves & Son	7,718	19	3
Ashley	7,698	0	0
Braithwaite & Co.	7,639	8	8

SAWLEY—continued.

Jewell	£7,500	0	0
Vernon	7,413	0	0
Harper	7,400	0	0
J. & J. Warner	7,373	0	0
Beighton & Berry	7,294	15	0
Doleman	7,112	16	3
TOMLINSON, Derby (accepted)	7,075	0	0
Cuthbert	6,750	0	0

TOTNES.

For the erection of a permanent grand stand, 150 feet long, of iron and timber. Mr. W. F. TOLLIT, architect, Totnes.

Wilkins & Sons	£974	0	0
Badcock	570	0	0
Reeves & Sons	558	9	0
Brook	545	0	0
KINSMAN BROS., Totnes (accepted)	510	0	0

STOKE-ON-TRENT.

For extension of Chromo Transfer works. Messrs. A. R. WOOD & SONS, architects, Tunstall and Burslem.

Townser & Son	£2,399	0	0
Heath	2,322	0	0
Cooke	2,300	0	0
Walton, jun.	2,200	0	0
Cooke & Son	2,175	0	0
Boirdley	2,150	0	0
Tompkinson & Bettelly	2,147	0	0
Grant & Son	2,100	0	0
Micklejohn	2,014	0	0
Cornes & Son	2,000	0	0
GODWIN, Hanley (accepted)	2,000	0	0

WHEATLEY HILL.

For erecting a curatage. Mr. J. GARRY, architect, West Hartlepool.

Manners	£569	15	0
Moore	538	12	0
Atkinson	526	4	2
Howe	499	16	5
TWEDDLE, West Hartlepool (accepted)	497	8	10

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For construction of gasholders.

NEWTON & CHAMBERS, LTD. (*accepted*) . . . £5,649 0 0

TRADE NOTES.

We have pleasure in announcing that Messrs. Henderson & Glass, steel and iron merchants, of Vulcan Street, Liverpool, have admitted into partnership Mr. William Duncan Henderson and Mr. Robert Glass, the sons of the present partners.

THE Guild of Handicraft, Ltd., have been entrusted by Mr. E. W. Allfrey, architect, Oxford, with the production and fixing of a handsome oak screen and stalls at St. Helens Church, Abingdon, and also some special carving work, including a 2 feet 6 inches figure of Madonna and Child and a similar one of St. Michael for oak reredos in Urswick parish church, under the instructions of Messrs. Settle & Brundrit, architects, Ulverston.

A LARGE turret clock has just been completed, showing time on four dials 9 feet 6 inches diameter, with one large hour bell, for Halifax, Nova Scotia, Canada. It is fitted with all the latest improvements, including Lord Grimthorpe's gravity escapement and compensating pendulum, &c., and is made by Messrs. W. F. Evans & Sons, Soho Clock Factory, Handsworth, Birmingham. The same firm have also just completed four public clocks with two dials to each and fixed them at Newcastle-on-Tyne, Sunderland, Lincoln and Wolverhampton, and also a turret striking clock for Evesham and two others fitted up in London.

SCAFFOLDING has had to be erected at the south tower of Exeter Cathedral for the purpose of ascertaining the cause of a crack discovered some time ago which extends from near the ground to the battlements. Trenches have been sunk, but no change in the foundations has been revealed.

NEW CATALOGUE.

THE "Harrogate" fireplace, manufactured by Messrs. Hopkins & Co., has several varieties, and illustrations of them are given on an adequate scale. Progress in fireplaces might be said to be marked by a descent towards the hearth, which, unlike most improvements, is a return to primitive ways. In the "Harrogate" the coals are separated from the hearth by the space needed for a shallow ash-tray. A feature which should render many people pleased with this fireplace is the absence of bars, with their inevitable need of black-lead, which in the old-fashioned types make serious demands on a servant's time at the most precious hours of the morning. Furthermore, no flue-brush is required. A house equipped with Harrogate fireplaces should know no servant problem. Messrs. Hopkins & Co. are ready to carry out at their Tunstall works any design submitted to them, and they will send the plans for fixing. The tiles are a noteworthy factor in their works, where the firm produce them glazed, printed and coloured, enamelled, embossed, majolica, barbotine, hand-painted, decorated and enamelled. There is much difference in effect between the "Windsor" fireplace, with its enamelled-slatted tile surround, with its graceful Adams decoration on an ivory ground, and the "Empress" fireplace, with a surround of enamelled briquette antique tile. There is a hood. The manufacturers can claim to have produced not only a cheap but a simple fireplace, which can be readily fixed by an ordinary bricklayer, and one which is cleanly owing to the complete combustion of the fuel, and implies only a slight amount of labour on servants. The tiles, curb, mantelpiece used by the firm are excellent in form and colour, and help to recommend the "Harrogate" for adoption wherever good taste prevails.

LORD AVEBURY will preside at the annual soirée of the Selborne Society, to be held, by permission of the First Commissioner of Works, in the Civil Service rooms at Burlington House on April 26, when illustrated addresses will be given on subjects of special interest.

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The Building Trades Exhibition, Olympia.



THE RIGHT HON. THE LORD MAYOR, SIR WILLIAM TRELOAR.

"WESTWARD the course of Empire makes its way" was the declaration of Bishop Berkeley to explain his abandoning of preferments in England in order to teach missionaries for the Indians in Bermuda. The success of the United States, which did not exist as an independent Republic in his time, suggests he was right. If we may presume to follow so illustrious an example in respect of a more material subject, we should say that of late years the tendency of exhibitions in London is also towards the west. Mr. H. Greville Montgomery was therefore wise in opening his Building Exhibition of 1907 in "Olympia" at Kensington, although his enterprise made it necessary to break with old associations. We are confident that the results for himself and his supporters will justify his action. Considered simply as a show the exhibition in its new quarters is more effective than any of those held in Islington. Never before were such elaborate structures set up as specimens. For some of them are of a solidity which made licenses for their erection from the County Council essential. The galleries are more accessible, and in other ways exhibitors and visitors will find they have gained by the removal. We may therefore assume that on Saturday, after the opening by Sir William Treloar, the interest of the exhibition will be quickly recognised.

Anyone who is acquainted with exhibitions during their preparatory stages will acknowledge the difficulty of being able to do justice to the contents. Every hour confusion seems to become worse confounded by new additions. Some exhibitors also make it a rule to keep back their specialties to the latest moment which the arrangements allow. The notices we give this week will therefore have to be taken as subject to correction when more favourable opportunities arise for a closer examination.

The collection of *Thos. Lawrence & Sons*, of Bracknell, is always interesting for the colour and texture of the bricks. The makers have been desirous to display the applicability

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Section Books & Stock Lists on Application

ILLUSTRATIONS.

VICTORIA AND ALBERT MUSEUM, SOUTH KENSINGTON.

COMPETITION DESIGN FOR CHALKWELL HALL SCHOOLS,
WESTCLIFF-ON-SEA.

HEAD-QUARTERS FOR THE ESSEX COUNTY POLICE.

of their brick for decorative work. This year they have been well inspired, for they show gauged and carved pilasters and arches executed by the students of the Tottenham, Wimbledon and Battersea Polytechnics. It is commonly understood that work seen in exhibitions is produced under the most favourable conditions, but in this case we find that even students can work out excellent ornament with such materials. To meet modern demands Messrs. Lawrence have been engaged in colour experiments, and are able to present satisfactory examples in different shades. Another desirable product is their 4-inch facing bricks, which are darker in colour than those used in the Westminster Cathedral.

Messrs. G. Tucker & Son, Ltd., have a varied collection of bricks and tiles. An interesting addition to modern examples will be found in the collection of Roman tiles made from the same clay, and which continue, in spite of their antiquity, without any signs of decay.

Portland cement was never used in such large quantities as at the present time and never was care in selection so necessary. The Saxon Portland Cement Co., Ltd., reveal the transformation of the material as seen in its various tages from chalk marl, as it leaves the quarry, to the renowned Saxon cement. We can see the efforts which are made by grinding, burning, crushing to eliminate all weakness, until it becomes equal to a minimum tensile strain of 600 lbs. per square inch. Every ton which leaves the works is guaranteed of that strength, as well as equal to meeting all the conditions of the British Standard Commission.

Messrs. J. Osman & Co. exhibit a model of their "new perfect" continuous kiln, as well as photographs of other kilns they have erected at home and abroad. It is claimed that they are capable of burning every kind of clay product. Several of their kilns have been set up at Durban in South Africa, and they have others in Mexico and China. In ten years they have built over 140 kilns.

The Fireproof Company, Ltd., again rely on their dovetail corrugated steel sheeting, which is well adapted for fireproof floors, ceilings, partitions, casings to girders and stanchions, proscenium fronts and much else. Its adaptability is remarkable. It will serve for centring in difficult positions; with neat cement it can become a damp-course, and with "camjud" slabs varying from 2 inches to 3 inches in thickness, will form complete partitions, reinforced concrete pipes, &c. With such a combination it would be hard to discover the kind of building in which it cannot be turned to account.

Vulcanite, Ltd., display some of the applications of asphalt. They have varieties for damp-courses, sloping roofs and flat roofs. An object that is sure to attract attention is a roof-tank, which shows how the material will serve that purpose, and likewise how patent vulcanite roofing is impervious to moisture.

The stand of Julius Hülsen & Co. will appeal to chemists from its practical applications of that science. They manufacture hydrate of barium for softening water for boilers, the deposit becoming a soft mud, which can be easily blown off or cleaned out. By this anti-incrustator boilers are preserved and the risk of accidents is minimised. Another of their preparations is precipitated carbonate of barytes for preventing scum on bricks, terra-cotta, &c. Practical brickmakers have testified to its value. They also show leadless glazes, pure silica ware for decorative purposes, &c.

A building exhibition would be incomplete if William Oliver & Sons, Ltd., were not represented. In their collection of timber we have nature unaffected, and where so much has to be artificial their immense longitudinal sections of noble trees refresh the eye. They will present this year hardwoods, dry and fit for immediate use, in wainscot oak, mahogany, walnut, teak, American quartered and plain oak, whitewood, pitch pine, kauri pine, yellow pine, &c., veneers, teak and wainscot oak floorings.

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THE KAHN TRUSSED BAR IS A SCIENTIFIC & ECONOMICAL REINFORCEMENT.

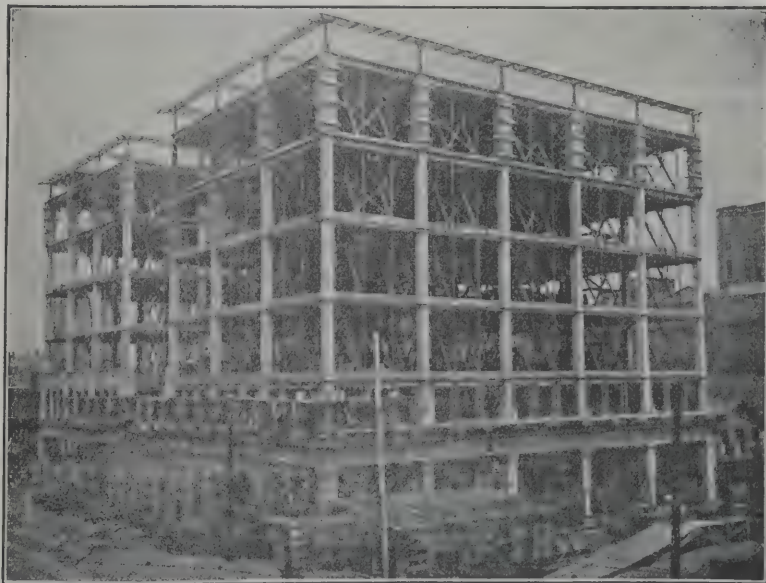
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THE KAHN TRUSSED BAR, ALTERNATING TYPE

TRUSSED CONCRETE STEEL CO.,
CAXTON HOUSE, WESTMINSTER.

The Silicate Paint Company have hitherto been content to suggest the character of their invaluable "Duresco" for plain walls and for decoration. This year they have resolved to display its manifold uses, for they have had constructed a full-sized bungalow, in which Duresco will be used throughout, and which will become one of the most impressive objects in the exhibition. On looking at the structure it can be understood why 30 tons and upwards of Duresco was used in the new War Office.

Wood is so largely used, its preservatives have now increased interest. "Solignum," of Mayor & Co., Ltd., is a protection against vegetable or other enemies such as dry rot and white ants. Both in this country and in Africa, Australia and Japan it has been found efficacious, and as it is made in two colours, brown and green, it has also decorative value.

The Globe Tank and Hurdle Company will contribute their patent rotary screens, flat screens, sand-washing machines, lock nuts, railings and gates.

Messrs. Cakebread, Robey & Co.'s stand is likely to suggest to strangers the variety of goods required of metropolitan builders' merchants. In their collection will be found several types of ranges, stoves, boilers, sanitary goods, patent drain joints and drain machine appliances, smoke-test machines and drain rods, which are in demand in all parts of the world. A special feature is a cast-iron verandah with glass roof for villa residences, for which there is likely to be a demand.

Messrs. Wilmer & Sons will be represented by several of their patent grates and ranges, by porcelain baths and lavatories, chimneypieces in wood, marble and iron and tiles. They make a specialty of grates, and the patent "Bond's" fire and "Sine Qua Non" range will be shown in action. The former occupies small space, but is effective and is produced in several forms.

The Nautilus Fire and Heating Co. will exhibit grates which have been designed by architects, as well as dog grates and mantelpieces. The St. Ivel and Nautilus cooking ranges, which have self-contained flues, will be shown, together with two new types of baths.

The Coatstone Decoration Company will display a wooden structure which from being coated with their "liquid stone" is suggestive of masonry. The company have also a

peculiar rough-cast which is cheaper than what commonly goes under that title. They will also show "Sandisco," which is a washable distemper, besides a stone preservative and a stone backing solution which prevents the penetration of acids and the discoloration of new work.

The announcements of *The Brilliant Sign Company* are too well known to need much description, for they correspond with the title conferred on them. A factory has been opened by the company at Antwerp, and another at Buenos Ayres is under consideration. They have secured an order for letters which will cover 500,000 inches. A new process for background work has been introduced, and from possessing steel dies the company can use stouter copper than is possible when only wood dies are available.

Acetylene gas generators and fittings especially designed for acetylene lighting will be seen at the stand of *Mr. Thomas Potterton*. As he is also a heating engineer, there will be specimens of various kitcheners, heating apparatus, boilers and ranges. The "Victor" gas boilers are adapted for use in flats, and have been adopted by various gas companies.

The firm *James Austin & Sons, Ltd.*, are in their second century, and the list of buildings in which they have co-operated by their ropes and cords, if it could be prepared, would be an interesting document. Among their exhibits this year will be the Eclipse picture line, the Goliath sash-line, the Venetian blind-line and endless cords.

The "Clipper" Belt Hook Company have several useful specialties, including an improved wall-tie, a clip for attaching electrical tubes to girders, a clamp for extending scaffolding planks, a safety belt-shift, a gate hanger, &c.

Hall's Distemper was so skilfully brought to notice in former exhibitions it is difficult to surpass those efforts. The new stand takes the form of a picturesque cottage which visitors are likely to covet. Distemper prepared for exterior work—"Sisco," "Aperfectol," "Orientolac"—and distemper adapted for interior work are employed. There is also a set of screens which prove the decorative value of other varieties. Considered as a comprehensive exposition of an important business the stand will be admired by all business men, and everything in it will sustain examination.

GREAT BUILDING TRADES EXHIBITION

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Messrs. Phillips & Son are exhibiting their "Channel Bolt" and other safes, which are fireproof and burglar-proof. Strength is derived from a special rolled section,



which recalls the Classic fret and which frames the door, preventing air, fire or water from entering. Inexpensive party-wall doors and fourfold doors for large stores are so among the contents of the stand.

Subjects which are remotely political are excluded from the purview of *The Architect*, or it would be easy to draw attention to the peculiar position of Messrs. Walter Carson & Sons. They are one of the few firms who carry on business in Ireland as well as in England, and the testimonials to their paints, oils, stains and varnishes include names of Irish as well as English customers. Yet for years they have remained unaffected by any disturbances which may take place around them. If more firms were disposed to imitate Messrs. Carson the Irish difficulty would be diminished. Everything connected with painting, including brushes, putty, enamels and varnishes, is produced by them, and

whatever bears their name is of a high character. Their plastine is adapted for glass roofs of every description, and is a substitute for putty which is unaffected by the atmosphere for a long period. Muraline is in many colours and is a washable water paint. Vinolite is a paint for conservatories and greenhouses. The works of the firm at Battersea are extensive, and from their long experience Messrs. Carson are able to combine quality with economy.

The inventions and rights of Mr. P. B. Jagger have been acquired by the *Improved Construction Company*; they are, therefore, able to employ concrete under new conditions for paving slabs, floor tiles, building blocks, roofing tiles, floor beams, girder covering, stanchion covering, sewer pipes, railway sleepers, steps, sills, lintels, architraves, cornices, friezes, dadoes, columns, pilasters, bases and capitals, &c. The company claim as proof of facility in production that they can turn out 72 superficial feet of paving slabs of any design, or twelve 32 inches by 9 inches by 6 inches interlocking building blocks of any design or colour, in less than fifteen minutes, and all other materials in like proportion. They have in stock standard designs for ornamental work, but they promise to follow exactly any details furnished by architects. The works of the company are at Strood for the London market, but works can be erected in any part of the country to supply local demand. One advantage which builders will appreciate is that licenses for using the process can be granted on advantageous terms to those taking them, and the works at Strood can be used in order to verify the statements about the machinery and processes.

The quality of the artificial stone manufactured by *The British Building Stone Co., Ltd.*, may be judged from the fact that it competes with nature in lithographic stones. They are subjected to such a variety of strains that a material which will stand would appear suited for work which at first sight might appear more exhausting. When we find that, according to a report by Messrs. Kirkaldy & Son, 3-inch cubes of the company's artificial stone required about 12,000 lbs. per square inch for crushing, it is evident that the material is equal to all requirements. Chemically it has been ascertained that the artificial stones compare most favourably with natural stones, and are likely to prove extremely valuable for building purposes. So far the experience in actual buildings has con-

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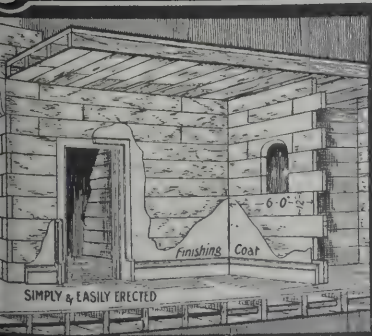
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firmed what science had anticipated. The new stones can be produced from a thickness of only $\frac{3}{4}$ of an inch up to any height that is desirable in blocks. They can be moulded to any design and turned out dressed and carved complete. The stone shown has been manufactured with a small experimental plant, but it is sufficient to reveal the commercial and constructive possibilities of the patents and process of Mr. T. M. Thom.

The chief articles exhibited by *Messrs. C. Chancellor & Co.* are their well-known velure Japan paint and stripso paint remover. Velure is claimed to be more elastic than any other paint. That it resists exposure to hot sunshine without cracking or chipping off, and stands wear and tear, is proved by the large number of testimonials from all parts of the world, including the Soudan desert region about Wadi Halfa, and such countries as Brazil and Australia. H.M.S. *Ivy*, stationed off the Guinea Coast, just under the equator, has been painted for many years with velure. A number of wood panels demonstrate the beautiful surface and colours. A number of this firm's specialties, including a damp preventive; fumood, a preparation for fuming wood, a swimming-bath paint, &c., are also shown.

The *Kinnear Patent Steel Rolling Shutters* have triumphantly withstood many fiery trials, including tests by the British Fire Prevention Committee. Messrs. Arthur L. Gibson & Co. have such reason to be proud of the results of the latter, they have transported the set of two shutter doors which were fitted on either side of a 14-inch wall to represent a party-wall door. The four-hour test was of unusual severity, as it was interrupted owing to damage to gas producer, and water was applied to cool the shutters. At the conclusion of this double test it was found that the inner shutter had been little damaged by the great heat while the outer was almost as good as new. Reports of the tests should be perused by district surveyors who may interpret too literally the clauses of the London Building Acts as to party walls. In America these shutters are employed as fireproof curtains for theatres. The stand shows a larger rolling shutter suitable for wider and higher openings. A B. and S. patent folding gate encloses another of the four sides, while a small shutter for a window opening encloses the fourth. The floor of the stand is laid with patent interlocking rubber tiling.

VARIETIES.

PLANS have been prepared by Messrs. J. D. Swanston & Syme, of Kirkcaldy, for a hippodrome in Lindsay Street, Dundee. The resident architect will be Mr. Leslie Ower.

THE Macclesfield highway committee have passed the plans of a memorial hall and Liberal club, to be erected in Exchange Street, at a cost of 6,500*l*.

THE Middleton Evans estates, which include the greater part of Llandrindod Wells, the Pump House Hotel, with its pump-room and famous springs, and the Llanerch Hotel, are to be sold by auction by Messrs. Knight, Frank & Rutley.

SIR JAMES RECKITT has purchased the Holderness House estate, in East Hull, belonging to the Jalland family, with the intention of constructing a garden village. The site is about a mile long and a quarter of a mile wide, and it is estimated would provide accommodation for 10,000 inhabitants under garden city regulations.

MESSRS. R. M. C. CRAWFORD & DAVID FRAME, trading as Crawford & Frame, Talbot Place, have served on the town clerk of Dublin a writ claiming an injunction to restrain the Corporation from entering into any contract in connection with the Clontarf main drainage other than that entered into with Messrs. Crawford & Frame, and to compel specific performance of that contract. They have also caused a writ to be served on Mr. Vance, a member of the Town Council, claiming damages for alleged libel and slander.

A CURIOUS astronomical clock in Ottery St. Mary Church probably constructed by monks, is being set right (after being in disuse for a century) by an expert in horology. On the face, or dial, there are no hands, but in lieu thereof are figures representing the sun, moon and a star, indicating respectively the hour, the day of the month and the phases of the moon. The clock is of a pattern similar to one in the transept of Exeter Cathedral.

THE Acorn Hotel, in Temple Street, Birmingham, has been reopened after reconstruction and enlargement on an extensive scale. It has now a hundred or more good airy bedrooms, and is unique in the quadrangular arrangement of its planning to meet the contingency of fire, for a continuous passage runs all round the hotel to give the occupant

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any room easy access to numerous staircases and emergency exits. The contractor was Mr. Thos. Rowland, and Messrs. Wood & Kendrick, architects.

EDINBURGH NEW ART SCHOOL.

The site of the new art school is the north part of the Leith Market, and the building, which is in the form of a parallelogram measuring 370 feet by 126 feet, is nearly parallel with the north boundary wall, and about 22 feet from it. There will be access from Lauriston Street, says the *Scotsman*, and also from Lady Lawson Street by the steeply inclined way. There is a sharp slope on the ground from south to north, and as the present surface was found to have been levelled up in 1843, it was thought advisable to put down bores to find out at what depth suitable foundations could be got. These bores disclosed the necessity of going much deeper than is usually necessary, and advantage has been taken of this necessary underpinning to form a basement under the northern part of the school. There are two internal courts, separated by the centre block, containing the main staircase, &c., and all the buildings surrounding these courts are two storeys high, excepting in the case of the west wing, which is one storey high. The main entrance is in the centre of the south front. The outer hall enters an inner hall 31 feet by 21 feet, from which the corridors of the south wing branch right and left, and facing the entrance are the corridors to the north wing and the main staircase to the upper and basement floors. The outer hall is flanked on the left by the porter's room, in which there is cloak-room accommodation for visitors to the school, and on the right by the office. The office communicates with the directors' room, and attached to the office is a shop for the sale of paper and other artists' materials. The corridors, which are all 9 feet 6 inches wide, run straight from end to end of the building—a satisfactory arrangement for purposes of control. The main staircase, which is of stone, has steps 9 feet 6 inches wide, and, being in the centre of the building, is as conveniently placed as possible for intercommunication. The east court is covered over with a roof having a large amount of glass, and forms a sculpture gallery and museum,

measuring 70 feet by 38 feet. It is separated from the corridors flanking it by arched openings on the ground-floor and square-headed openings of similar breadth on the upper floor, and it is intended to place the beautiful casts of the Elgin marbles, now in the Royal Institution, over the arches, where they will be seen to great advantage. This sculpture hall will be seen from the entrance-hall and from the corridors on both floors of the east section of the building, so that students will be in daily touch with statuary and other works of art.

From the corridor of the south-east wing are entered the directors' room, council-room and a small museum for special art specimens, and at the end of the corridor is a room 60 feet by 36 feet 6 inches for instructing house painters in the principles and practice of decoration. A conservatory for plants opens off it. The rooms on the south-west wing are a lecture-room for anatomy, 28 feet by 27 feet and a room for elementary modelling 88 feet by 25 feet. The modelling-room has a door to a passage near the west extremity of the building, by which clay will be brought into the clayhouse in the west wing. Clay will be taken to the modelling-room by this door, thus preventing, as far as possible, the use of the corridors for this purpose. At the end of this corridor there is a stair for access to the staff apartments on the floor above. The west wing of the north part of the building is set apart for sculpture, and there are life classrooms for women and men, 30 feet by 30 feet and 36 feet by 30 feet respectively, and a modelling-room 55 feet by 30 feet. A studio for the professor is placed between the life classes, with apartments for the models. In the centre of the north wing there is a room, measuring 67 feet by 32 feet, for elementary drawing, and in the east wing a room 55 feet by 30 feet for drawing from the antique. The rest of the north wing is set apart for still-life painting, the room measuring 80 feet by 30 feet, so arranged that it can be divided by curtains. In the west wing there is a room 45 feet by 32 feet for teaching the principles of design, and also a room for the professor. The larger room has a door to the conservatory at the south-east corner of the building, in which plants used for purposes of study can be kept. Returning to the west wing there is provided a workshop, painting and carving-room, room for casting and a clay-room. Part of the east court is covered

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in with a glass roof, forming a pavilion 40 feet by 38 feet for animal painting. Animals can be brought into the pavilion by the 10-feet wide passage at the end of the elementary modelling-room.

Over the main entrance there is, on the first floor, a hall 60 feet by 30 feet, in which ceremonial functions, exhibitions of students' work, &c., can be held. Entering off the south-east corridor are a room for process etching, a room for elementary architecture 72 feet by 25 feet, the professors' room, and a lecture-room 28 feet by 25 feet, and in the east wing, entered from the same corridor, a classroom 60 feet by 30 feet for advanced architecture. In the south-west wing are the library, 43 feet by 25 feet, and a room for students' proofs, 31 feet by 25 feet. Between them is the librarian's room, in whose charge the students' proofs will be placed. The remaining rooms are set apart as common rooms for the professors and assistant teachers. The whole of the north wing is set apart for painting. In the centre there is a large room for composition, and in the east wing three life classrooms, each 41 feet by 30 feet, one of which is for women. Each room has suitable apartments for models attached to it. The professors' studio is beside the large central room. The west wing is set apart for studios for advanced students. There are six, each 21 feet by 17 feet, and at the end of the corridor is a large studio, 30 feet by 30 feet, for the director. There are lavatories in each of the wings, and on the basement floor a large cloak-room, 30 feet by 30 feet; common rooms for men and women students, 26 feet by 17 feet, with lavatories attached to them, and general lavatories. The remaining rooms in the basement will doubtless be found useful for teaching book-binding, carving, &c.

Looking to the size of the building and the sum available for its erection, the utmost economy had to be observed in its design. As the south front can only be seen when inside the cattle market, it has been treated in the simplest manner possible, with plain piers separating the windows, which are surrounded by simple mouldings, the details being of somewhat French type. The centre of the south front is slightly accentuated with pilasters and a pediment over the three central windows. As the effect of the building from Johnston Terrace and the Castle Esplanade is probably of

more importance than its appearance from any other standpoint, the roofs at the angles of the building and those of the centre blocks have been carried up considerably above the general level, so that from a distance the building will have the orderly appearance appropriate to a public edifice. From motives of economy, and looking to the difficulty of getting any satisfactory durable white or grey stone, it is proposed that the hewn work shall be of red stone and the rest of the wall surfaces of what is known as common rubble from Hailes Quarry. The interior is practically devoid of ornament, reliance being placed on the proportion and breadth of the corridors for architectural effect. The sculpture hall and corridors surrounding it will, it is hoped, even in the absence of ornament, prove a satisfactory centre for such an important building. The heating is proposed to be by hot water, and the ventilation by extract fans placed in the courts, with ducts from the various apartments. The heating chamber will be in Lady Lawson Street, so that coal may be taken in at street level. The architect (who took up the work on very short notice from the Town Council, and has so far carried it through with the utmost despatch) is Mr. J. M. Dick Peddie, Albyn Place.

THE DRY EARTH SYSTEM.

MOULÉ'S Patent Earth Closet Company, Ltd., whose name is associated with the earliest introduction of the dry earth system to public attention, are keeping abreast of the prevailing activity in matters hygienic. They have recently patented an improvement upon the old type of earth distributing machinery, which appears to be a distinct advance in efficiency, and the novelty is applied to their old and to some newly introduced patterns. Those who prefer the old style of cased-up closets and those who favour the pedestal form will find in the company's catalogue illustrations of both sorts in variety, and all of them are equal to any good modern water-closet in appearance and in the quality of the fittings.

The system has outlived the discussion stage, and now very successfully competes with the several schemes put forward with more or less pretension to wrestle with the troublesome rural sanitation problem. The earth system

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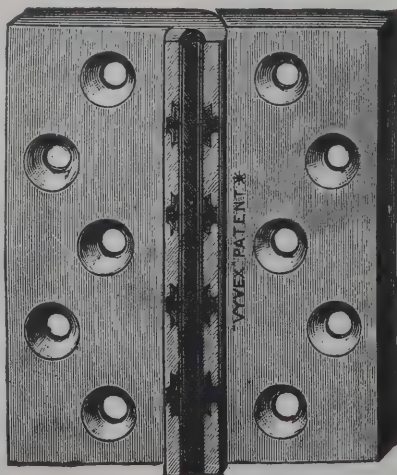
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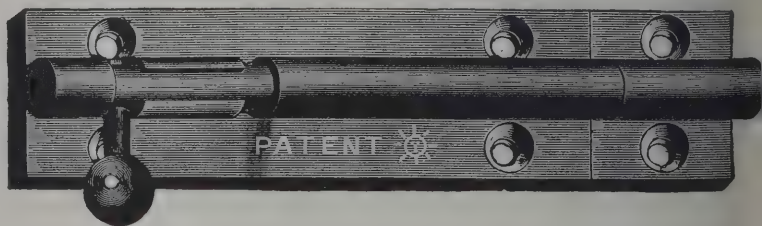


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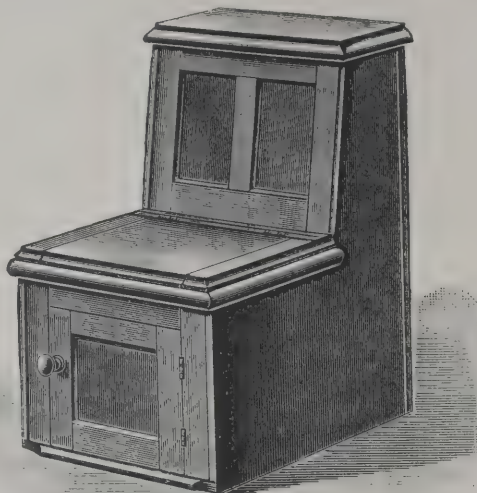
prima facie an obviously natural method, for the impulse to bury putrescible matter in earth appears to be instinctive in all animals. Besides, fine dry earth has a power to deal with such matter that is far more potent than is generally known.

Another recommendation the Moule's system has to offer is the lowness of cost and the readiness with which it may be installed. The village carpenter supplies all the skilled labour required, for here are no cisterns, pipes, valves, drains or cesspits, and incidentally to this last evil there is no fear of befouled wells.



The upkeep of a Moule's closet appears to be proportionate—the little attention required to provide and maintain supply of dry earth for furnishing the hopper and the removal of the used earth. Upon these matters the company are qualified to give practical advice from their lengthy experience of close upon fifty years of such work.

Reduced to a simple routine these items of attention become but an incident in the week-end work of a country house or cottage, and the possessor of the earth-closet has this additional compensation for his trouble—that thereby he is absolved from the impost of a sewer rate and part of a water rate, burdens which rest heavily in the neighbourhood of towns.



Moule's Company publish papers which explain how their closets are arranged on upper floors, and how closets inside the house—upstairs or down—may be attended to from the outside. The Board of Education, in the Regulations for Planning and Fitting-up Public Elementary Schools, recognise the utility of earth-closets in rural districts, and the company has lithographed plans to meet this requirement. From the testimonials printed by the company we note the wide range of adaptability of these closets; commendation comes from private houses, from a college, from a sanatorium and from a reformatory, and it is stated that Government departments have purchased more than 12,000 of these appliances.

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FIRE-RESISTING CONSTRUCTION.

At the fifth annual general meeting of the Insurance Society of Edinburgh Mr. F. A. Macdonald read a paper on "Standard Fire-Resisting Construction in Relation to the Present Rules of the Fire Offices Committee," in the course of which he made special reference to the various forms of fireproof construction and the methods of designing buildings so as to meet the risk of fire resulting from occupancy. A number of different systems were described, particular attention being directed to the ferro-concrete or reinforced concrete construction, a full description of which was given. Insurance offices should, the lecturer said, set up a less perfect standard of fire-resisting construction in order that that form of building might be more generally adopted for warehouses and factories. While it was possible to construct fire-resisting structures of a very high standard, it was not the specification of certain details that would insure efficiency, but rather the skill and knowledge of the general engineer. Those who undertook such duties should have some knowledge of constructional work and the resistance of materials to fire, and have ability to estimate the fire hazard which would arise from the occupancy and exposure. In conclusion, Mr. Macdonald suggested that the Fire Offices Committee might give consideration to the creation of a standing sub-committee, to whom all questions on fire-resisting construction should be referred, as he was convinced that the expense of the establishment of a central department devoted to the work would be repaid many times over in the first two or three years of its existence. A discussion followed.

SEVERAL important building schemes have taken shape in Dundee, and the prospects for masons, joiners, plumbers and the allied trades for the current year are bright. A start has been made with the new West End branch library, and in the course of a week or two workmen will begin operations for the erection of a similar institution for the north end; the new technical institute in Bell Street will be undertaken; Mr. Swanston, Kirkcaldy, has lodged plans for the new theatre to be erected in Lindsay Street.

MASTER MONUMENTAL MASONS.

THE inaugural meeting of the National Association of Master Monumental Masons and Sculptors was held at the Cannon Street Hotel on March 12 at 3 P.M. There was a large and fully representative attendance from provincial towns and the London area. Mr. W. Borrowdale, of Sunderland, the convener of the meeting, opened the proceedings with a short speech, in which he referred to the real necessity of forming such an Association on a broad basis, to assist and protect them in their trade interests in these times of complex and competitive conditions of trade. He announced and read a number of letters he had received from firms trading in various parts of the country offering to join the Association and expressing a wish for its success. The meeting then elected to the chair Mr. Bennett, sen., of Brighton, who, after thanking them for the honour, dealt with some of the evils with which the trade contended unsuccessfully as individuals; but they would be successful as a body or association in redressing those grievances and in dealing with the marble merchants' and the granite trades association, also the railway companies and their excessive rates and charges. Mr. F. T. Mossford, of Cardiff, spoke upon other similar points and the meeting was thrown open to free discussion.

Among the subjects discussed were the obnoxious cemetery rules and excessive fees, and the fact that in some districts municipal trading was done. This threatened their very existence as independent tradesmen, and was no doubt illegal. The question of being able to deal with secret commissions by their Association being allied to the Secret Commissions' Prevention League, and also the advantage of an information bureau, in which could be included and registered the names and addresses of expert reliable workmen and specialists, were considered. It was brought out that the members of the Association could collectively insure their workmen under the Employers' Liability Act at about half their individual payments. The encouragement of the apprenticeship system, and the desirability of doing as much work as possible in this country, possibly through local arrangements, was also discussed, and felt to be desirable in sustaining the practical retailer in his proper position.

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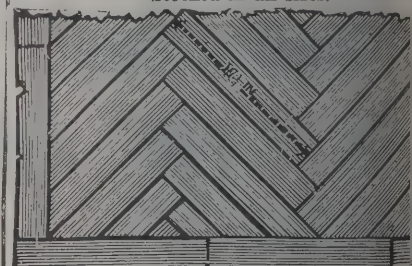
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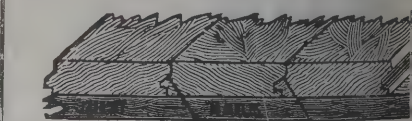
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It was decided that the name of the Association should be "The National Association of Master Monumental Carvers and Sculptors," that there should be no entrance fee for the first three months from that date, and that afterwards the entrance fee, should be one guinea, and a subscription of one guinea in advance per annum should be payable by members.

Mr. Borrowdale mentioned that he had had two applications for the post of secretary. After discussion, it was agreed to appoint Mr. Robert J. Ward, chartered accountant, 2 Clement's Inn, London, W.C., as paid secretary, the Association to have the use of Mr. Ward's offices for committee meetings. It was also agreed to appoint Mr. W. Borrowdale as honorary secretary with him.

ELECTRICITY AND SLATE-MINING.

At the ordinary meeting of the Institution of Civil Engineers on March 26, a paper was read on "The Application of Hydro-Electric Power to Slate-Mining," by Mr. M. Kellow.

The slate mines of Wales are situated almost without exception in the counties of Carnarvonshire and Merionethshire. The mountainous character of the country greatly facilitated mining and quarrying operations in the past, as the steep hillsides enabled the slate beds, which incline at high angles, to be worked by adit levels and horizontal galleries directly from the hill-sides, and a small amount of power only was required under these circumstances. The conditions tend to become less favourable every year, as the workings become deeper, and as also mechanical aids in the manufacture of slate tend to become more universal, the requirements, as regards power, must increase considerably.

Though steam has hitherto been chiefly used, there is an abundance of water-power in the two counties, which, if applied, would supply all the needs of the slate industry in this respect. There is little doubt that when the advantages of utilising water-power in conjunction with electric transmission and distribution are generally realised, it will be used almost to the exclusion of any other in slate-mining. The author designed and installed a hydro-electric plant which contains many features of novelty. The problems

covered a wide area, and the application of the principles involved to slate-mining generally were considered. The scheme has been carried out in the Croesor and Cwmfoel valleys in the vicinity of Snowdon, and includes all the essentials of a complete power system.

Details were supplied as to rainfall, catchment area, water-storage (partly by means of a reservoir 12 acres in extent, constructed at an elevation of 1,460 feet above the sea), and a steel pipe-line with its accessories. So far as the author is aware, there is no previous example of so high a head of water as 860 feet having been utilised in the United Kingdom. Particulars of an original design of air-vessel for use at the bottom of the pipe-line, furnished with hydraulic charging apparatus, to enable it to be filled with air at a pressure corresponding to that of the water, were given.

The author having carried out a large number of experiments on various forms of buckets, nozzles, &c., certain conclusions were arrived at, which were stated in the paper. Efficiency-curves, with different forms of bucket at various peripheral speeds with constant volume, and at constant peripheral speed with varying volume, are given.

The advantages and disadvantages involved by the use of continuous and alternating current respectively, as regards generation, transmission and distribution were compared, and a conclusion was arrived at that the three-phase alternating-current system is the one best adapted to slate-mining. Considerations affecting the choice of periodicities were discussed, and forty or fifty cycles is regarded as the most suitable. The type of generator and method of driving were considered, and conclusions stated.

The conditions under which it is desirable to generate at the distribution voltage, and those under which transformation is desirable, were described, and also the methods of driving the exciter from the alternator-shaft, and from a separate power-source respectively.

The essential qualities in mining plant are stated to be reliability, first-class mechanical construction and simplicity of operation, and as regards motors these conditions are best fulfilled by the three-phase induction type. The conditions prevailing in slate mills were described, and group-driving by moderate-sized squirrel-cage motors is favoured. The peculiar requirements of winding-up inclined planes,

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which are usual in slate-mines, the character of the traffic, &c., were dwelt upon, and the conclusion arrived at that three-phase motors are well adapted to the work. The types of motors most suitable to the driving of pumps, fans, winches, &c., were considered. The influence of various starting devices, used in connection with the motors, on the power-factor of the system, was discussed. The advantages of the three-phase system as applied to slate-mining were then summarised and the plant installed for mill-driving, winding, traction, pumping, lighting, &c., at the Croesor Slate Mine described. Efficiency curves were given relating to every part of the system separately and in combination.

MERSEY IMPROVEMENT.

THE Mersey Docks and Harbour Board have for many years past employed a powerful plant in dredging the bar of the river, Queen's Channel, and certain shoals which tend to form in other parts of the $12\frac{1}{2}$ miles of main channel lying seawards of New Brighton. By the work of the sand pump dredgers *Brancker* and *G. B. Crow* the depth of the channel has been greatly improved so as to satisfy the present requirements of shipping, and from this point of view its condition has never been better than at present.

While it is necessary that the requirements of vessels as regards depth should be fully met, it is desirable that the width and direction of the channel should also be such as to render navigation easy for the growing numbers and length of vessels frequenting the port, and the work of the dredgers has also been successfully directed to the regulation of the width and outline of the channel.

For many years past that portion of the Taylor's Bank which forms the concave side of the channel abreast of the Crosby Lightship has been gradually receding owing to its erosion by the tidal currents. This is an ordinary phenomenon noticeable at the bends of all rivers, and is due to the centrifugal force of the current acting on the concave bend and producing an erosive effect. Currently with, and in consequence of this recession of the Taylor's Bank, the Askew Spit, on the opposite or convex side of the channel, has advanced towards it.

The result of these movements is that the bend in the

Crosby Channel at this point is becoming more accentuated and, having regard to the very big ships now frequenting the port and the increase in their size which may be anticipated, requires to be controlled and improved. The best method of effecting this has been under the consideration of the Board for some time past, and after a careful study of all the surroundings of the case they have determined to adopt the proposal of their engineer-in-chief, Mr. Anthony G. Lyster, to "revet" with stone the southerly face of Taylor's Bank, so as to prevent further erosion.

Before, however, adopting this suggestion, they and their engineer thought it well that the question should be considered by a commission of the highest engineering authorities on such questions in this country. After mature consideration of the question and visiting the spot, this important commission unanimously confirmed Mr. Lyster's proposal. The Lords of the Admiralty and the Mersey Conservancy, who have been advised by Vice-Admiral Sir G. S. Nares, K.C.B., F.R.S., Acting Conservator, and Sir William Matthews, K.C.M.G., vice-president Inst.C.E., have sanctioned the project.

The work, which follows the lines successfully adopted in other rivers, consists in the deposit along the southern face of the Taylor's Bank, below low-water level and well outside the channel, of a layer of small lumps of hard stone, in such a manner as to revet or clothe its slope, and so to protect the underlying sand from erosion by the current. The total length would be about $2\frac{1}{2}$ miles.

The description of the work, as given in the notice issued by the Conservancy, is as follows:—"A stone revetment to the height of mean low-water mark, or thereabouts, of the southerly face of Taylor's Bank, in Crosby Channel, in the estuary of the river Mersey or Liverpool Bay, commencing at or near the southerly end of Formby Channel at a point situate 1,370 yards or thereabouts, measured in a south-westerly direction, from the beach mark on the fore-shore of the urban district of Little Crosby, known as the Crosby Beach Mark, and terminating at a point situate 5,360 yards or thereabouts, measured in a westwardly direction, from the said Crosby Beach Mark."

With a view to still further improving the channel, the Board are about to construct a dredger of three times the size and power of the *Brancker* and *G. B. Crow*.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITION OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

CONTRACTS OPEN.

ACCINGTON.—April 15.—For Congregational school chapel, Higher Antley Street. Messrs. Haywood & Harrison, architects, Post Office Chambers, Accrington.

ASKAM-IN-FURNESS.—April 22.—For the erection of meeting-room in connection with the Church of Christ. Messrs. J. W. Grundy & Son, architects, Central Buildings, Ulverston.

BATH.—April 16.—For the mason and tile fixer, carpenter, painter, plumber and general contractor's work at the several bathing establishments, for the hot mineral baths committee of the Bath Corporation. Mr. Alfred J. Taylor, architect, 18 New Bond Street, Bath.

BATLEY.—April 15.—For the erection of an additional storey to Victoria warehouse, Bradford Road, and also erection of five shops thereto. Mr. B. Watson, architect and surveyor, Upper Taylor Street, Batley.

BISHOP AUCKLAND.—April 15.—For the whole or any portion of the work required in erection of a detached villa. Mr. F. H. Livesay, architect and surveyor, 107 Newgate Street, Bishop Auckland.

BRADFORD.—April 17.—For extension of Dumb Mill, Frizinghall, for the Bradford Corporation. The City Architect, Whitaker Buildings, Brewery Street.

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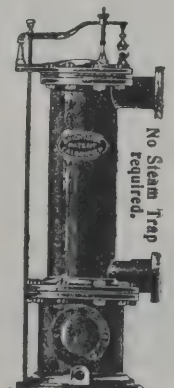
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BYKER.—April 13.—For the whole of the works in connection with the nave and chancel of the church at St. Lawrence, Byker, Newcastle-on-Tyne. Send names to Messrs. Hicks & Charlewood, architects, 67 Westgate Road, Newcastle-on-Tyne.

CARLTON.—April 17.—For the construction of the 75-feet span masonry bridge known as Carlton bridge, carrying a district road over the river Aire at Carlton, within the urban and rural districts of Skipton, and situate $1\frac{1}{2}$ mile south-west of the town of Skipton. Deposit 1*l.* Mr. F. C. Carpenter, West Riding surveyor, County Hall, Wakefield.

CHEW. MAGNA.—April 17.—For improvements the Chêw Magna Council school, Somerset. Mr. William F. Bird, Midsomer Norton.

COLCHESTER.—April 17.—For the erection of a wooden footbridge over the river Colne, in the Castle Park. Deposit 1*l.* 1*s.* Mr. Herbert Goodyear, A.M.I.C.E., borough engineer and surveyor.

CONSETT.—April 15.—For proposed building premises, Middle Street, Consett, Durham. Send names to Mr. John J. Eltringham, architect and surveyor, Hawthorne Terrace, Blackhill.

COVENTRY.—April 22.—For alterations and additions to the Earlsdon Council school. Deposit 1*l.* 1*s.* Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry.

DARENTH.—April 17.—For the erection of industrial workshops at Darenth Asylum, near Dartford, Kent. Deposit 1*l.* Mr. W. T. Hatch, engineer-in-chief, The Metropolitan Asylums Board, Embankment, London, E.C.

DEARHAM.—April 20.—For proposed alterations and additions to the Dearham Council school, Cumberland. Mr. Joseph Forster, Clerk of Works, 13 Earl Street, Carlisle.

EDINBURGH.—April 24.—For the various building works, as well as schemes and estimates for laundry engineering, in connection with proposed public washhouses at Simon Square, for the St. Leonard's district. The Public Works Office, City Chambers, Edinburgh. Mr. R. Morham, city architect.

ELLAND.—April 20.—For the erection of an additional storey to Norton Mill, Elland, Yorks. Send names to Messrs. Stott & Sons, architects, 5 Cross Street, Manchester.

EXETER.—April 19.—For the erection of almshouses, remodelling existing cottages and the restoration of the chapel at St. Anne's. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

GREAT BROUGHTON.—April 20.—For the erection of a Primitive Methodist church. Rev. Mark Pattison, Ruskin Villa, Stokesley.

HULL.—For additions and alterations to premises of the British Marble and Slate Syndicate, Neptune Street. Mr. Melville Lenham, architect, &c., 21 Bond Street, Savile Street, Hull.

HUMBERSTONE.—April 17.—For the erection of Wesleyan chapel and school. Deposit 1*l.* Messrs. Gelder & Kitchen, architects, 120 Alfred Gelder Street, Hull.

IPSWICH.—April 15.—For alterations to the public hall. Deposit 1*l.* 1*s.* Messrs. Eade & Johns, architects, Tower Chambers, Tower Street, Ipswich.

IRELAND.—April 15.—For alterations, additions and improvements to Ballyhubbo House, Charleville. Mr. Brian E. F. Sheehy, architect, 57 George Street, Limerick.

IRELAND.—May 1.—For the erection of two consumptive hospitals at the Clonmel district lunatic asylum, for the joint committee of management. Deposit 2*l.* 2*s.* Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

IRLAM.—April 17.—For the erection of Council offices. Deposit 2*l.* 2*s.* The Council Offices, Clarendon Terrace, Irlam, Lancs.

KENDAL.—April 15.—For additions and alterations to 1, 2 and 3 Denmark Terrace, Kendal Green. Mr. John F. Curwen, architect and sanitary engineer, 26 Highgate, Kendal.

LISKEARD.—April 22.—For alterations and renovations of the Wesleyan chapel. Mr. John Sansom, architect, Liskeard.

LONDON.—April 18.—For engine foundations and builder's work at the electricity works, Hackney. Deposit 5*l.* Mr. Robert Hammond, M.I.C.E., consulting engineer, 64 Victoria Street, Westminster, S.W.

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LONDON.—April 27.—For the erection of dwellings for the working classes, on a site known as Brantome Place. Messrs. Joseph & Smithem, architects, 83 Queen Street, Cheapside.

LONDON.—May 3.—For Admiralty extension block IV. (superstructure). Sir Aston Webb, R.A., 19 Queen Anne's Gate, S.W.

LOUGHBOROUGH.—April 16.—For the construction of a concrete retaining wall to the electricity station site, and erection thereon of wrought-iron fencing, &c. Mr. A. H. Walker, borough surveyor, Town Hall, Loughborough, Leicester.

MENSTON.—April 16.—For new chronic block to be erected at the Menston asylum, Yorks, to accommodate 120 cases. Deposit 1*l*. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

NEWCASTLE-ON-TYNE.—April 13.—For construction of a coal shed at the city asylum, Coblodge. Deposit 2*l*. 2*s*. The City Engineer's Office, Town Hall, Newcastle-upon-Tyne.

PORTSLADE-BY-SEA.—April 19.—For the erection of a police station and police residences. Mr. F. J. Wood, county surveyor, County Hall, Lewes.

PRESTON.—April 17.—For the erection of a domestic science centre in Maitland Street, Cuttle Street and Delaware Street. Deposit 1*l*. 1*s*. The Borough Surveyor, Town Hall, Preston, Lancs.

PRESTON.—April 17.—For the erection of a domestic science centre at the corner of Marsh Lane and Spa Road. Deposit 1*l*. 1*s*. The Borough Surveyor, Town Hall, Preston, Lancs.

REDCAR.—April 18.—For the erection of a police-station, with boundary-walls, drill-yard, &c. Mr. Walter H. Brierley, county architect, 13 Lendal, York.

RIPPONDEN (YORKS).—April 16.—For alterations and additions to Ryburn Mills. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

SCOTLAND.—April 15.—For the concrete and drainage and carpenterwork of shop and stores to be erected in Commercial Road, Buckie. Messrs. R. Tindall & Sons, ironmongers.

SCOTLAND.—April 17.—For executing the mason, carpenter, plasterer and painter's work of alterations at Ellon parish church, Aberdeen. Messrs. Kelly & Nicol, architects, 367 Union Street, Aberdeen.

SKIPTON.—April 19.—For the erection of two houses and a shop in Gargrave Road. Mr. James Hartley, architect, Skipton.

STOKESBY.—April 18.—For the erection of the Primitive Methodist church, Stokesby, Norfolk. Mr. A. F. Scott, architect and surveyor, Castle Meadow, Norwich.

THORNTON.—April 13.—For alterations and repairs at the Council school, Thornton, Lancashire. Deposit 1*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

WALES.—April 13.—For the erection of a new C.M. orphanage at Bontnewydd, near Carnarvon. The Cartref, Bontnewydd.

WALES.—April 13.—For proposed alterations to Bontnewydd C.M. chapel. Mr. R. B. Ellis, Bronant, Carnarvon.

WALES.—April 15.—For building eighty houses at Aberaman. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

WALES.—April 15.—For the erection of fifteen houses or more at Melincourt, Resolven. Mr. G. A. Treherne, engineer and architect, Belmont, Aberdare.

WALES.—April 15.—For the erection of a house at Cilderi, Golden Grove, Llandilo. Mr. Arthur S. Williams, architect and surveyor, 7 King Street, Llandilo.

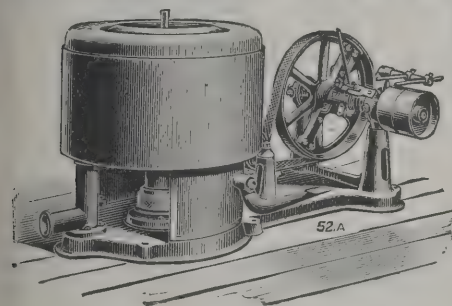
WALES.—April 19.—For the erection of a mission hall at Caeracca, Dowlais. Mr. Arthur Marks, M.S.A., architect, Express Chambers, Glebeland Street, Merthyr.

WALES.—April 20.—For the erection of a classroom and other works at the Hillside Council school, Blaenavon, Mon. The County Council Offices, Newport, Mon.

WALES.—April 20.—For the erection of a mixed school at New Inn, near Pontypool, Monmouthshire. Deposit 2*l*. 2*s*. Mr. H. J. Griggs, architect, Newport.

WALES.—April 20.—For the erection of a laboratory, workshop and cookery-room at the St. David's County

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school. Mr. Hugh Thomas, architect and surveyor, 9 Victoria Place, Haverfordwest.

WALES.—April 22.—For Salvation Army school, Bethcar Street, Ebbw Vale. Adjutant Dewey, 94 Pennant Street, Ebbw Vale.

WALES.—April 22.—For the erection of a minister's house at Pentre. Mr. W. D. Morgan, M.S.A., architect, Post Office Chambers, Pentre, Rhondda.

WAREHAM.—May 1.—For the erection of almshouses, boundary walls and fences, &c., at Wareham, Dorset. Mr. G. Clavell Fitter, North Street, Wareham, Dorset.

WORKINGTON.—April 15.—For the erection and completion of a house and shop at corner of Corporation Road and Queen Street. Mr. J. E. Wildridge, architect and surveyor, 106 John Street, Workington.

WREXHAM.—April 15.—For the erection of an additional classroom and a book and stationery-room at the girls' department of the Victoria school. Deposit 10s. 6d. Mr. M. J. Gummow, architect, Egerton Street, Wrexham.

TENDERS.

ABERDEEN.

For the supply and delivery of one surface condenser, together with air-pump, oil separator, &c., for the Corporation. Mr. J. ALEX. BELL, city electrical engineer.

Richardson, Westgarth & Co.	£1,790	0	0
Allen, Son & Co.	1,433	0	0
Liverpool Engineering and Condenser Co.	1,430	0	0
Mirrlees, Watson & Co.	1,349	0	0
Bailey & Co.	1,281	0	0
Belliss & Morcom	1,274	0	0
Haste Pump Co.	1,235	5	0
Cochrane	1,224	10	0
Storey & Sons	1,208	10	0
Wright & Co.	1,162	0	0
Willans & Robinson	1,158	0	0
Midland Engineering Co.	1,127	0	0
De Ritter	1,124	14	0
Cole, Marchent & Morley	1,124	0	0
Hall & Sons	1,123	0	0
Worthington Pump Co., London (accepted)	1,116	0	0

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For making-up a road in Park district. Mr. HARRY ALDOUS, Fountain House, Brightlingsea.

Farr	£750	0	0
Trueman	320	0	0
Nichols	220	13	8
Lord	190	0	0
BLYTH, Brightlingsea (accepted)	176	10	0

COLCHESTER.

For a bungalow in Mi'e End Road. Mr. W. SCARGILL, architect. Quantities by Mr. R. HORNE, Colchester.

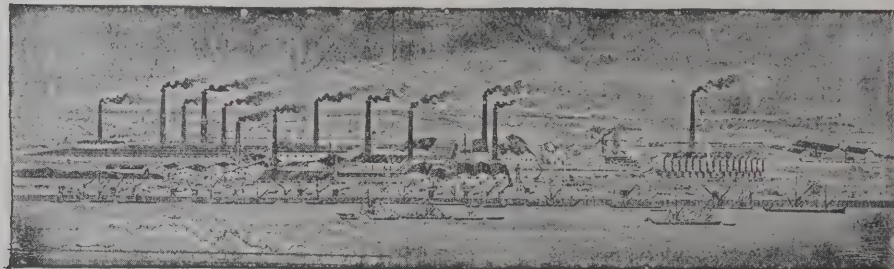
Ward	£578	18	0
Scott	491	0	0
Beaumont	460	0	0
Diss	448	0	0
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or the erection of houses, Fronks Road. Mr. H. STEWARD WATLING, architect, Kingsway House, Dovercourt.

Rose & Woolnough, Ipswich. £1,895 0 0

or alterations and additions to Stour House. Mr. H. STEWARD WATLING, architect, Kingsway House, Dovercourt.

Saunders, Dovercourt (at per schedule).

DUNDALK.

or the erection of a sanitary convenience, gate piers and other works at town hall. Mr. M. SELLARS, town surveyor.

WYNNE, Jocelyn Street (accepted). £260 0 0

ERDINGTON.

or erecting west wing to the No. 2 north pavilion at the workhouse, for the Aston Guardians. Messrs. C. WHITEWELL & SON, architects, Birmingham.

LEE & SON, Aston (accepted). £3,654 0 0

FELIXSTOWE.

or the erection of two shops, The Promenade. Mr. H. STEWARD WATLING, architect, 24 Victoria Parade, Felixstowe, Dovercourt, Ipswich and Lowestoft.

Harris, Ipswich (at per schedule).

FOLESHILL.

or the levelling, paving, &c., a portion of Back Lane, Collycroft, Bedworth. Mr. A. E. NEWBY, surveyor.

Boon & Sons. £442 0 0

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Palmer. 397 10 0

Surveyor's estimate. 344 19 9

GEORGEHAM.

or the construction of a sewer at Georgeham, Barnstaple. Mr. ERIC G. KINGWELL, Barnstaple.

Somerwill. £161 13 1

Tucker Bros. 150 0 0

BROWN, Georgeham (accepted). 132 0 0

GODALMING.

For the erection of a Council school. Messrs. A. WICKHAM JARVIS and FRANK A. RICHARDS, M.A., architects, 36 Victoria Street, London, S.W.

Bunning. £6,182 0 0

Tribe & Robinson. 5,885 0 0

Milton. 5,730 0 0

Mitchell Bros. 5,605 0 0

J. & M. Patrick. 5,590 0 0

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Kemp. 5,283 0 0

Martin, Wells & Co. 5,280 0 0

WAKEHAM BROS. (accepted). 5,195 0 0

GREAT YARMOUTH.

For the erection of mantle show-room, work-rooms, &c., for "Palmers." Messrs. GEORGE BAINES & SON, architects, 5 Clement's Inn, Strand, London, W.C., and A. S. HEWITT, Bank Chambers, Regent Street, Great Yarmouth.

LEGGETT, 39 Dene Side, Great Yarmouth (accepted). £2,310 0 0

GRIMSBY.

For the erection of works at South Killingholme. Messrs. BENTLEY & HALL, architects, Grimsby.

Pattison & Sons. £5,973 0 0

Hewins & Goodhand. 5,897 0 0

Moss & Sons. 5,836 16 8

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THOMPSON & SONS, Grimsby (accepted). 5,600 0 0

Parker & Sons. 5,430 10 0

HASLEMERE.

For works at Frenshaw Hall (second contract). Messrs. J. W. SIMPSON & M. AYRTON, architects, Gray's Inn, W.C. Quantities by Messrs. G. M. SIMPSON & N. EVILL.

Holden. £3,793 0 0

Milton & Sons. 3,674 0 0

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For erecting workshops, &c., in Mendy Street. Messrs.
HOOPER & NASH, architects, High Wycombe.

Gibson	£747	0	0
Stevens & Son	658	0	0
Flint	647	0	0
Nash & Sons	624	0	0
HARRIS, High Wycombe (accepted)	565	0	0

HULL.

For the erection of foundations and basement of proposed
shops, Jameson Street. Mr. JOSEPH H. HIRST, city
architect, Town Hall, Hull.

Sangwin	£1,604	0	0
Brunton	1,554	6	9
Houlton & Son	1,260	0	0
Goates	1,256	18	0
Fenwick	1,244	0	0
Harper	1,231	10	0
Levitt	1,211	0	0
Quibell, Son & Greenwood	1,196	0	0
PANTON, Anlaby Road (accepted)	1,118	0	0

IPSWICH.

For the erection of a detached residence, Rushmere Park.
Mr. H. STEWARD WATLING, architect, 4 Tavern Street,
Ipswich, Dovercourt, Felixstowe and Lowestoft.
Linzell, Ipswich £900 0 0

IRELAND.

For the erection of a manse on the Maxwell Road, Bangor,
Mr. ERNEST L. WOODS, architect, Bangor, co. Down.

Keith	£1,740	0	0
Colwell	1,690	0	0
Beers	1,512	10	0
Irving	1,448	0	0
Colville & Watson	1,390	0	0
McKie, Belfast (accepted)	1,200	0	0

LOWESTOFT.

For the erection of two houses, Oulton Broad, Lowestoft.
Mr. H. STEWARD WATLING, architect, 41 London Road,
Lowestoft, Ipswich, Dovercourt and Felixstowe.
Smith, Ipswich £350 0 0

KIRKBURTON.

For the construction of about 8,523 lineal yards of stone-
ware pipe sewers and about 506 lineal yards of iron
pipe sewers, together with manholes and flush
chambers, also sewage-disposal and other works.
Messrs. BROOK, DRANSFIELD & DYSON, engineers,
Huddersfield.

Brebner	£8,922	17	7
Underwood	8,020	9	7
Macdonald	7,886	0	0
Tyler	7,387	0	0
Kellett, Ltd.	7,329	17	11
Johnson & Son	6,827	11	6
Smith	6,706	0	0
Arundel	6,640	4	8
Braithwaite & Co.	6,553	0	3
Etheridge & Clarke	6,527	5	7
Turner	6,423	10	2
Naylor & Sons	6,297	17	11
Eagland & Sons	6,288	0	0
Edmondson & Wyatt	6,270	0	0
Bentley	6,183	13	5
Dolman	6,115	6	4
Barry	6,022	0	0
Ward & Tetley	5,968	3	5
Sidebottom & Brown	5,791	6	7
Balmforth	5,721	8	2
G. H. & N. W. Graham	5,644	0	0
Graham	5,606	0	0
Bentley & Swift	5,577	13	5
WARING & SONS, Huddersfield (accepted)	5,565	0	0
Engineers' estimate	5,826	11	7

LONDON.

For the steel tube for the 15-inch main in the Royal Albert
Docks, for the Metropolitan Water Board.

Thames Ironworks Co.	£175	0	0
Lester & Perkins	144	0	0
FRASER & SON (recommended)	134	0	0

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or lengthening three boilers, for the Metropolitan Water Board.

Thames Ironworks Co.	£221	0	0
Fraser & Son	147	0	0
LESTER & PERKINS (recommended)	139	0	0

MACCLESFIELD.

or laying about 5,450 yards of 4-inch and 3-inch cast-iron pipes, with meters, hydrants and other fittings. Mr. J. THORPE, surveyor, Macclesfield.

Marland	£911	0	0
Roberts	859	0	0
Taylor & Son	724	0	0
Barry	704	0	0
Dean & Co.	695	0	0
Jackson	632	0	0
Brebner & Co.	630	0	0
Jowett	602	0	0
Johnson & Son	558	0	0
Westwood	467	0	0
Bentley	461	0	0
YORK & Co., Wellington (accepted)	433	0	0

or the laying of about 1,720 yards of 6-inch stoneware pipe sewers, with manholes and flushing arrangements, at Poynton. Mr. J. THORPE, surveyor, Macclesfield.

Dean & Co.	£949	0	0
Roberts	732	0	0
Jackson	673	0	0
Jowett	640	0	0
Barry	571	0	0
Barker Bros.	558	0	0
Westwood	546	0	0
Marland	518	0	0
Edmondson & Wyatt	518	0	0
Fram Construction Co.	508	0	0
Taylor & Son	477	0	0
Clayton Bros.	452	0	0
GOSLING & STAFFORD, Hazel Grove (accepted)	405	0	0

MAIDSTONE.

For the construction and equipment of light railways from High Street to Loose, comprising permanent way (tramway construction), overhead line, underground mains, switchboard, rolling-stock and buildings, for the Corporation. Mr. STEPHEN SELLON, 36 Victoria Street, Westminster.

Law	£41,764	7	10
Griffiths & Co.	39,917	9	4
Neal	38,432	0	0
White & Co.	37,401	8	5
British Insulated and Helsby Cables	35,798	9	10
Underwood & Bro.	35,172	14	9
DICK, KERR & Co., Cannon Street (accepted)	32,439	19	1

MARKET HARBOROUGH.

For erecting house and shop. Mr. W. J. SMITH, architect.

Lane & Gross	£340	0	0
Corbett	333	0	0
Hufford	322	0	0
Dexter	320	0	0
Brown	315	0	0
BOTT & PALMER, Market Harborough (accepted)	313	0	0

MITCHELSTOWN.

For sewage-disposal works, for the No. 1 Rural District Council. Messrs. KAYE, PARRY & ROSS, engineers, 63 Dawson Street, Dublin.

O'Mahony	£1,350	0	0
Roche	1,290	0	0
Baird	1,250	0	0
CREEDON, Fermoy (accepted)	905	0	0

MOUNTAIN ASH.

For approach road to Abercynon cemetery. Mr. W. G. THOMAS, surveyor.

John	£950	15	10
Morgan	915	0	10
Sutherland	764	3	6
Evans & Murray	702	18	4
Webb	596	3	4
WILLIAMS BROS., Ynysybwl (accepted)	564	6	8

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NEWMARKET.

For new library and other alterations to White Lodge, Cheveley, Newmarket. Mr. H. STEWARD WATLING, architect, 4 Tavern Street, Ipswich, Dovercourt, Felixstowe and Lowestoft.
Thackray & Co., Huntington £612 0 0

ORMSKIRK.

For the erection of a pavilion and the extension of the main infirmary block at the workhouse. Mr. J. DOB, architect, Liverpool.
C. & J. CHAPPELL, Liverpool (accepted) . . £5,050 0 0

PONTYPRIDD.

For pulling-down and rebuilding business premises in Market Square. Messrs. W. M. LEWIS & MORGAN, architects, Pontypridd.

Harris	£1,370	0	0
Rogers & Sons	1,275	0	0
Davies	1,199	13	0
Smith-Jones	1,156	0	0
Julian	1,097	0	0
R. Jones	1,076	0	0
E. Jones	1,049	0	0
WILLIAMS & JAMES (accepted)	977	0	0

ROCHFORD.

For the erection of receiving and mental wards at the Union workhouse. Messrs. GREENHALGH & BROCKBANK, architects, Southend.
F. & E. DAVEY, Southend (accepted) . . £2,437 0 0

SANDBACH.

For the erection of slaughter-house. Messrs. ALFRED PRICE & SON, architects, Sandbach.

Birchall Bros.	£779	0	0
STRINGER, Sandbach (accepted)	674	0	0
Street	639	17	0
Edwards	634	10	0
Millward	632	14	0
Jackson, Ltd.	626	9	0

PORT TALBOT.

For new premises, Station Road. Mr. R. O. CLARK, architect and surveyor. Quantities by Mr. CHARLES MILLS, Newport, Mon.

Jenkins	£2,797	0	0
Rees	2,770	0	0
Davies & Sons	2,700	0	0
Groom	2,560	0	0
Reed	2,500	0	0
Cox	2,483	0	0
Nicholas	2,464	0	0
Clarke	2,430	0	0
MORGAN & Co., Newport (accepted)	2,349	0	0
Bevan	2,299	0	0

SCOTLAND.

For the construction of sewers from the foreshore through M'Cubbin's and Potter's lands and Station Road, Bank Street, Hunter Street and a portion of Main Street, Prestwick. Messrs. J. & H. V. EAGLESHAM, C.E., engineers, Ayr.

Osborne	£2,101	6	7
Kirkland	1,878	14	5
Stevenson & Son	1,657	16	7
P. Hastie	1,326	1	3
Laprairie	1,310	14	9
Reid & Son	1,275	18	7
McAndrew	1,255	9	6
Hutchinson	1,085	16	10
H. Hastie	1,063	19	6

WALES.

For the erection of new Council school, Cwmdau. Mr. W. D. JENKINS, county education architect, Shire Hall, Carmarthen.

Thomas Bros.	£998	0	0
Evans	868	0	0
Davies	825	0	0
Howells & Son	812	10	0
R. Thomas	745	0	0
Williams	740	0	0
W. THOMAS, Llandilo (accepted)	689	0	0

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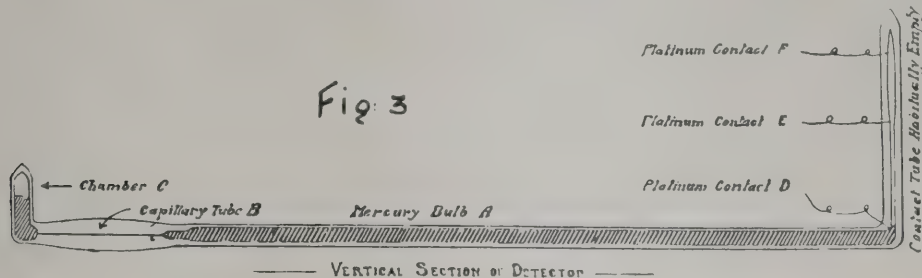
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LESLIE WALKER FIRE ALARM.

In the description of the Leslie Walker fire detector in our issue of March 29, the lettered diagram showing the action of the detector was accidentally omitted. The missing figure we have the pleasure of now giving, the letters being those referred to in the original full description. The action is briefly as follows:—In the figure a mercurial bulb A is continually kept filled with mercury, from which a fine capillary tube B communicates with the partially filled compensating chamber C. On the right is shown the (normally empty) contact tube containing platinum contacts

A LARGE clock with Westminster chimes has just been fixed in Rothwell parish church, Northamptonshire, by John Smith & Sons, Midland Clock Works, Derby. The clock is fitted with all the latest improvements and has been made generally to the designs of the late Lord Grimthorpe. The same firm recently made a large clock and chimes at Irthlingborough Church in the same neighbourhood.

THE London and Lancashire Fire Insurance Company's report and balance sheet for the year ending December 31, 1906, is eminently satisfactory. The combined fire and



and F and forming the (normally) open portions of two electrical circuits. Usually, the mercury passes from A through tube B to chamber C on a rise, and returns to B on a fall of temperature. On a sudden or abnormal rate of rise tube B is much too small to carry off the flow and the mercury is instantly forced into the contact tube, thus bridging electrical contacts D and E, and later also E and F. The circuits are also bridged at a pre-determined degree of temperature, for when the chamber D is full the mercury of course flows up the contact tube. The closing of a circuit signals to those in charge.

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accident premiums amount to 1,592,037*l.*, showing an increase of over 105,000*l.* The operations of the company, excluding San Francisco, have resulted in an underwriting surplus of 344,066*l.*, which, with interest of 58,949*l.*, makes a total credit balance of 403,015*l.* After making full provision for the company's loss at San Francisco of 925,000*l.*, increasing the fire fund by 40,000*l.*, and paying a similar dividend to last year, viz. 16s. per share, or 32 per cent. on the paid-up capital, the total reserve funds amount to 1,554,068*l.*, in addition to the capital of 2,280,000*l.*

AN interesting account, with illustrations, is given of "The Lost Tapestries of the House of Lords" by Edmund Gosse, in *Harper's Magazine* for April. They were designed to commemorate the Spanish Armada, and carpeted the walls of the Upper Chamber until the fire of 1834, but fortunately a pictorial record of them exists in the spirited engravings of John Pine, the friend of Hogarth.

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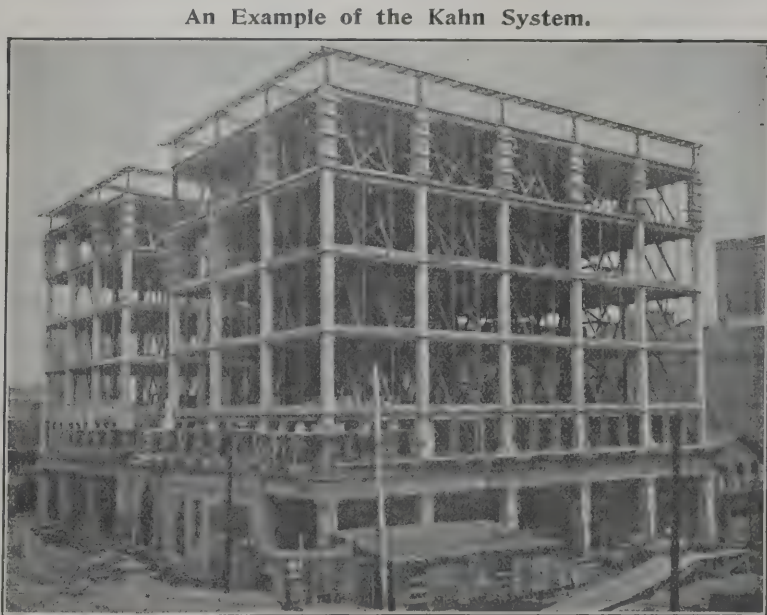
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The Building Trades Exhibition, Olympia.

A Great Success.

THE International Building Trades Exhibition began its official existence on Saturday last, when the Lord Mayor (Sir W. P. Treloar), attended by the civic officers, declared it open. His Lordship perambulated through the aisles, with Mr. H. Greville Montgomery, M.P., acting as cicerone, and manifested considerable interest in several stalls, where a halt was made to allow of inspection. Subsequently a large and influential company, chiefly composed of prominent architects, adjourned to the inaugural luncheon.

Mr. Montgomery, who presided, in proposing the loyal toasts, announced that the Prince of Wales had promised to honour the exhibition very shortly by a visit.

Sir Aston Webb, R.A., in proposing a vote of thanks to Sir William P. Treloar for opening the exhibition, said it was a duty which gave great pleasure to himself, and it was one that would meet with the approval of everybody present. This was an exceptionally busy time of year and contained few Saturdays in which the Lord Mayor was free to attend such functions. Therefore special honour had been conferred. The Lord Mayor must necessarily be interested in buildings, for the city of London without its buildings would not be much of a city. An old writer declared, "Show me a man's accounts, and I will tell you his religion." Sir Aston Webb amended it to, "Show me a nation's buildings and I will tell you its aspirations and its associations." The buildings of London can compare very favourably with those of any other city. St. Paul's is one of the buildings of the world, and a large number of more recent date are scarcely less conspicuous in their way, if only there was more room for their display. There is nothing, after literature, which reveals more clearly the importance of a nation than buildings. The present Building Trades Exhibition must be characterised as an extremely good one, and it called for congratulations to Mr. Montgomery after all the trouble he had taken. It promised to be one of the most successful, interesting and useful yet held. Such an exhibition can materially help architects to solve the numerous problems which have to be solved in the course of their daily work.

One of their trials was to find new buildings quickly veiled in grime and dirt. It was reasonable to look to the Building Exhibition for help in the solution of the problem of London smoke. Electricity allows of the production of heat without smoke. In his (Sir A. Webb's) opinion coal will become in fifty years entirely out of date. Another is the use of materials which will resist smoke, as may be seen in the new Savoy Hotel. A house designed by Mr. Halsey Ricardo, close to Olympia, might similarly be alluded to. Architects must be the principal customers of firms connected with the building trades. The qualities looked for by architects are beauty, durability, utility and colour texture, rather than perfection of execution and manufacture. Too much stress is sometimes attached to the latter. Architects have come to the conclusion that the cheapest thing is by no means necessarily the best. They like to see competition in quality rather than in price; competition in the latter brings in its train unfortunate results.

Mr. F. L. Dove (president of the Institute of Builders) said it was particularly appropriate for the Lord Mayor to open such an exhibition, where all the stages of a building are seen and which reveals all the advances made year by year towards a solution of domestic difficulties wrapped up in the habitation of houses.

The Lord Mayor said he was very pleased to be present and to have the honour of opening the exhibition. Nevertheless, he could not help feeling reminded of one occasion when almost as a boy he attended a "beanfeast" organised by a firm of builders. In the course of those proceedings one of the workmen got up to propose the health of a certain foreman, which he did in the following strain:—"What I like about Mr. Jones is that when he is drunk he sits down quiet like a gentleman and does not look much more of a fool than he does when he is sober." As Lord Mayor he undoubtedly took an interest in buildings, more especially in the Mansion House, which he enjoyed without the payment of rent or rates and taxes, and which he had been told was worth 50,000*l.* per annum. Though it was a

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very nice building it was capable of great improvement. At any alterations he might initiate would benefit not himself but his successors. Another building which especially appealed to him was situated in Norwood, and its use might be expressed in words overheard from a passer-by, who alluded to it as the house where "the Lord Mayor lives when he is not lord mayor." He felt sure that the exhibition must do a great deal of good to everybody connected with the building trades, and it was a duty to attend it. It brought inventions under the notice of people who ought to know of them. However, to his mind it was incomplete in so far as it contained no display of high-class carpets—an essential part of a well-equipped house. He drank to the success, the continued success, of the Building Trades Exhibition and of Mr. Montgomery. Each exhibition doubtless was better than the last, just as had been said for even hundred years about the Lord Mayors of London.

Mr. H. Greville Montgomery, M.P., said that he might use a Parliamentary expression, and describe the proceedings as part of an unauthorised programme. He was very delighted to receive in that room a small amount of praise, because for the last three weeks he had been the subject of ceaseless badgering on the part of exhibitors. His effort had been to make the show a success on the lines he had laid down ten or twelve years ago at the Agricultural Hall. Previously the principal avenues were filled with cabs, café chantants, sweets stalls, shooting galleries, and other features of a fair. All that had been changed, and nothing is now admitted that does not appertain to the building trades. The present exhibition could be claimed to be the finest and most comprehensive trade exhibition ever held in this or in any other country. There was no need for such attractions as dancing saloons. It had been complained that the exhibits were too substantial. In his opinion that was a good fault. The floors could be walked upon in safety, and a visitor could lean against walls without a collapse. He sincerely hoped that the exhibition would bring prosperity to the building trades.

We may now turn to the most important among the stands.

Messrs. Sharp, Jones & Co. show their patent Brandram joint as applied to pipes of stoneware, concrete

or iron. A steel band dipped in hot bitumen is placed over the joint made by two pipes. The band is made tight by a screw cramp, and finally fastened by means of staples inserted in the eyes of the band from each side. Rock concrete is also made by this firm in the form of tubes, manholes and roofing tiles. The cement used complies in every particular with the conditions of the British standard specification for Portland cement of the Engineering Standards Committee. Their tubes have been used for more than thirty years for sewerwork, &c., and are made of a very dense, impervious and heavy concrete, composed of selected Guernsey granite and Thames Portland cement. Messrs. Sharp, Jones & Co. adapt the material to serve as circular manholes for sewers and house-drains and other purposes. The War Office and Admiralty recognise the merits of this economical patent. The manhole has a height of 5 feet 9 inches to the point where it narrows to the shaft of 27 inches diameter, which may be continued to any height and at a price which is less than with any other material. Rock concrete serves a no less effective purpose as double-lock roofing tiles, where its economy is further illustrated. Travellers can inspect them in many parts of the world, such as the colony of Nigeria. The fact that they keep buildings cool is likewise a recommendation to architects in this country.

The Well Fire Company, Ltd., again strike out a new line in the "Pyramid" grate, which shows their original patent well fire adapted to suit peculiar conditions. Under certain circumstances the low-placed type of grates with their great heat may introduce an element of fire risk. To remedy this the "Pyramid" is fitted with a false hearth of firebrick fixed on a cast-iron frame, which forms a warm-air chamber beneath the fire and a cool air-chamber above the hearth for the protection of any timberwork. The result is that all possible danger is obviated. The company recommend the use of their iron frame for securely holding the faience slabs round the fireplace. Their stand is a large one, and shows the multifarious departments of their business. The Well Fire Company are as artistic as they are practical, and prove it in their chimneypieces, tiling and fireplace furniture, as well as in the usual forms of art metal-work. Simplicity and refinement are two conspicuous qualities of the display.

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The *Nostell Brick and Tile Works* point with pride to the colour of their goods as distinctively marking them. It approaches chocolate. The fact that they are non-vegetative must be a recommendation in the eyes of many architects, and that they are non-absorbent in the eyes of all. The firm turn their splendid materials into all the customary forms found in brick and tile works.

The effect of otherwise imposing mansions is sometimes ruined by a mean front entrance-door. The architects who are responsible should inspect the stand of *Elliott's Moulding and Joinery Co., Ltd.*, where they will learn how handsome and grandiose a door in oak and yellow pine may look. It was made for the front entrance of New York Lodge, Bourne End—a Thames residence for a wealthy American, and suggests welcome and hospitality. The folding-door measures 11 feet 6 inches by 8 feet 6 inches, with a fanlight, and the outer face is of fumed and waxed polished oak. Their contract on this building comprised solid Spanish mahogany panelling, &c. It is pleasant to know that the owner did not insist on importing his fittings from the United States, although woodworking flourishes there. The stand shows in many different ways that this company are well equipped for satisfactorily helping architects whatever may be their requirements in moulding and joinerywork of the highest class.

Most building owners if offered a choice between marble and glazed tiles at similar prices would select the former. The *Manu Marble Company, Ltd.* come forward with that alternative. Their material is composed of marble chippings subjected to a pressure of 400 tons, and has the appearance and properties of the natural stone. The markings and colour go right through, and the surface may be highly polished. All varieties of marble are imitated or manufactured with equal readiness, and the architect can confidently order any colour scheme his fancy suggests. The standard size of slabs or tiles is 16 inches square, or if an oblong form is preferred 14 inches by 21 inches. The difficulty of exercising the enormous pressure required entails limitations as to dimensions. These, however, are gradually becoming increased, and the company will shortly be able to put on the market blocks 4 feet by 3 feet.

Very few people are so fortunate as to go through life without acquaintance with a smoky chimney. With most

it is begun in early youth and continued till old age, in spite of many efforts to break it off. With the irresistible march of science the creation of remedies of the nuisance may be expected to attain increased effectiveness. One of the most recent chimney cowl is that patented by Mr. E. G. Wright, and named the *Twentieth Century King Chimney Cowl*, which is the climax of nearly forty years' successful practice as a ventilating specialist and chimney expert. It is non-revolving, but is constructed so as to make an up-draught, whatever may be the direction of the wind. The outside air enters the cowl in an upward direction and receives a double circular motion, thereby driving the smoke out. The same principle is applied to "King" ventilators, in which the outside air enters at the base in two places and vigorously drives out the vitiated air. Mr. E. G. Wright also has a patent atmospheric stove much used in greenhouses and other places.

The solidity and strength of "Mack" partitions are again suggested by the stand of *J. A. King & Co.*, the British manufacturers, who have erected a lofty structure with partition walls of different thicknesses. Their fireproof ceiling encloses the structure above. The interior surfaces are treated in various ways. When steel is used for floor beams the slabs are laid on the lower flanges, which can be covered with concrete or other material. In one test carried out on a 2½-inch slab partition 14 feet long 9 feet high, the total load was 32 tons, giving a floor load of over 3 cwts. per foot super. In another test of a similar slab the load was 6½ cwts. per square foot; the distance between the joists was 2 feet 6 inches. Their 5-inch "Mack" pugging blocks for fireproofing projecting shop roofs are made to fulfil the requirements of the London County Council Building Amendment Act, and are obtainable to any width to fit the space between the joists. The stand shows their other specialties, and photographs suggest the quantity of business done.

In the United States a high reputation has been won by the *Trussed Concrete Steel Company*. About twelve months ago they invaded Great Britain and have established works in the Old World. As indicating the demand for the bars we might say that in the past year altogether 36,000 tons of their bars were sold, which were distributed in over 1,700 structures. The Kahn-trussed bar is equally useful

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in a simple bridge, a factory, or in a gigantic structure like the Marlborough Blenheim Hotel, Atlantic City, New Jersey, U.S.A., where the walls are entirely of reinforced concrete. The latter is a great building, some 560 feet long, from 50 to 200 feet wide and nine storeys high, with a dome rising to thirteen storeys. Nevertheless it was completed in less than six months. The trussed bar was used in all the columns, girders and floors. Specimens are shown of bars in four sections, which are adapted for beam and arch requirements in every form. In one test a panel of concrete reinforced with the trussed bars was loaded to 2,000 lbs. per square foot; the deflection was only 3-32nds inch. In an American hardware house the floors of the nine storeys are designed to carry up to 500 lbs. per square foot with safety. In this structure all the columns, beams and slabs are concrete reinforced with the Kahn-trussed bar. It will be seen that the *Trussed Concrete Steel Company* have arrived with the prestige of wide and diversified experience behind them, and were from the first almost certain of success.

Messrs. Carter & Co. (Poole, Dorset) are showing specimens of their productions, including floor tiles, mosaics of all sorts, terrazzo, marble and ceramic-glazed wall and hearth tiles, terra-cotta and faience. The fireplace interiors with wood mantels, built up of briquettes with faience hobs and arch bricks, glazed hearth and kerb all to match, should be noted. But their special exhibit this year is a varied selection of glazed tiles for decorative purposes, fireplace and furniture panels, and dadoes. Many of these are in the leadless glazes in which quaint design and harmonious colouring, with charming variety of tone, give special distinction. The slip outline process, too, gives the artist a free hand. Some may prefer the restful effect of a more uniform

tone of colour, as in the older lead-glazed tiles. There is a collection of choice garden pottery. It may be interesting to note in connection with the leadless glazes that Messrs. Carter are carrying out a contract to supply and fix some thousands of yards of these tiles for the new Home Office.

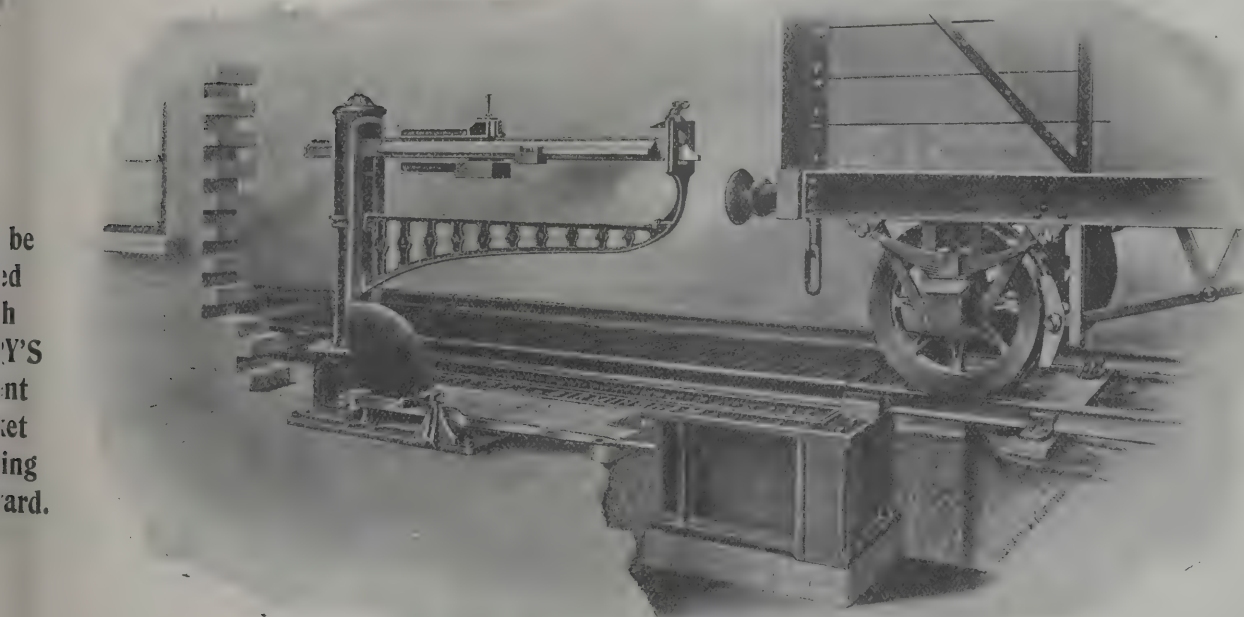
The principle of alternative speeds has been applied to many forms of mechanism, and Messrs. *Hammond & Champness* have just adapted it to lifts. They mean to protect themselves by a patent. The two-speed goods lift shown is fitted with a line by means of which the ratio of the gear can be instantaneously changed. The high speed will be a great boon where the cage has to ascend to a height, provided that the load in it is light. In the case of a lift capable of carrying 6 cwt. the additional cost of the two-speed equipment would only be 10*l*. Besides this novelty, Messrs. Hammond & Champness invite an inspection of their other types of lifts, as well as an iron staircase and models of iron roof principals.

An unsolicited testimonial of a striking kind from England's greatest architect as to the sterling merits of Weldon stone is shown by Mr. *John Rooke*, of the Weldon Stone Quarries, Kettering. It came from Inigo Jones in 1640, and consisted of a block showing the heraldic bearings of one of his noble patrons. After so long an interval the carving still remains sharp, while the surface has admirable colour. Architects can hardly fail to be influenced by the sound judgment of their predecessor in the selection of stone. It is believed the stone was used in Old St. Paul's. It certainly was for the restoration of the pinnacles of Rochester Cathedral, and three years ago for refacing the whole of the central tower. The stone is easily worked, is cheap, and has been extensively used for ashlar and dressings in ecclesiastical and public buildings and mansions.

It is pleasant to know that the old London clamp brick has not been entirely excluded. Messrs. *Dawson & Co.* have several alongside of other fundamental accessories to building. An improved stable gulley with a reversible base and perforated bucket under the grid has been extensively used. Part of the stall is roofed in with "Eternit" slates, and faced with sheets of it. The French natural marble stone "Echaillon"—of which there is only one quarry in existence—is shown in its three colours.



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The sanitation enthusiast—and who is not one in some degree?—will find attraction in the new patent basins and sinks of the *Ajax Sanitary Company, Ltd.*, who have determined to draw up the death warrant of the long familiar plug basin with its immovable overflow openings. Experience has shown that in the old-fashioned basins objectionable matter accumulates behind those openings which cannot be cleansed out. To remedy this the Ajax Company fit a shutter or sliding valve in a recess at the back of the basin, the top of which is either cut away or fitted with a grid to allow the water to overflow. This shutter may be of any metal or rubber, and run in grooves or made to fit against the sides of the overflow passage or basin. It is simply lifted out or raised to allow the water after use to escape, which it does with great rapidity. Two years have not elapsed since their introduction, and yet they may be seen in the Harrow Cottage Hospital, London County Council schools, and have been ordered, amongst other places, for St. Bartholomew's Hospital and the Manchester Royal Infirmary. In order to indicate the ease with which the basins and fittings are kept to look as good as new, visitors are allowed to wash their hands.

"Windmill" brand roofing tiles, ridges and finials, &c., are shown by *Messrs. Watson, Nelson, Ltd.*, who have their works at Napton-on-the-Hill, near Rugby. Their patent fluted-faced tiles are designed to keep out the severest rain storm from a house-top. The channels are carried to about 2 inches above the bottom edge of the upper tile, and effectually prevent water being forced up and on to the roof timbers. They are especially serviceable where a roof with a flat pitch is required. *Messrs. Watson, Nelson, Ltd.*, are supplying the tiles for a building estate of 16 acres in process of development at Barnes, across the Thames. They also make adamantine pavings, bricks, pipes, &c.

It would be a difficult matter to send a working passenger lift round to a possible purchaser on approval. *Messrs. R. Waygood & Co., Ltd.*, have overcome this impediment to business transactions by installing a complete electric lift which conveys passengers to the gallery overhead. As the safety-gear is guaranteed the public must be content to do without taking part in a breakdown test. Some people may derive satisfaction from the knowledge that Waygood lifts are installed in Buckingham

Palace and the new War Office. A specimen lift enclosure and gate may be seen. A model is set up of their familiar automatic electric passenger lift, of a hand-power service lift and an electric friction hoist for builders and contractors and for warehouses, stores and factories. The latter may be hired.

Mintons, Ltd., can only give a faint indication of the number of ways they are prepared to undertake the decoration of a wall with their tilings. The dadoes, panels and friezes offer endless scope for variety of artistic handling. Some prefer an intricate raised pattern, while others like plain surfaces. Either will find their taste gratified. The combination of colours and forms is most pleasing. A panel, designed by Mr. L. V. Solon, showing the full-length figure of a girl, and another of a yacht under sail, are excellent specimens of this class of work, and worthy of a firm of such repute.

Messrs. R. H. & J. Pearson, Ltd., are equally ready to supply dainty fire-grates, with corresponding chimney-pieces, as large kitcheners or cast-iron baths. An excellent contrast is afforded by a fireplace made up of a Sheraton wood mantel with brass interior, into which small Wedgwood panels are fixed and a "Commonwealth" kitchener. The latter is made with a self-clearing fire, which precipitates the ashes into the sifter below. It consists of wrought-iron ventilated roaster and oven, Eagle patent lifting fire, tile coverings fixed with brass screws; bright plate rack, full register top plate, long handle dampers and polished wrought bright fittings to oven doors. It is made in segments so that the parts which come in direct contact with the fire can easily be renewed without disturbing the range.

At this season of the year more than any other the novelty shown by the *Grooved Wall Paper Company* is sure of attracting interest. By the process shears or machines for trimming are dispensed with, the paper on a slight pressure tearing along the perfectly straight grooved line. The trimming can be detached while the paper is being hung. The company are London agents for the "Marpedo" paints and enamels.

The Roman mosaics and terrazzo flooring of the *British Mosaic Art Co., Ltd.*, unpretentiously display their merits. The company are also workers in parquet and wood blocks. They make flooring with curved angles for hospitals.

OUTSIDE FIRE ESCAPE STAIRCASE



The above illustration shows Fire Escape Staircase recently erected at the Goyt Mill, Stockport.

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Messrs. Pinchin, Johnson & Co., Ltd., offer the following simple recipe for obtaining a perfect paint finish:—Two coats "Minerva" opaque white, one coat special "Satinette" undercoating and one coat "Satinette" either gloss or flat. To illustrate their interpretation of what perfect finish means they have set up a "Satinette" staircase which may also be said to serve as a mirror, such is its smoothness and gloss. As a contrast the newels are treated with the flat variety of this white enamel. But like "Minerva," it may be had in all colours and is applied like any other high-class enamel. One gallon of "Satinette" on a hard smooth surface has a covering capacity of about 75 yards super; thinning will only reduce this. Messrs. Pinchin, Johnson & Co. place the following guarantee on every can of "Minerva" paint:—"The paint contained in this package is made only of the best materials obtainable, mixed to correct proportions—genuine English white lead (carbonate), genuine white zinc (oxide), best linseed oil, pure American turpentine and, or where necessary, colouring matter for tinting. Sufficient driers are added to insure proper results."

The Ratner Safe Company, Ltd., must be known to the burglar profession and avoided in consequence. But fire does not show the same discrimination and has wasted much effort in futile attempts to injure the contents reposed in the safes. In the recent fire in Featherstone Street, London, the entire building was burned down, but the safe survived the ordeal with no more than surface damage. All the safes are on the twelve-corner-bent principle out of one solid steel plate. Their patent interchangeable key lock is one to which numberless different keys can be made, whereas only the key which last locked it can unlock it. The firm have supplied a safe to the King at Balmoral and done much work at the Chancery Lane Safe Deposit. Over 13,000 Ratner party-wall doors have been delivered to Oxford Street firms, Army and Navy Stores, &c.

A technical course as to the manufacture and qualities of Portland cement is offered free by the Associated Portland Cement Manufacturers, Ltd. Their stand shows the raw materials and follows them through their various stages. A complete testing apparatus in conformity with the requirements of the British standard specification has been set up and tests are made "while you wait." Many of the largest contractors in this country have purchased from the com-

pany a Gilbreth's patent portable gravity concrete mixer. Those unacquainted with it should inspect the model shown of this labour-saving appliance. The mixer is a steel trough filled with numerous rows of steel pins and deflectors, staggered in order to thoroughly mix the sand, cement and aggregates as they gravitate through the trough. The machine may be hired as well as purchased. It is found that four men shovelling into a gravity mixer, which delivers direct to barrows or other conveyers, will completely mix a cubic yard of concrete before an equal number of men mixing by hand will complete one dry turning. In other words, four men and a gravity mixer can mix as much concrete, and mix it better, than twenty men can mix by hand with shovels. Samples of ferro-concrete cement are shown all ready for immediate use.

A handsome balustrade with steps placed against the gallery railing by the *Empire Stone Company, Ltd.*, is so inviting as to tempt the visitor to walk up them if unchecked. The result might be unfortunate, as the top step is on a level with the top of the gallery railing, and the curious visitor might meet a similar fate to that of Humpty Dumpty. However, a close inspection of the stone may be made equally well on the floor level, and the claim of the company to be the best finished stone on the market may be judged. There is a lengthy stretch of footpath laid with "Empire" stone, as put down in innumerable towns both great and small, as well as a half full-size sample of ferro-concrete fireproof flooring. The Narborough Works, near Leicester, always contain a large and well-matured stock of stone, which enables the company to cope with any number of contracts.

The *Enderby and Stoney Stanton Granite Company, Ltd.*, use their quarries for the production of setts, dressed kerbs, trams or wheel stones and other purposes. Specimens of different classes of worked granite are included. The setts are clean cut. Broken granite, red, grey or blue, for macadam is supplied.

"Chez-lui" is applied as a trade name by Messrs. J. Price & Son to decorative and bath enamels, washable distemper, gold paints and aluminium enamels. They are enamel paint, colour and varnish manufacturers, enamellers and japanners. The "Chez-lui" special bath enamel is offered to the amateur for renovating his bath himself.

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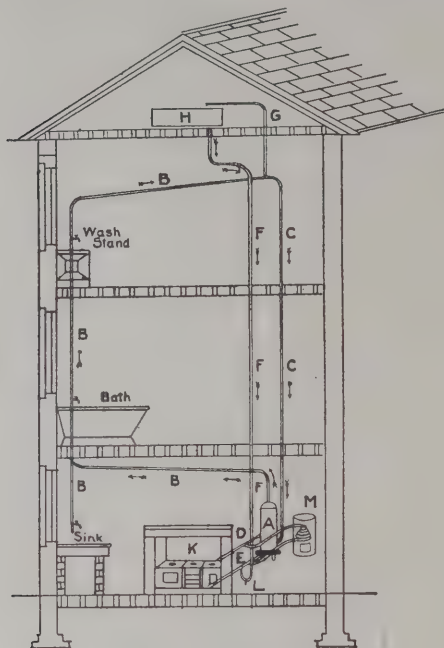
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The accompanying diagram will show the valuable new patent of *Mr. W. M. Glendinning*, who, in his character of hot-water specialist, has achieved great success. A is a hot-water cylinder, B the hot-flow pipe from it, C the return-pipe to cylinder and boiler, D the flow connecting the kitchen boiler, K, with the cylinder, and E the return-pipe; F is the cold-water supply from the cistern,



H, which has a safety or expansion pipe, G; L is the draw-off tap, while M is the patent heating coil, which is connected to flow and return-pipes of cylinder. Underneath the coil may be placed a Bunsen burner or an oil reservoir. The water passes through the coil in a thin stream, and almost instantaneously becomes hot. The patent must in summer time prove an invaluable adjunct,

for the full supply of warm water throughout the house is always available independently of the kitchen fire. In the winter it removes the bogey of burst pipes and boilers. Mr. Glendinning has applied the same principle to a geyser in which the cold water enters at a temperature of 30 degs. and leaves at 120 degs. Six small gas-jets enter into as many pipes with 144 holes placed under coils. The water so quickly heats as to come out as boiling in thirty seconds if the flow is shut off, and a hot bath costs no more than a halfpenny. Water companies allow it to be connected directly with the main. The appearance of the bath-room is often marred by the necessity of an unsightly flue; in this patent no flue is required, for there are no fumes and no smell. Both patents will repay examination.

Felts under many forms are offered for examination by *F. McNeill & Co.*, as well as damp-courses, bitumen sheeting, fibrous plaster slabs, slag-wool slabs, insulating papers and other things which, though hidden in the interior of a building, are often vital to its complete enjoyment.

Man-o'-war teak wood garden seats, built out of old Navy ships, would impart romance to the most commonplace garden. They may be had from *Castle's Shipbreaking Company, Ltd.*, who show timber put to many ornamental uses.

The *Ruberoid Company* have constructed a sloping roof over their stand and put it on their well-known and much-used roofing material. On the floor they show it employed as on a flat roof. The goods station and warehouse recently erected by the North-Eastern Railway Company at Newcastle-on-Tyne has a roof area of 70,000 square feet, which is entirely covered with this fabric. As a contrast to this, its use on a cottage erected at the Garden City, Letchworth, may be cited, suggesting that it is as applicable to a hen-house as to a palace. The terrace roof of a cotton mill in Lille, France, was covered with ruberoid and converted into a tank to hold 27,250 cubic feet of water. After five years the owner was able to say that it showed no signs of a leak, ample proof of how impervious it is to water. A similar job was subsequently executed at another factory. The company have established a reputation for their insulating papers, damp-course, sarking felt and other goods, including various preservative paints for wood and metals.

THE "DRAWWELL" GRATE

WAS PLACED

First in the Final Tests

at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

N.B.—All Grates bear the Trade Mark and Name of "Drawwell" on firebrick to insure against imitation.

This Grate can only be supplied through Builders' Merchants, Ironmongers, &c., but Drawings and Particulars can be obtained from

J. & R. CORCKER, Ltd.,

GENERAL IRONFOUNDERS, Ferham Works, ROTHERHAM.

London Showrooms, Saracen's Head Buildings, Snow Hill, City,

W. B. CLARKE, Agent, where the "Drawwell" can be seen in action.



When Victoria stone was introduced in 1868 its principal scope was thought to be in pavingwork. But architects insisted upon sharing in the advantages of the new material, and the *Patent Victoria Stone Company, Ltd.*, was launched upon the more artistic, if not more useful, paths of architectural decoration. Their stand portrays the range of their work, which can be made to serve stable flooring and classical colonnades with equal readiness. Two paving stones shown, which might almost pass for new, have a splendid record for wear. One of these was removed from London Bridge after fourteen years' use, during which it is computed 640 million pedestrians passed over the bridge. The other was laid in the entrance hall of the South Kensington exhibitions, and after twenty millions had used it the wear was no more than $\frac{1}{8}$ -inch. The stone is applicable in 2-inch slabs as walls for bungalows, pavilions, country railway stations, &c. A large moulded porch to be set up at a metropolitan gasworks office has been brought down for display. More delicate carving is seen on the detached slabs. Victoria stone may take multitudinous decorative and useful forms.

First and foremost, the *Bostwick Company, Ltd.*, have been makers of collapsible gates for the past twenty years. A natural development of their business was in the direction of ornamental wrought ironwork and art metalwork. A novelty in their gate department is Clark's new improved patent collapsible steel gate for lifts, with or without automatic gearing for closing. The feature of it is the complete filling in the whole gate with lattice, leaving no spaces at the ends of each set of lattice as in the original collapsible gates. Its construction removes the usual liability to foul when the gates meet with an obstacle in opening. The stand should be inspected by students and others interested in art metalwork as applied to the requirements of everyday life, whether in the form of entrance gates, vanes, railing, screens, signs, electric, gas and oil fittings, name plates, engraved or *repoussé* work.

The *Hempstead Patent Brick Company* have built up their partition blocks as walls for the purposes of display. They can point to severe tests as to their powers of fire-resistance and their strength, and they produce a material guaranteed fire-resisting to the melting-point of steel, *i.e.* 2,786 degs. F. In one test a 3-inch partition constructed of 12-inch by

6-inch by 3-inch blocks, and jointed with mortar consisting of sand of the same material as the blocks and Portland cement, and another partition of $4\frac{1}{2}$ -inch blocks were set up and enclosed. Between them two short lengths of steel joist (partially protected inside hollow blocks) were placed. The fires were stoked up to white heat for eight hours, with the result that the exposed ends of the joists were partially melted, while that within the blocks was unhurt; the blocks themselves were uninjured except in one case, which was due to the joist expansion, and the partitions were quite sound. The results were a triumph for the makers. In a strength test lasting several days a $2\frac{1}{2}$ -inch hollow terracotta partition sustained a distributed floor-load of 640 lbs. per foot super. In another, with a 3-inch partition, the load was 660 lbs., and was then stopped on account of the serious deflection of the timber lintels. These effective patent blocks have been fitted into tee section iron frames, thinly plastered over, and used as fireproof doors, either hinged or sliding. In addition to being fireproof, the "Hempstead" blocks are soundproof.

Mansfield Bros. have as their specialty sanitary goods of "Felspeene" ware, and show a three-range lavatory in it. In addition to these and allied appliances they sell art tiles, "vitrified" flooring tiles, mosaics, briquette fire-places, &c.

Mr. W. E. Farrer shows his improved automatic sewage-distributor at work, which is designed especially for small installations such as country houses or villages. The apparatus consists of a galvanised wrought-iron tipper (divided longitudinally into two sections) supported on gun-metal lined bearings. The effluent from the liquefying-tank discharges directly into it. The distribution is effected by concentrating chutes, to which are connected continuing perforated cast-iron channels with flanged joints, and drilled with holes at their lowest point. The liquid, when converged by the chutes at the moment of the fall of the tipper, creates a wave which rushes down the channel, giving a head sufficiently great to spray the contents through the small holes on to the filtering media. By the double action of the tipper a period of rest is allowed to each half of the filter, and aeration is thus insured. In addition, they show many other productions which they as engineers and sanitary specialists have placed on the market.

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The anatomy of the *Columbian Fireproofing Company's* system can be studied at their stall, which shows concrete fireproof floors and roofs, as well as armoured cement water and sewer-pipes. The Columbian system may be briefly described as consisting of special ribbed steel bars from 1 inch to 2½ inches in depth, embedded in concrete and suspended in steel stirrups over steel joists, and 3½ inch, 4 inch and 5 inch heavy ribbed bars between main girders or resting on the walls to eliminate the ordinary steel joists. Few architects, engineers or contractors can be ignorant of the system. The "Bonna" armoured cement pipes were first manufactured in France some ten or twelve years ago, and much more recently were introduced into Great Britain. The Paris Municipality early showed their confidence in the invention of M. Bonna by laying down 250 miles of the pipes, varying in diameter from 1 foot to 12 feet, for high-pressure and sewage. At Swansea an 18-inch armoured cement water main standing a working pressure of 185 feet head has been completed for the Corporation. A contract for sewage pipes is now being carried out at Acton.

The "England" Works again show their all metal self-contained cloak-room fittings. Since we saw it at the Sanitary Congress last year at Bristol, we believe that it has been fitted with a small revolving mirror—an indispensable adjunct to a cloak-room fitting, by which users can give finishing touches to their personal adornment, and with a collapsible seat which would render the putting on and taking off of boots a matter of comfort instead of a gymnastic trial. Another exhibit is their automatic ball-bearing double-action door, pivot and check, which may be quickly fixed, and works simply.

The adjacent utilitarian exhibits act as a foil to the pleasing stained glass shown by *Messrs. Campbell & Christmas*, who have their studios in Brompton, S.W., from which they have executed work in various forms for well-known architects. In addition to noteworthy stained glass they exhibit glass and marble mosaics, metal casements, leaded glass, mural paintings, marblework and opus sectile decorations. Architects anxious to summon the aid of the arts and crafts to perfect their buildings should visit the Brompton studio in order to realise that willing and competent co-operation is waiting to be called upon. A small

piece of wire glass, approved by the London County Council as fire resisting, becomes a thing of beauty in the hands of *Messrs. Campbell & Christmas*. Opportunities for introducing decorative glass into secular buildings are constantly allowed to pass unheeded. Fortunately a revival of interest in it is becoming manifested in contemporary architects, and the possibilities of the material may soon be realised.

Among the many novelties which are being shown to the public at Olympia for the first time must be included Carey's "Sesame" door at the stand of *Messrs. Pemberton, Arber & Co.* in the Annexe. The invention is only a few weeks old. The doors of the model stand on a slightly raised platform, which being depressed by the weight of anyone over five stone, automatically swing open to their fullest extent, and remain so until the person has passed through and steps off the platform on the other side, when they close. The gear must be simple, for the pit required is only 8 inches deep. A single door, it is said, can be fitted up as easily.

The *Silicate Paint Company* have erected a full-sized bungalow decorated inside and outside with their well-known washable water paint "Duresco." Outside is a tiled roof, lined bricks and a good imitation of rough-cast—all in Duresco. The interior further exemplifies the capability and beauty of the material. The walls show a peculiar and charming softness. The frieze decorations lend additional charm to the general effect. Some twenty panels decorated entirely with Duresco are also exhibited, offering a wide range of colour schemes. The decorations are carried out by stencilwork, and the cost of reproduction in a practical way is within the reach of all.

The *Acme Flooring and Paving Company* (1904), Ltd., make an interesting display, showing stretches of flooring laid with various woods such as pine, jarrah, oak, teak and deal, each having perfect joints and a smooth level surface. The company are prepared to give a five years' guarantee with flooring laid on W. Duff's "Inmovable-Acme" system. A striking recommendation as to the efficacy of their dowelled paving is its adoption in 1895 by Sir J. Wolfe Barry for the roadways of the Tower Bridge, where particularly severe wear and tear had to be provided against. The company might be taken for numismatists from the number of medals they have won.

**B. & S. Patent
Folding Gates.**

**Ornamental
Wrought Iron Work**

**Patent Interlocking
Rubber Tiling.**

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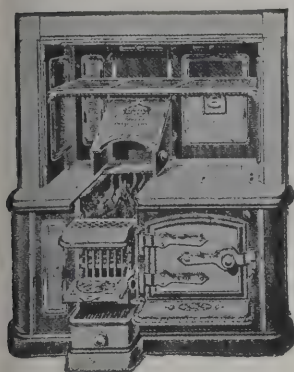
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**Catalogues and
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If it be accepted that the attainment of perfection is impossible in mundane things, it follows that there is always room for improvement, which is revealed to all those who have the power to see. The person that can and does profit by experience is worthy of more respect than one who rests serenely content with his original perfections and imperfections. When Messrs. Ellkay & Cornes, Ltd., first showed their combined range, copper and bath its merits were recognised at once. Unspoilt by success, the firm



were not satisfied that they had carried their idea to its limits, and they now have improved on that first type. The parts to be cleaned are now brought down to a minimum, and there are no tiles. The fire opening is smaller, and less floor space and wall space are taken up. On the scullery side is a large top and opening to the copper, and plenty of headroom. Finally, there is Mr. Lancaster's new copper, which is shaped like an ordinary copper, but on the grate side it projects and so meets the back of the kitchen fire. Consequently, when the fire is alight the water is always hot, and it is not now necessary to divert the heat from the oven to boil the clothes or to provide a bath. Then there is the "Ellkay" folding bath, with or without a cabinet, and many other housing specialties

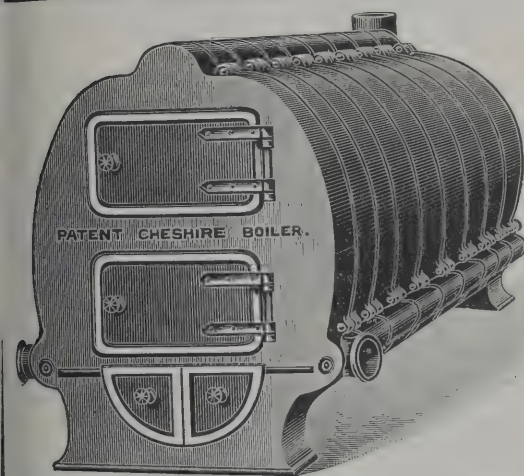
There is peculiar appropriateness in the presence in the exhibition of a stall filled with a selection of the books published by B. T. Batsford. There must be few people connected with the building trades who do not owe a debt of gratitude for help received in one or other of the volumes which cover so wide a range of technical knowledge.

Joseph Richmond & Co., Ltd., offer to the notice of builders a self-sustaining lift gear which is complete on one cast-iron bracket, and has no detached parts. It may be fixed by any unskilled workman, as it cannot be put out of truth. The necessity of a brake cord is removed. Owing to a regrettable confusion as to dates the company have not been able to set up their specialty—a perfect automatic electric lift (Richmond & Carey patent).

The Carron Company elected to exhibit only their stoves, interiors, dog grates, hearths and wood mantels. The numerous grates are as attractive in design as they have ever been. The experience of the company in the production of grates goes back to 1780. Some years ago they determined to reproduce these eighteenth-century examples and were assisted in doing so by the advice of Mr. J. Kinross, the architect. Complete artistic and financial success has rewarded the experiment.

Seasoned hardwoods from many climes have been brought together by C. B. N. Snewin & Sons, Ltd., including mahogany wainscot, teak, walnut, whitewood, kauri, curly pitch pine, and English and Borneo teak. The patent automatic self-folding doors shown are a new patent of which they are the sole concessionaires. Their protection from draught is scarcely less useful than the fact that they are panic-proof.

The New Expanded Metal Co., Ltd.—For years the Expanded Metal Company have occupied a stand at the Building Exhibitions, and a visit has always proved instructive. They have to some extent re-erected their stand as at the previous Building Trades Exhibition, viz. a light steel-framed building standing well off the ground, revealing floor, external and internal wall and ceiling fire-resisting construction. Expanded metal is made into several forms, such as lockers, builders' screens, workshop divisions, fencing, baskets, wire guards, &c. The barrel roof of the stall is of granite plaster on the metal. The applicability of the material to culverts is displayed.



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The *Clee Hill Granite Company, Ltd.*, possess the Titterstone quarries in South Shropshire, about six miles from Ludlow. We are told that the whole of Clee Hill is covered with a strong basalt or dolorite varying in thickness from 120 feet to 240 feet. The material is not made into fanciful forms but fulfils a vastly useful purpose as setts, macadam and chippings. The Home Office describe it as "almost perfect as a roadstone." The firm have on their books as customers county councils and other public authorities throughout the country.

Granite concrete is used in sewer tubes, "Aqueduct" invert blocks, paving slabs, dressings, &c.; all of which are shown on a generous scale by *John Ellis & Sons, Ltd.* The sewer tubes may be armoured and unarmoured, circular and elliptical. At Golder's Green Estate, Middlesex, they supplied 36-inch steel-ribbed granite concrete tubes. The company have a patent breeze concrete porous pipe for land filtration and filter beds.

A businesslike display is made by *E. C. Young* of American hardwoods, whitewood pine planks, mahogany, turned newels and balusters, mouldings of every description, three-ply, compoboard, prepared oak flooring, overdoors, hand-rail, porchwork, &c.

Messrs. Perrett Bros. take their clay from the Woolwich and Reading beds, which in itself is something of a guarantee as to quality. Out of it they make pressed sand-faced red bricks, ridge tiles, finials and chimney-pots. The splendid colour is natural, and consequently goes right through. Their ridge tiles are conspicuous for their uniform straightness, and are of a hard texture.

The decorative capabilities of "Emdeca" are forcibly shown at the stand of the *Emdeca Metal Decoration Company, Ltd.*, and the *British Stamped Metal Company, Ltd.*, which attracts many visitors. "Emdeca" is made of flexible thin gauge zinc sheets, which can be cut with ordinary shears and bent around the sharpest angles without injury to the surface coating. It has a sale of 150,000 square yards per year. The roof of the stand is divided by seemingly two heavy transverse beams into four coffers with panels and coves, the whole being made of stamped steel. The Emdeca metal tilings exhibited are particularly successful, and some of the patterns would please the most exacting æsthetic taste.

The "Heaped" fire is again shown in action by *Messrs. Bratt, Colbran & Co.*, the patentees and makers. Sir Aston Webb, R.A., as reported above, laid particular stress on the crying need for a decrease in the amount of smoke pollution of the atmosphere of London and all busy towns. The "Heaped" fire is put forward as an answer to that need, as giving a steady incandescent fire of perfect combustion as well as throwing a maximum amount of heat into the room. They show the fire set in various pine and hardwood chimney-pieces, together with brass and copper stoves, iron mantel registers, &c.

The *Patent Indented Steel Bar Co., Ltd.*, have not yet had sufficient time to establish themselves as firmly in this country as they have in the United States, where they have assisted in the erection of many remarkable structures, including the Butler Bros. Building in St. Louis, which is the largest building of monolithic construction in the world. A double wood frame set up holds photographic slides of some of their other American contracts. If a similar frame is shown at the next Building Trades Exhibition we may expect to find the slides illustrating successful contracts in Great Britain. Several well-made models clearly demonstrate the methods of adapting the Indented Bars to floors, culverts, retaining walls, concrete piling, reservoirs, sewers, bridges and tunnels, and indicate the perfect provision for shearing stress requirements and the continuous mechanical bond it makes with the concrete, which renders slipping impossible. It is important to understand that the company do not carry out construction work themselves, but supply designs free of charge, and then sell the bars. They are ready to obtain tenders from firms who have already carried out work for them or to sell their bars to any contractor desired.

A working model of their patent revolving sprinkler is shown by *Messrs. George Jennings, Ltd.*, together with full-sized apparatus employed for sewage disposal, including a gauging indicator. The points claimed for the sprinklers are that they are jointless; there is no loss of head, as the head of liquid on the distributing arm is the same as at the source of supply; the centre tank has protected ball bearings; there may be either continuous or intermittent working with varying flows; they are powerfully made and are unaffected by the wind.

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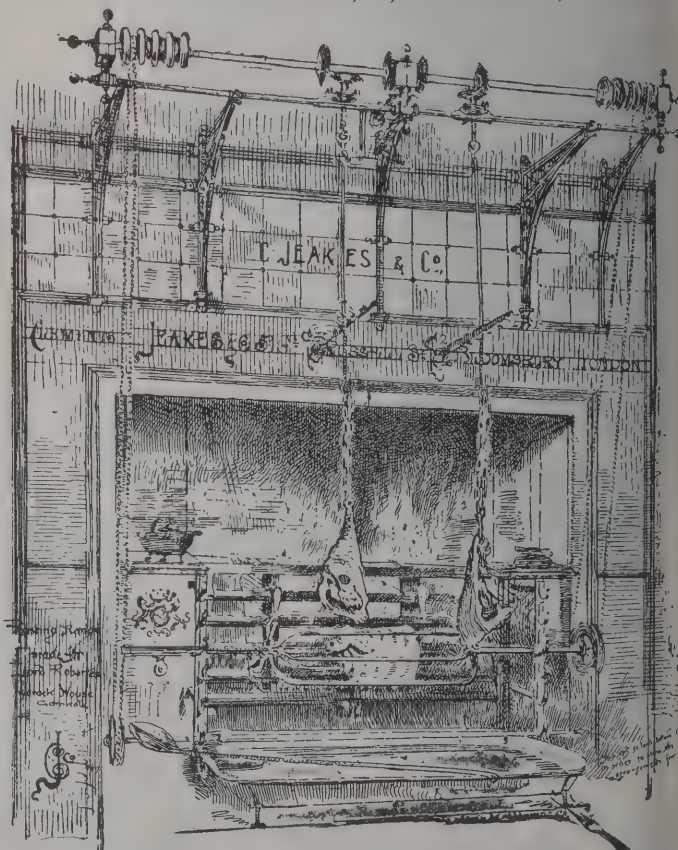
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COOKING, LAUNDRY, HEATING, VENTILATION, Etc.

The Lord Mayor of London, in common with a large portion of visitors to the present exhibition, manifested interest in Mr. Prior's display. His heat distributor fully described by us on its appearance at the last International Congress at Bristol, and we need only mention that it is again in operation, and as a consequence wins a praise from everyone who sees it. Mr. Prior has more turned his inventive talents to account and produced a patent geyser grate and boiler which has the same simplicity as the distributor. An ordinary living-room fire is equipped at the back with pipes and a radiator. When special heat is required for the latter a sliding plate at the top is brought forward and converts it into a closed fire. The front may be closed by the Venetian bars, in which case the fire will be alight for many hours without attention. The boiler shown supplies two cylinders of 30 gallons and 20 gallons with hot water. An accidental proof of the boiler's efficacy was afforded this week. The fire was allowed to go out when Olympia closed on Saturday night, and on Monday morning the water was still hot although the fire had been cold for eighteen hours. Mr. Prior has answered the demands for something which will supply hot water for domestic purposes as well as heating stoves at a very cheap rate.

"Carrara" ware, made by Messrs. Doulton & Co., as a material for exterior architectural effect, is shown by a large handsome window frame which is to be set up at the Manchester House, Piccadilly. The rusticated columns are green and white. Many other colours are procurable. The same washable ware is used for fireplaces. The firm's w.c. doors are intended to be introduced where only a narrow depth of space is available. They open in the middle and are fitted with self-opening hinges. The Doulton potteries are represented by other widely varying products.

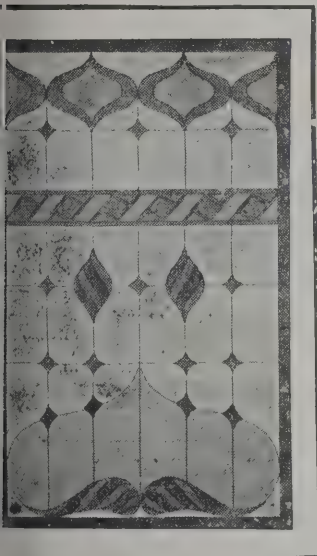
Marbille plaster is employed on several exhibition walls—in itself a witness of its merits—and particularly on the walls of the sole London agents, Messrs. A. W. Green & Co. The plaster is made in five grades from a pure gypsum stone by a special process. Quick interior and exterior work is possible with it. The second coat may be laid on the first within a few hours, and the most delicate decoration can

be applied forty-eight hours later. Its cheapness is put forward as another point.

Messrs. Wm. Griffiths & Co., Ltd., in addition to displaying Norway and Guernsey pitchings and Belgian and Guernsey granite, have set up specimens of "Opalite" tiling suitable for lining walls of subways, bath-rooms, &c., with a curved frieze made up of the opalescent tiles. The combination is most pleasant. Messrs. Griffiths are ready to supply and fix "Opalite" which does not crack or craze.

Though mosaicwork is of very ancient date it is still possible for new ideas to be brought to bear upon it. English glass mosaic, recently placed upon the market by W. G. Crotch & Son, Norwich, is one. The insuperable obstacle to a general employment of this striking form of decoration is its great cost. Any cheapening process should be welcomed with applause. The company claims to have reduced the cost 40 to 50 per cent. below the old style. Its appearance may be judged at the handsome stall of Clark & Co., the exterior of which is made of Reconstructed Stone. A small dome has been set up in the roof and filled with glass mosaic with circular designs. Mosaic under its new form may be employed in many other ways like shop frontages, trade signs, permanent posters, &c., which would be certain to attract notice and so serve as an advertisement. Messrs. W. G. Crotch named their other material "reconstructed stone" because in every respect it differs entirely from the ordinary artificial manufacture. In one test a block was soaked in water for rather more than twenty-four hours. It was then kept for six days completely surrounded by ice; it was immediately afterwards placed in an incubator at 100 deg. Fahr. and finally baked in an oven at 300 deg. Fahr. The block was found to have retained its surface, texture and resistance to flaking, &c. Nothing further need be said as to its weathering qualities. The interior wall shows Xeleste quick-setting plaster, which is manufactured by Cafferater & Co., Newark-on-Trent, and sold by Clark & Co. The plaster has been used on all descriptions of buildings in this country and in America. One of its many advantages is that one material only is required, mixed with sand for rendering, and used next for finishing.

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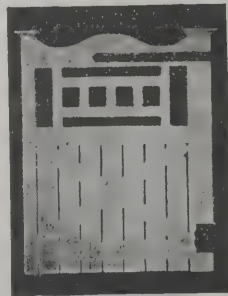
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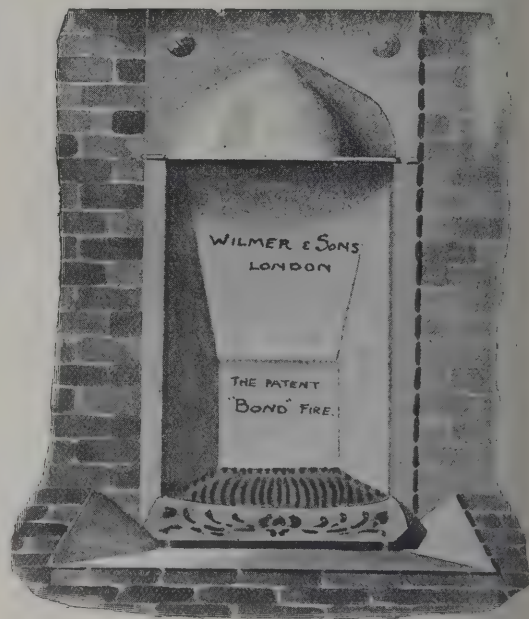
HIGHEST AWARDS at all INTERNATIONAL EXHIBITIONS.

Whether you wish to paint your bath, your house, your motor or your yacht, *Ripolin, Ltd.*, are anxious to help you both with their advice and their material. It is further used by railway companies for the protection of their signals, rolling stock, bridges and hotels. It would be difficult to exhibit instances of each of these objects in the sixty-eight available tints, so the company show an interior representing a room designed in Empire style with a pleasing colour scheme of Wedgwood green, white and blue. Ripolin has been the brilliant rival of wall-papers for more than a quarter of a century, and mental comparisons between the two may be drawn at the stand. The distinctive qualities on which most stress is laid are the durable, smooth finish and pure and permanent colours. There is the Ripolin gloss and the Ripolin flat. The following is an alluring scheme suggested by the firm:—A cool mossy green dining-room, a rose du Barri drawing-room, cosy red staircases, delicate Wedgwood blue bedroom, spare room of French grey, and bath-room and kitchen of pure white.

The "Paragon" is a very recent addition by *Messrs. Colthurst, Symons & Co., Ltd.*, to the numerous patent tiles on the market, and has for object the exclusion of all rain. The right edge of each tile is raised and grooved so as to fit into a groove on the left edge of the next tile. Battens laid to 12½ gauge; at this gauge it takes 120 tiles to the square, and the weight is 5 cwts. Several other of their patent tiles are shown, such as an interlocking Roman tile, which has a similar principle to the "Paragon." They are made to bond, and so securely interlock as to remove any necessity of nailing. The "Acme" tile is recommended for villas.

Messrs. Norton & Gregory have long been rendering invaluable aid to architects, engineers and builders. "Velo-graphy" is recommended for the reproduction of plans and drawings for its speed, accuracy, permanence, manipulation, variety of material, drawings copied direct, and price. But their aid is likewise brought inside the office. There is the improved "Perfect" drawing-table with T-square or straight edge attached; the compact "Perfect" drawing cabinet, one of which, though only 20 inches in depth, is capable of holding 300 or 400 drawings; the "Arcus" sun printing frame; a large selection of instruments, and picture frames for the ultimate fruits of all their help.

In the "Bond" fire of *Messrs. Wilmer & Sons* 3-inch firebrick slab is placed some 3 inches below floor level. A bright steel hearth slope fits in the grate so made. The coals rest on a specially constructed grate almost on a line with the floor. In consequence the heat radiates along it and drives the cold air up the chimney.



useful accessory can be supplied when the fire is built against an exterior wall; a cast-iron box fitted behind the stove communicates by a pipe with the outer air. The cold air enters, passes through the box where it becomes warmed and escapes through a pipe above, which terminates in a ventilator fixed in the wall of the room overhead. This arrangement has proved most satisfactory.

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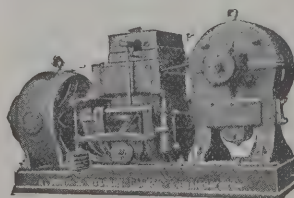
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Among the new exhibitors is the *Berkefeld Filter Company, Ltd.*, with a very interesting display of their well-known filters. These are now made in such a variety of forms that they can be used for practically any purpose. They are simple in construction and can easily be cleaned, and it is claimed they yield a sterile filtrate five to ten times larger than other germ-proof filters. A very convenient form for household use is the "Berkefeld H" pressure filter, which is attached to the main service pipe by a cistern where there is a fall of not less than 10 feet, and yields a constant supply of germ-free water, which is obtained by simply turning on the tap.

Dr. Sims Woodhead, F.R.S.E., said of this filter:—"The rate of filtration is very rapid; in fact, the output is so large that there is no reason why such filters should not supply sufficient water to meet all household requirements." This pattern filter, and the larger sizes, has been used in innumerable private houses, hospitals, hotels, rail-trains, &c., and two nickel-plated H filters have been carried to the Royal yacht for the present Mediterranean cruise.

The house-pump filters, drip filters, &c., are for use where no pressure is available. They are also exhibiting "Winco" semi-rotary wing pumps, a handy appliance for lifting and forcing water. These pumps consist of a perfectly cylindrical casing, in which a strong brass wing, provided with valves oscillates, and while principally operated by hand, they can easily be adapted to horse, steam, or wind power. They are very compact, and can be easily fixed and removed. There are thirteen sizes supplied in iron and brass, or in all brass, as well as double and quadruple acting. The approximate capacity is from 10 to 7,000 gallons.

The boilers of *Messrs. Hartley & Sugden* appeal to all who can appreciate the merits of a boiler. They show the "White Rose," the "Saville," the "Climax" and other types. The "White Rose," series A, was introduced about 25 years ago; this cast-iron sectional boiler met with instantaneous success, and was supplemented by series B and C, &c. Series F is a small pattern specially adaptable for small installations like motor houses. The firm are makers of both wrought-iron and cast-iron heating apparatus. Their display must increase their reputation still further.

Messrs. Samuel Elliott & Sons, Ltd., of Caversham, Reading, have an imposing display of their well-known joinery. Possible sceptics will be reassured by the statement that the work is not faked or especially produced for this exhibition, but is part of the orders at present in hand. In the centre of the principal side of the stand is a large Austrian oak hand-carved mantelpiece. As in all the other pieces, it is a pleasure to feel the smooth-cut surface and to see the sharp carving. A highly polished door of curly pitch pine hung up has seen four years' service. If it were not for the printed announcement it would be taken to have been just despatched from the Caversham works. Elliott's patent simplex weather bar for casements opening inwards has been introduced throughout the New Scotland Yard and the Imperial Institute. The chief feature of its utility is that it can be applied most readily to existing casements, it is a perfect preventive of the ingress of wet and draught, cannot get out of order and can be fixed by any workman. Mr. John Belcher, A.R.A., had the weather bars tested by forcing water against them through a hand-pump, and although the casements open inwards, "there was not a sign of water or moisture anywhere internally. In fact, they appear to be quite weather-proof and a great success."

Compoboard for walls and ceilings is shown by *Messrs. Machin & Koenig*. It is made of thoroughly seasoned wooden slats 4 feet long and about 1 inch wide, joined in an endless web, so that the 4-foot length of the slat forms the width of the complete board, while the length may be from 1 foot to 18 feet. It is said to be a little cheaper, and must certainly be very much quicker to put up than the ordinary lath and plaster. Consequently when speed is a desideratum this material is invaluable. *Messrs. Machin & Koenig* show several panels in ornamental woods.

D. G. Somerville & Co.'s stand is made up of a reduced replica of the upper portion of a steel-framed telephone building with reinforced concrete, sound and fire-resisting floors and roof, as supplied and erected by them for that and many other contracts. They offer two alternative flooring systems: one consists of steel joists, combined with their hollow reinforced concrete tiles (of which the total weight, exclusive of top finishing, is 35 lbs. per foot super.); the other reinforced concrete beams, instead of R.S.

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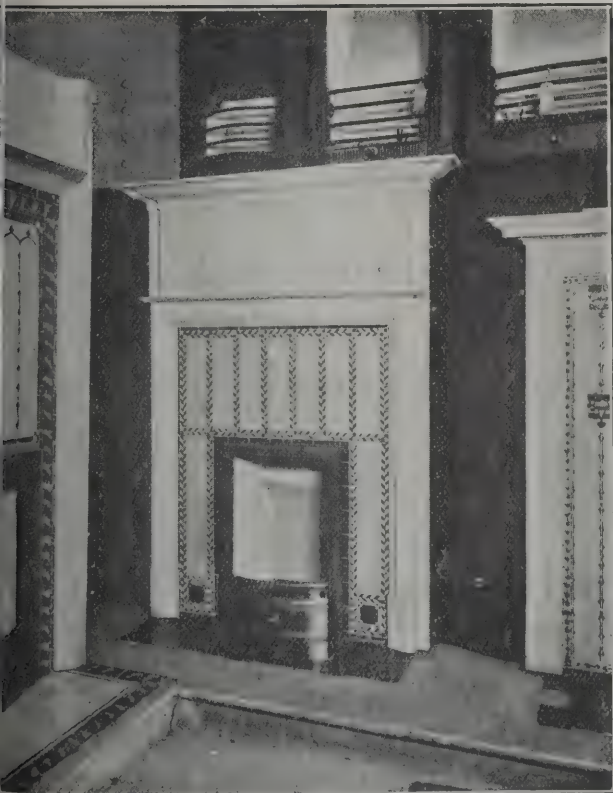
THE "PYRAMID" GRATE has a FALSE HEARTH, fixed or movable, the upper side of which is a slab of firebrick upon which the hot ashes fall. This forms a regenerative hot-air chamber under the bars, and secures perfect action and **GREAT ECONOMY**. The underside is formed of cast-iron, and being raised above the ordinary Tile or Stone hearth, it forms a cold-air chamber, and **PREVENTS THE POSSIBILITY** of any unexposed timber under the hearth **BEING IGNITED**. This is a real danger arising from the use of most low types of grates which have not this protection.

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EDINBURGH, LEEDS, DARLINGTON.



THE "PYRAMID" GRATE (Patent).
NEW PRICE LIST ON APPLICATION.

joist bearers; the weight of this complete (including steel reinforcing bars and concrete, but exclusive of top finishing) is 45 lbs. per foot super. A section of a concrete pile as supplied and used by them in the reconstruction of the Town Quay, Southampton, is given. It consists of reinforced concrete slabs fixed round angle-iron guides, and with ordinary concrete filling.

The wide range to which the *Cloisonné Glass Company* can put their material is shown at their stall. As glazing for windows and doors it has become quite familiar. It is no less applicable for lamps, screens, transparent mosaics and facias in different styles of lettering. The goods are all marked as to price, and should find an extensive sale during the fortnight they are shown. The swinging lamps give an alluring effect to the interior, where there are trays, mahogany frames and tables, &c., ornamented with cloisonné panels, to delight everyone.

The buff terra-cotta building and paving bricks and roofing tiles of *Messrs. Towers & Williamson* afford a pleasant change from the more usual colours. Their appearance is solely due to the natural clay, and in no way to adulteration or faking. The tiles are made in four shades, a combination of which gives great variety to a roof.

The "*Safety*" *Water Elevator Company* continue to win friends through their patent appliance, which must be a boon and a blessing where a water supply is not laid on and resort has to be made to primitive wells. It insures perfect protection for the water.

Messrs. R. Gay & Co., Ltd., can boast of the distinction that their impenetrable paint is the only paint used on the lifeboats of the Royal National Lifeboat Institution. *The Architect* said, in 1870, "The impenetrable paint of Messrs. R. Gay & Co. has had the test of time, and its qualifications are numerous." This may be said with still greater truth nearly forty years later. Their Etruscan paint as used on Buckingham Palace is a cheaper brand of ready mixed paint and is adapted for all outside work, is anti-corrosive and dries hard in eight hours.

Carl Flohr, in addition to exhibiting a model of his patent electric push-button lift, now offers two new electric machines, one being for drilling and the other for rivetting, to the notice of structural iron engineers, &c. Each is portable and entirely self-contained. The drilling machine

can be suspended from the overhead track or beam so as to work vertically, horizontally, or at an angle. The rivet machine does its work in about a second by the manipulation of an ordinary bell button.

Messrs. Hopkins & Co. are showing at the stand of *G. M. Callender & Co., Ltd.*, a specimen of their unglazed slab name-plates intended for streets and direct posts. The black lettering shows up against the white background, and the plates are both strong and durable.

Messrs. Vickers & Field, Ltd., show their patent "Wirebit," which consists of pure Trinidad lake bitumen spread on woven steel wire; the meshes form a mat to hold material and keep it in place under superincumbent pressure. A small tank lined with "Wirebit" is filled with water and proves its watertightness as a damp-course. It is sold in rolls 18 feet and 24 feet long, and of any width desired. The material conforms with the building by-laws of district councils and local authorities. As a roofing material it has proved useful.

Brookes, Ltd., make a display with granite from Norway and Sweden. They manufacture artificial stone flags and bricks and tiles at their new works, Broad Oak, Hipsleyholme, near Halifax. *Joseph Brooke & Sons* have supplied during the past twenty-five years many of the large building contracts with Silex hard York stone for steps, landings, &c. The *Hard York Non-slip Stone Company* employ their stone for decorative work, in addition to its original form of paving.

Mr. John Tann has an excellent exhibit at Stand No. 1 of "Anchor Reliance" safes, strong-room and party-wardens. The safes are bent solid at all twelve corners, rendering them proof against injury through falling from any height. From his long experience, being one of the originators of fire and burglar-proof safes, the latest models combine the best workmanship and methods with the maximum of security.

The catering is being most satisfactorily carried out by *Messrs. Lyons & Co.*, but the ventilation of the rooms set apart for the comfort of visitors and unfortunate attendants at the exhibition is very far from satisfactory. In our next issue we shall give further particulars of the many exhibits to which want of space this week has prohibited our referring.

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THE
Architect and Contract Reporter.

FRIDAY, APRIL 19, 1907.

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As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief, as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

LONDON.—The Metropolitan Borough of Bethnal Green invite designs for new municipal offices, Council hall and committee-rooms. Premiums of 100l. and 50l. Conditions and plans from Mr. G. E. Finch, borough engineer, Town Hall, Church Row, Bethnal Green, on payment of 2l. 2s., returnable on receipt of design.

CONTRACTS OPEN.

ASHTON-UNDER-LYNE.—April 24.—For (1) supply and fixing of fire-escape staircases at the workhouse, and (2) for the structural alterations in connection therewith. Deposit 2l. 2s. Messrs. John Eaton, Son & Cantrell, architects, Stamford Street, Ashton-under-Lyne.

ASKAM-IN-FURNESS.—April 22.—For the erection of meeting-room in connection with the Church of Christ. Messrs. J. W. Grundy & Son, architects, Central Buildings, Ulverston.

BARNSELY.—April 22.—For the pulling-down of the mills, laying out the estate, and the erection and completion of twelve houses and shops, also forty dwelling-houses on the Oak Mills Estate. Send names to Messrs. Tennant & Collins, architects and surveyors, Regent Street, Barnsley, and at Pontefract.

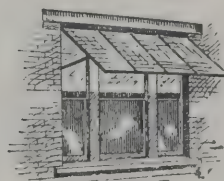
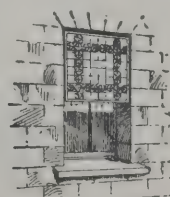
BINGLEY.—April 25.—For the erection of a detached, a pair of semi-detached and a block of four houses on the Manor Park Estate. Mr. Wm. Rhodes Nunn, architect and surveyor, Market Street, Bingley, Yorks.

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BLACKBURN.—April 23.—For the erection and completion of thirteen houses, Brooklands Terrace. Mr. John B. Thornley, architect, Darwen.

BRENTOR.—April 20.—For general external repairs to house and buildings, Bonnaford Farm, Brentor, near Tavistock. Send names to Mr. Charles Cole, architect, 50 High Street, Exeter.

BROMLEY.—April 30.—For providing and fixing about 2,226 feet super of panelling in the new municipal buildings in Tweedy Road, together with the necessary police court furniture, &c. Mr. R. Frank Atkinson, architect, 8 Sackville Street, W.

BURNLEY.—April 23.—For the erection of urinals in Manchester Road and Colne Road. Mr. G. H. Pickles, borough engineer, Town Hall, Burnley.

BURSLEM.—April 20.—For the erection of a public mortuary at the town yard. Deposit 2*l.* 2*s.* The Borough Surveyor's Office, Queen Street.

CARLINGHOW.—April 22.—For joiner, plasterer, slater and painter's work for eight houses. Messrs. G. & J. Mortimer, Coal Pit Lane, Carlinghow, Batley.

CHINGFORD.—April 26.—For erection of a sorting office at Chingford. Deposit 1*l.* 1*s.* Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

CONSETT.—April 23.—For the erection and completion of house at Westwood. Mr. T. H. Murray, architect and surveyor, Consett, Durham.

COVENTRY.—April 22.—For alterations and additions to the Earlsdon Council school. Deposit 1*l.* 1*s.* Messrs. G. & I. Steane, architects, 22 Little Park Street, Coventry.

DEARHAM.—April 20.—For proposed alterations and additions to the Dearham Council school, Cumberland. Mr. Joseph Forster, Clerk of Works, 13 Earl Street, Carlisle.

EBCHESTER.—April 20.—For the erection and completion of four houses. Mr. T. H. Murray, architect and surveyor, Consett.

EDINBURGH.—April 24.—For the various building works, as well as schemes and estimates for laundry engineering, in connection with proposed public washhouses at Simon Square, for the St Leonard's district. The Public Works

Office, City Chambers, Edinburgh. Mr. R. Morham, city architect.

ELLAND.—April 20.—For the erection of an additional storey to Norton Mill, Elland, Yorks. Send names to Messrs. Stott & Sons, architects, 5 Cross Street, Manchester.

GILDERSOME.—April 24.—For the erection of stable and coachhouse, &c. Messrs. T. A. Buttery & S. B. Birds, architects, Queen Street, Morley.

GREAT BROUGHTON.—April 20.—For the erection of a Primitive Methodist church. Rev. Mark Pattison, Ruskin Villa, Stokesley.

GREAT KENDALE.—April 20.—For alterations and additions to Great Kendale, near Driffild. Send names to Messrs. Tennant & Collins, architects and surveyors, Pontefract and Barnsley.

HALE.—April 22.—For the erection and completion of stables, steam road-roller shed, &c. Deposit 1*l.* 1*s.* Mr. S. A. Pickering, surveyor, Town Office, Hale, Cheshire.

HEREFORD.—April 20.—For a large cabinet-making factory to be erected at Eign, Hereford. Deposit 2*l.* 2*s.* Forward names to Messrs. Groome & Bettington, architects and surveyors, Palace Chambers, King Street, Hereford.

HEYWOOD.—April 22.—For erection of boundary wall and railing at the new free library in Church Street. Mr. J. Ainsworth Settle, borough engineer, Heywood, Lancs.

IRELAND.—April 25.—For the brick and concrete, carpenter, slater, plumber, iron, painter and glazierwork of extensions at Messrs. Brown, Corbett & Co.'s Killowen distillery and maltings, Coleraine. Mr. Charles C. Doig, architect, Elgin, N.B.

IRELAND.—April 25.—For improvements to premises, 112 West Street, Drogheda. Mr. F. H. Tallan, architect and surveyor, 106 West Street, Drogheda.

IRELAND.—April 26.—For rebuilding of premises at Bishop and Henrietta Streets, Londonderry. Mr. Jas. P. M'Grath, architect, Commercial Buildings, Foyle Street, Londonderry.

IRELAND.—April 27.—For the erection of a building on Curry's Hill, Drogheda. Mr. F. H. Tallan, architect, 106 West Street, Drogheda.

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IRELAND.—May 1.—For the erection of two consumptive hospitals at the Clonmel district lunatic asylum, for the joint committee of management. Deposit 2*l.* 2*s.* Mr. J. F. Miller, architect, 179 Great Brunswick Street, Dublin.

IRELAND.—May 6.—For the following new works, for the Great Northern Railway Co. (Ireland):—Extension of 1st Office rooms, Portadown station. Deposit 2*l.* 2*s.* Plans; forms of tender 1*s.* each. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

KEIGHLEY.—April 23.—For alterations at the fire brigade station. Mr. Walter Fowlds, borough engineer.

LANCASTER.—May 4.—For new villa for private patients at the county lunatic asylum. Deposit 2*l.* 2*s.* Application April 20 to Mr. H. Aspinall, architect, Prudential Buildings, Dale Street, Liverpool.

LANGLEY PARK.—April 20.—For the erection of twenty-four houses. Forward names to Mr. C. E. Oliver, architect, General Offices, Consett.

LEEDS.—April 22.—For any or the whole of the trades—namely, bricklayer and mason, carpenter and joiner, plumber and glazier, plasterer, painter, slater and ironfounders' work—necessary in the building of proposed house and shop premises at the junction of Mabgate and Carry Hill. Forward applications to Messrs. Thomas Winn & Sons, architects, 84 Albion Street, Leeds.

LEEMING.—April 24.—For additions to stores at Leeming, Cenhope, Yorks. Messrs. John Haggas & Sons, architects, North Street, Keighley.

LISKEARD.—April 22.—For alterations and renovations at the Wesleyan chapel. Mr. John Sansom, architect, Liskeard.

LITTLEHAMPTON.—April 25.—For the building of boundary wall and providing and fixing of unclimbable steel fencing about the new grounds of cemetery, with other work. Mr. J. Howard, surveyor, Town Offices, Littlehampton.

LIVERPOOL.—April 25.—For the construction of public baths at Queen's Drive, Walton. Deposit 1*l.* 1*s.* Mr. W. R. Curt, engineer and chief superintendent, Municipal Offices, Liverpool.

LONDON.—April 23.—For additions to the call-over office at the Guardians' office, Brook Street, Kennington, S.E. Deposit 2*l.* Mr. W. Thurnall, clerk.

LONDON.—April 27.—For the erection of dwellings for the working classes, on a site known as Brantome Place. Messrs. Joseph & Smithem, architects, 83 Queen Street, Cheapside.

LONDON.—May 3.—For Admiralty extension block IV. (superstructure). Sir Aston Webb, R.A., 19 Queen Anne's Gate, S.W.

NEW MILLS.—April 23.—For the erection of a gas foreman's cottage at Mousley Bottom. Gas Manager, New Mills.

PEASEDOWN ST. JOHN.—For the erection of 100 workmen's cottages upon land adjoining collieries. Send names and addresses to the Dunkerton Collieries, near Bath.

WALES.—April 20.—For the erection of a classroom and other works at the Hillside Council school, Blaenavon, Mon. The County Council Offices, Newport, Mon.

WALES.—April 20.—For the erection of a mixed school at New Inn, near Pontypool, Monmouthshire. Deposit 2*l.* 2*s.* Mr. H. J. Griggs, architect, Newport.

WALES.—April 20.—For the erection of a laboratory, workshop and cookery-room at the St. David's County school. Mr. Hugh Thomas, architect and surveyor, 9 Victoria Place, Haverfordwest.

WALES.—April 22.—For Salvation Army school, Bethcar Street, Ebbw Vale. Adjutant Dewey, 94 Pennant Street, Ebbw Vale.

WALES.—April 22.—For the erection of a minister's house at Pentre. Mr. W. D. Morgan, M.S.A., architect, Post Office Chambers, Pentre, Rhondda.

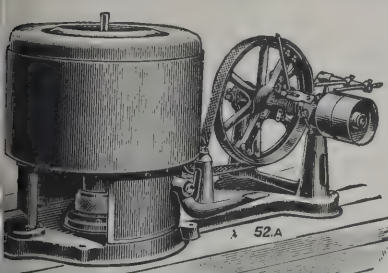
WALES.—April 24.—For the erection of a Baptist chapel at Cymmer, near Port Talbot. Deposit 2*l.* 2*s.* Messrs. Evans & Jones, architects and surveyors, 4 Trinity Place, Swansea.

WALES.—April 24.—For the erection of three houses at Llwydcoed. Mr. J. Llewellyn Smith, architect, Aberdare.

WALES.—April 27.—For the erection of twenty-four houses at Deri, near Bargoed. Mr. D. M. Davies, architect, 24 Cardiff Road, Caerphilly.

WALES.—April 29.—For rebuilding Gobiath Welsh Calvinistic Methodist chapel, Cwmdare, near Aberdare. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

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WALES.—April 30.—For the rebuilding of the Pen-y-darren tavern, Merthyr. Mr. C. M. Davies, architect, High Street.

WAREHAM.—May 1.—For the erection of almshouses, boundary walls and fences, &c., at Wareham, Dorset. Mr. G. Clavell Filliter, North Street, Wareham, Dorset.

TENDERS.

ASHBURTON.

For the construction of about 1,150 yards of sewers, 6 inches to 15 inches diameter. Mr. C. E. ROBINSON, engineer.

Contract No. 1.

Badcock	£792	4	5
Vanstone & Co.	606	12	8
J. & T. Binns	596	8	3
T. Chaddock	547	2	0
Pollard & Co.	523	6	10
J. Chaddock	521	1	0
ARSCOTT & SON, Buckfastleigh, South Devon (accepted)	506	16	0
Dean & Co.	453	14	7
Bridgman	385	17	11

Contract No. 2.

J. & T. Binns	493	4	2
Vanstone & Co.	447	9	3
Arscott & Son	416	10	0
Dean & Co.	408	11	4
T. Chaddock	404	4	3
J. Chaddock	398	10	4
Pollard & Co.	367	10	6
Badcock	365	7	4
PENGILLEY, Ashburton, South Devon (accepted)	335	6	5
Bridgman	304	4	2

BARNOLDSWICK.

For levelling, pitching, paving and channelling part of Park Avenue. Mr. WM. BENNETT, town surveyor.

Campbell	£798	16	6
Baker	424	0	0
Green	389	10	4
ARMSTRONG, Nelson (accepted)	376	5	4

BELFAST.

For additions and alterations to Salem Methodist church

York Street. Mr. W. D. R. TAGGART, architect, Belfast.	
McIntyre Bros.	£3,683 6
McDowell, Leatham & Fraser	3,678 16
Calwell	3,620 17
C. & J. McQuoid	3,543 8
Lees	3,439 0
J. & R. Thompson	3,190 0
Campbell & Son	3,169 5
Lowry & Percy	3,137 0
Keith	3,055 0
Kidd	3,019 13
Dowling	2,786 15
Elliott	2,541 0
COPELAND, Whitla Street (accepted)	2,368 0

BLACKBURN.

For alterations and extensions for out-patients' department &c., for Blackburn and East Lancashire infirmary. Messrs. SIMPSON & DUCKWORTH, architects, Blackburn.

Woof, Cronsshaw & Sons £4,031 10

BURNLEY.

For the erection of Burnley county court.

Kelshaw & Lee	£6,580	0	0	£10	0
Brown & Sons	6,395	0	0	20	0
Clegg Bros.	6,363	19	6	20	0
Peters & Sons	6,325	0	0	50	0
Smith Bros.	6,114	0	0	—	—
Lumb	6,050	0	0	30	0

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Mr. J. T. GRIFFIN, surveyor	
Adams	£1,399 0
FRENCH BROS., Buckhurst Hill (accepted)	993 0

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ans	£791	18	0
owells	727	5	6
utter	706	5	2
ollins & Co.	704	2	7
atherley & Co.	703	10	0
ssiter, Caerphilly (accepted)	700	12	1
rveyor's estimate	750	0	0

Tridwr Road.

atherley & Co.	453	4	7
ans & Murray	414	1	1
ollins & Co.	394	15	8
utter	379	10	11
WILLIAMS, Aber (accepted)	376	6	11
rveyor's estimate	400	0	0

EARLESTOWN.

the erection of two settings of through retorts (thirty-two mouthpieces), with alterations to retort-house. RAKES, LTD., Halifax (accepted).

£1,875 0 0

FELIXSTOWE.

erecting a residence. Mr. H. W. BUXTON, architect, Felixstowe. Quantities by Messrs. YOUNG & BROWN, 104 High Holborn.

irk & Randall	£2,779	0	0
ennett	2,690	0	0
ohnson & Co.	2,664	0	0
vallis & Sons	2,660	0	0
enney	2,648	0	0
Vall, Ltd.	2,610	0	0
ratt	2,593	0	0
rimwood & Sons	2,579	0	0
atman & Fotheringham	2,552	0	0
Lawrence & Son	2,544	0	0
Smith & Son	2,525	0	0
inzell	2,417	0	0
hurman	2,394	0	0
WARD & SON, Felixstowe (accepted)	2,337	0	0

IRELAND.

For plumbing and gasfitting at the technical school building, Strand, Londonderry. Mr. EDWARD J. TOYE, architect, Londonderry.

BURNS, Sackville Street (accepted) . . . 757 13 9

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For sewage-disposal works, &c., for the Kettering Urban District Council. Mr. THOS. R. SMITH, engineer and surveyor.

Sewage-disposal works, comprising septic tanks, filters, and other works, rebuilding cottages, &c.

Firth & Co.	£8,054	4	1
Bell & Sons	8,041	19	6
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Smith, Edmunds & Co.	6,903	0	0
Henson	6,802	0	0
Jewell	6,547	5	4
Moss & Sons	6,524	12	4
Cunliffe	6,295	0	0
Drever	6,137	17	3
Wilmott	6,044	8	0
KETTERING CO-OPERATIVE BUILDERS (accepted)	5,452	12	0

Gas, street sewer, &c.

Moss & Sons	725	0	0
Firth & Co.	648	16	4
Jewell	543	7	0
Smith, Edmunds & Co.	528	0	0
Macdonald	525	0	0
Wilmott	483	15	11
Drever	471	8	11
Henson	436	13	9
KETTERING CO-OPERATIVE BUILDERS (accepted)	396	10	10

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Stanton Ironworks	343	1	6
Holwell Iron Co.	340	12	2
BUTTERLEY Co., Derby (accepted)	332	6	2

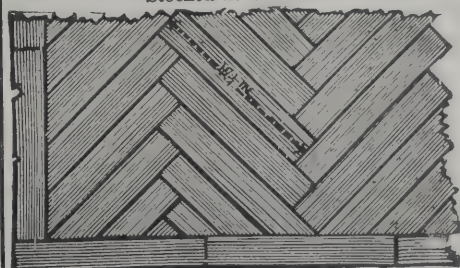
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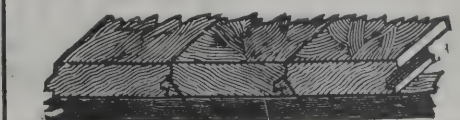
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Blakeborough & Sons	157	16	0
Rees & Sons	154	12	6
Parsons & Wills	147	19	3
HAM, BAKER & Co., Westminster, S.W. (accepted)	139	2	0

KINGSTON-ON-THAMES.

For enlargement of Kingston-on-Thames head post office.

Farley	£6,212	0	0
Nichols	5,137	0	0
Glaze & Sons	5,095	0	0
Oldridge & Sons	5,093	0	0
F. & H. F. Higgs	4,994	0	0
Patman & Fotheringham	4,993	0	0
Flint	4,967	0	0
Blake	4,890	0	0
Parsons	4,857	0	0
Fitt	4,855	0	0
Hyde & Co.	4,764	0	0
Lorden & Son	4,687	0	0
Lawrence	4,725	0	0
Dorey & Co.	4,580	0	0
Clayton	4,568	0	0
F. & J. Foster	4,486	0	0
WISDOM BROS. (accepted)	4,272	0	0

LEICESTER.For constructional steelwork in extension to warehouse.
Messrs. TAIT & HERBERT, architects, Leicester and Coventry.

Potter & Sons.	£965	0	0
Needham & Lowe	904	4	2
Russell & Sons	865	18	8
Wood & Co., Manchester (accepted)	857	0	0
Gimson & Co.	834	13	2

LEEK.

For extensions and additions to the isolation hospital.

W. E. BEACHAM, surveyor.	
GRACE, Leek (accepted)	£1,806 19

MILFORD HAVEN.

For the erection of cookery and laundry-rooms at the court school. Messrs. D. E. THOMAS & SONS, architects, Haverfordwest.

Scott	£789 0
Adams	740 0
Lloyd & Co.	702 0
COLE & SONS, Milford Haven (accepted)	697 0
Architect's estimate	700 0

OXFORD.

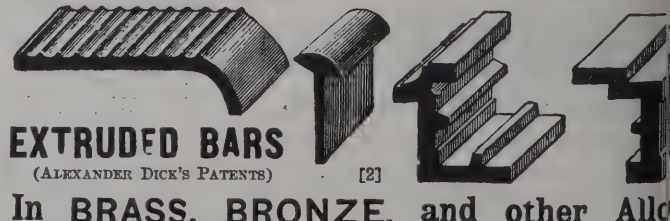
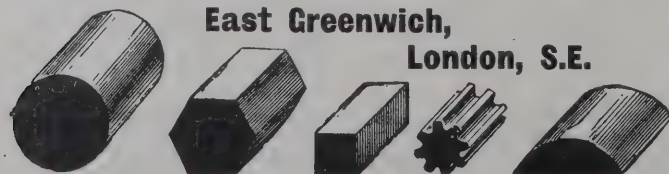
For erecting a grand stand in Magdalen school meadow, the historical pageant committee. Mr. F. P. TREPEL, architect, Warwick.

Harrison & Co.	£2,382 0
Grigg	2,244 0
Wooldridge	2,231 0
Holden & Co.	2,145 0
Rice & Sons	1,968 0
Organ Bros.	1,955 0
Kingerlee & Sons	1,949 0
Minty	1,825 0
SAUNDERS & SONS, Cirencester (accepted)	1,255 0

PERTH.

For causewaying of tramway track in King's Place, Leonard's Bank, and west approach to St. Leonard's Bridge. Mr. R. M'KILLOP, burgh surveyor.

Melloy	£1,408 19
Stark & Sons	1,266 6
Lothian Quarry Co.	1,217 17
Brunton & Son	1,215 0
Taylor Bros.	1,182 6
Ritchie	1,145 14
Leith, jun.	1,124 15
J. & J. Neilson	1,115 3
Dobson	1,093 10
Dick	1,088 9

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Brannigan Bros. & Co.	1,011	15	1
Finlayson	983	11	7
M'Andrew	958	9	9
Martin & MacFarlane	952	4	3
D. & R. TAYLOR, Perth (accepted)	926	19	1
or causing West High Street, Dovecotland Bridge, &c.			
Mr. R. M'KILLOP, burgh surveyor.			
Brunton & Son	£1,864	8	7
Lothians Quarry Co.	1,843	7	4
Stark & Sons	1,774	1	5
Dick	1,735	8	0
Dobson	1,723	6	1
Taylor Bros.	1,679	0	1
Ritchie	1,677	8	6
Leith, jun.	1,670	5	0
Shaw	1,628	7	6
J. & J. Neilson	1,603	5	0
Brannigan Bros. & Co.	1,541	17	5
Wilson & Co.	1,536	8	7
Finlayson	1,516	8	9
Martin & MacFarlane	1,491	1	1
M'Andrew	1,460	1	9
D. & R. TAYLOR, Perth (accepted)	1,425	17	2

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or the supply of 44 tons 6-inch and 4-inch pipes, with valves, hydrants and special castings, for the Brechin Town Council. Mr. W. EGGIE, water engineer, Brechin.			
Stewart & Co.	£368	7	7
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Maclaren & Co.	351	8	4
LAIDLAW & SON, Alliance Foundry, Glasgow (accepted)			
	337	15	7
or erecting a farmhouse at Middleton. Messrs. WATT & DAVIDSON, architects, Aberdeen.			
Accepted tenders.			
Edward & Rae, carpenter and painter	£119	19	0
Duncan, mason	106	12	6
Roger & Baxtor, plasterer	40	17	0
McDonald & Sons, slater and plumber	35	16	0

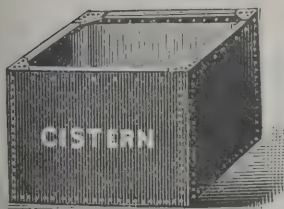
SMITHAM.

For the erection of a school and additions to the infants' school. Messrs. A. WICKHAM JARVIS & FRANK A. RICHARDS, architects, 36 Victoria Street, S.W.			
Mitchell Bros.	£7,586	0	0
Martin, Wells & Co.	6,950	0	0
Waller	6,831	0	0
Kemp	6,769	0	0
Smith & Sons	6,693	0	0
Jones & Son	6,600	0	0
Hawkins & Co.	6,580	2	9
Stewart & Sons	6,312	0	0
J. & M. PATRICK (accepted)	6,132	0	0

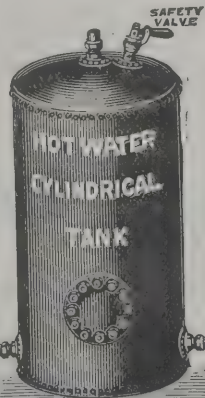
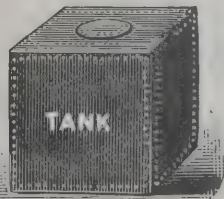
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For construction of reservoir at Southfleet, for the Metropolitan Water Board.			
Nuttall & Co.	£8,321	10	2
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Nightingale	5,555	0	0
Docwra & Sons	5,458	16	3
Fasey & Son	5,374	3	4
Aird & Sons	5,289	14	7
Mowlem & Co.	5,172	0	0
Redhouse, sen.	5,111	11	4
Smart	4,882	0	0
Ellingham & Sons	4,858	9	0
Nunn	4,837	2	3
Muirhead & Co.	4,799	19	11
Ewart	4,741	12	4
Moran & Son	4,659	17	3
Wallis & Sons	4,630	0	0
Kirk & Randall	4,604	0	0
Scott & Branton	4,546	0	0
Miskin, Ltd.	4,524	0	0
Moss & Sons	4,484	0	0
Underwood & Bro.	4,414	1	9
Blay	4,342	0	0
Osenton	4,242	15	0
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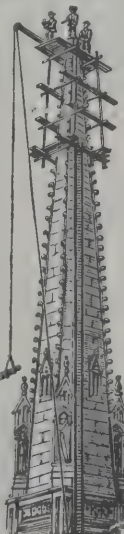
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Taylor	£997	0	0
Knight	890	0	0
Blay	804	17	6
Lonsdale	802	0	0
ELLINGHAM & SONS, Dartford (accepted)	768	0	0

TAUNTON.

For widening Kingston Road, Taunton. Mr. D. EDWARDS, borough surveyor.

Pollard & Co.	£257	3	0
Small	238	5	0
COLES, Taunton (accepted)	234	3	9
Surveyor's estimate	230	0	0

For erecting cottage over and in the rear of the fire brigade station, Magdalene Street. Mr. D. EDWARDS, borough surveyor.

Manning & Son	£259	0	0
Smith	257	0	0
Small	243	13	0
Coles	229	10	0
MOGGRIDGE, Taunton (accepted)	227	0	0

TONBRIDGE.

For the erection of pair of semi-detached villas in Quarry Lane. Mr. E. HARRIS, architect and surveyor, 5 Hornsey Rise Gardens, N.

Strange & Sons	£2,235	0	0
Punnett & Sons	2,048	0	0
Jarvis	2,030	0	0
MARTIN & Co., Tonbridge (accepted)	1,992	0	0

TUTBURY.

For the reconstruction of Branstone Canal bridge. Mr. H. S. TEBBITT, surveyor.

Yorkshire Hennebique Contracting Co.	£630	0	0
Adams	620	0	0
Emery	598	0	0
Sharp & Sons	530	0	0
HODGES, Burton-on-Trent (accepted)	500	0	0

WALES.

For alterations and additions to the Rose and Castle Inn, Caerphilly. Messrs. SWALWELL & HAVARD, architects and surveyors, Newport, Mon.

Reed	£668	0	0
Moon	650	0	0
E. D. W. Evans	640	3	0
Clarke	618	10	0
Parfitt	590	0	0
Jenkins, Ltd.	583	0	0
J. H. Leadbeter	570	0	0
E. R. Evans	570	0	0
G. F. Leadbeter	547	10	0
Howells, Cardiff (accepted)	530	0	0
Powles	529	0	0

For alterations and additions to vestry of Jerusalem Welsh Calvinistic Methodist chapel, Ton Pentre. Mr. W. D. Morgan, architect, Pentre.

MORGAN BROS., Ton Pentre, near Pontypridd (accepted) £1,135 0 0

WALSALL.

For erecting a brick chimney-stack, 130 feet high, at the electricity generating station, Wolverhampton Street. GOUGH & SON, Wolverhampton (accepted) £575 0 0

WICKFORD.

For erecting classroom and other alterations and additions at school. Mr. F. WHITMORE, architect, Chelmsford.

Allen & Gowers	£516	15	0
Burtwell	434	0	0
Norden	331	10	0
Davey	325	0	0
Carter	312	0	0
Snewin Bros. & Co.	297	0	0
Hart	295	10	0
Rayner	295	0	0
Westgate	279	0	0
Smith & Son	245	0	0
Wright, Springfield (provisionally accepted)	225	0	0

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The Building Trades Exhibition, Olympia.



ALL roads appear to have been leading to Olympia during the past fortnight. The great building can absorb an enormous number of people without suggesting a crowd. Nevertheless there have been many times when it was impossible to make one's way in comfort among the stalls. A genuine interest in what is shown is manifested by the majority of visitors, who usually appear connected directly or indirectly with the building trades. Perhaps we might include under this head the Prince and Princess of Wales, who spent some two hours in making a tour round the building. They, like many others, found attraction in the collection of loan drawings displayed in the annexe by the proprietors of *The Architect*. Mr. P. A. Gilbert Wood, the managing director of *The Architect*, was in attendance, and was called upon to answer questions relative to them asked by their Royal Highnesses, who afterwards made use of the temporarily installed Waygood's lift in ascending to the gallery, under the direction of the chairman, Mr. Henry P. Walker, and Mr. D. W. R. Green. His Royal Highness referred to the lifts erected by Messrs. Waygood in Marlborough House in commendatory terms. The Prince's request to be shown some New Zealand timber was gratified by Messrs. Oliver & Sons, Ltd., who have their stand in the centre of the hall.

The view we give will indicate the business-like appearance of Olympia during this highly-successful exhibition, as seen from the gallery.

The Swansea Stone Block and Machine Company are the sole agents in this country for the Pettyjohn system. As might be expected, it comes from the United States, where hollow concrete blocks have been established some years. In this case the concrete is rammed into the machine in a half-dry state; when this is done the cores are taken out and then the whole machine removed to form the next block. By this process twenty can be made in an hour. There are no cogs, springs or levers to get clogged by the cement. It is said to be possible to erect a six-room house and render it fit for habitation in less than four weeks, at a cost of about 150*l*. Application has been made to the authorities to allow 175 workmen's cottages on the Pantygwyr estate to be built with hollow concrete blocks.

Messrs. T. C. Fawcett, Ltd., have at work a new patent multiple-roller wirecut brickmaking machine, which will make either 8,000 or 25,000 bricks per day by simply varying the speed of the driving pulley, it only requires 8 horsepower to drive. It consists of three pairs of rollers of different diameter, but each 10 inches wide. The clay space between the first pair is 1 inch, between the second pair 3 inches and between the third 5 inches. A feed roller is placed in the hopper of machine. The clay passed through the first pair of rollers expands into the space between first and second pair. It then passes along in a column 3 inches thick to the space between second and third pair of rollers, the latter of which forces the column 5 inches thick through a die of the required size of brick. The internal friction is thus reduced to a minimum, the whole pressure of clay coming directly on to the mould. It will make special shape bricks, perforated bricks, drain-pipes or flooring tiles as desired. Messrs. Fawcett exhibit other appliances for brickmakers, such as a self-starting power cutting table, a power safety brick and tile press and a duplex portable press.

The Bexhill Casement Window Company have done away with pulleys, sash-cords, weights and rattling, and other evils under which the householder has been silently or loudly groaning, according to his temperament, for so many years. The company promise the new generation that driving rain or howling wind shall no longer force its way into rooms as heretofore. The full-size models exhibited inspire confidence that a great advance has been made towards affording an escape from the old shortcomings of sash-windows. Domestic servants have to be considered at the present time, and the "Bexhill" window cannot fail to win their warm approval for its safety in cleaning. The occupants of a room will no less appreciate it. When a big wind is blowing from one side the window can be made to act as a screen, leaving part of the frame open on the other. The window is formed of two sashes, hinged in the centre. To open it all that is necessary is to lift the catch, throw back the lever of the lock and then press outwards on the centre of the sash. The extreme sides reverse the runners and come towards one another, making

a V-shaped window with the point outwards, and leaving a free space on each side; or one side of the window may be left fitted into the frame and the other brought up to it, leaving nearly the entire window without any impediment to the ingress of air. In either case the two sashes can be firmly locked at any point along the entire length of frame. Every part of the glass can be reached for cleaning purposes from the inside of the room.

There is something of an *embarras de richesses* about the stall of Messrs. Nettlefold & Sons, Ltd. Their stand shows the new "Coburn" overhead trolley track as used in moving heavy weights about warehouses, &c., and also new and elaborate designs for door handles. Between these two extremes comes much else to interest architects, engineers and builders. Messrs. Nettlefold have acquired the assignment of all the British patents of the "Bardsley" oil door check and spring, and checking springs, &c., so that these will in future be of English workmanship. The door check is noteworthy for the fact that it may be applied to either hand or either side of a door without any change, and that no packing is used. Specially prepared oil is used as a checking medium. Their sliding doors and sliding collapsible partitions hang clear from the ground. The general ironmongery shown is worthy of the reputation of the company. The door furniture ranges in style from Mediæval to l'Art Nouveau. They are the sole agents in the United Kingdom of the Bullard patent automatic pipe wrench, which is worked by hand. When applied it opens instantly and closes itself till it grips, which it does without crushing.

John Whitehead & Co., Ltd., manufacturers of brick, tile, pipe and clay preparing machinery, have brought to Olympia a patent multiple edge runner mill for grinding clays, shales, &c., so thoroughly that it can pass immediately to the brick-making machine. It is built in three sizes, and may be constructed for either wet or dry grinding. The improvements claimed for it are greater crushing area and economy in space required. Material is gradually reduced and more thoroughly ground, for it is operated on by the six runners. By economy of motive power and labour the wear and tear is reduced to a minimum.

The display of wall-papers made by Arthur Sanderson & Sons, Ltd., will probably have the effect of stimulating

the seasonable fashion of having houses "done up." Particular importance appears to be attached by them to the proper blending of the friezes with the paper. The frieze affords the greatest scope for originality, and at the stand there are many pleasing designs. Some of them are veritable pictures—as the Rillington Hunt frieze, which would inspire any young mind with a longing for the chase; others are more purely decorative.

Mr. Mark Gentry devotes one side of his stall to the red and ornamental bricks which he manufactures at Sible Hedingham, in Essex, and the other to displaying the products of the Pioneer Glazed Brick Company, of which he is the London representative. The letters Pioneer on the top are in white glaze with brown as a background and stand out with great prominence.

Jabez Thompson & Sons, Ltd., are manufacturers of terra-cotta in numerous forms. Their stand was designed so as to suggest its architectural possibilities. Terra-cotta may be obtained glazed or unglazed, vitreous or plain, in grey, pink, red, buff, salmon-buff or other colour as desired. Their patent "Terrawode" brickwood for partition walls is a very porous earthenware, about half the weight of ordinary bricks or concrete, averaging 50 lbs. to the square foot. Nevertheless, a Kirkaldy test proved that the crushing strain on six "Terrawode" blocks 9 inches by 4½ inches by 3 inches was 1,526 lbs. per square inch or 100 tons per square foot. The British Fire Prevention Committee demonstrated its qualities in another direction. The material withstood a four hours' test up to 2,100 degs. Fahr., and then for five minutes a steam fire-engine played water upon the partition. It is sound-proof. Nails can be driven in without difficulty and it can be sawn. The "Terrawode" patent thin partition is made of slabs of the brickwood, averaging 12 inches by 12 inches by 2 inches or 3 inches thick. These are tongued and grooved on two edges, and are square on the remaining edges. The partition is so constructed that in every groove the tongue of the upper slab rests embedded in mortar, and when the partition is plastered on both sides, the whole combination of slabs unite, and become a firm stiff mass. Brickwood is supplied as circular blocks or square slabs for the protection of steel or ironwork. After two and a half hours' test by the Fire Prevention Com-

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STRUCTURAL ENGINEERS.

ESTABLISHED 1802

OUR SPECIALTY
IS THE
IMMEDIATE DELIVERY
OF
PLAIN & RIVETTED
STEEL WORK.



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Steel Works supplied and erected by Messrs. Redpath, Brown & Co., Edinburgh.

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ANGLES & PLATES.

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Riverside Works,
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Office: 75 Bath Street.
Pinkston Works,
Port Dundas.

MANCHESTER

Office & Works:
Trafford Park.

Section Books & Stock Lists on Application

ILLUSTRATIONS.

NEW PREMISES, CORNER OF LOTHBURY AND PRINCE'S STREET,
BANK, E.C.

NEW POST OFFICE, ABERDEEN.

NEW HOUSE SCHOOL, CLAPHAM COMMON, S.W.—THE ENTRANCE.

ittee, when the temperature was nearly 2,000 degrees
hr., all the steel stanchions so protected were in position
the removal of encasement and found to be unaffected.
their patent floor is constructed without the use of concrete.
"Terra-wode" is made to serve numerous special and
important purposes.

Last week we were only able to make a hurried allusion
Xelite plaster, and unfortunately it was misleading in
the important respects. *Clark & Co.* have placed on the
market a slow-setting English made hard plaster to rival
Cene's or Parian cement. Large gaugings can be made
a time, so that a workman may prepare in the morning
efficient to last him throughout the day. Water float-
ing improves rather than injures the wall. There is no
aste, as all the droppings and remnants can be tempered
and used. The rendering hardens gradually and increases
strength. The finish is remarkable for hardness and
flexibility.

John Yates & Co., Ltd., have a representative collection
of tools for contractors, and public authority use, including
their well-known "Bull" brand shovels, picks, spades,
rafting tools, road wedges, crow-bars, hammers, &c. They
so exhibited their new road danger lamps, which they
have recently put on the market, and illustrations of their
approved rotary screen.

Messrs. Machin & Koenig have supplemented their
exhibit of compoboard and panelling by E.T. slabs, or extra-
light slabs, of asbestos cement. They seem to be proof
against all the enemies of building, whether it be fire,
damp atmosphere, rot or vermin. The triple virtues are
great size, strength and cheapness. The slabs can be
worked by ordinary carpenter's tools, and may be painted
after a coat of priming, papered or distempered immediately
after fixing, which is done with galvanised steel nails.

Messrs. Lewis & Co. apply a patent flexible mastic
asphalte to damp-courses, roofing-felt and slaters' felt. In its
manufacture a chemical process is employed so as to make
the substance very highly compressed. Their felt is largely
used for roof covering, sheds, outhouses and barns; it is
also used under galvanised sheeting, slabs or tiles, &c.
Should a portion of the tiles accidentally become defective
it would still be sufficient covering.

Maughan's Patent Geyser Co., Ltd., intend the "Gacylote"
automatic cylinder for general house supply. To warm
15 gallons of water to 140 degrees it uses 20 feet of gas.
To maintain it at that temperature the supply is auto-
matically reduced to 3 feet. When hot water is drawn off
and cold water enters the geyser the gas supply again turns
on fully, until the water is heated to 140 degrees again.
The "Finsbury" circulating boiler is a similar principle on
a reduced scale. Their "New Teb" and other geysers are
en évidence.

The feat of making one fire stand in two rooms sepa-
rated by a solid brick wall has just been achieved by
Messrs. E. & C. Braby. This is no illusion, but is worked
by means of their patent revolving stove. The circular
stove is placed in two back-to-back chimneys, and is divided
by firebricks. One-half is lighted, and when the first room
is warmed a bolt is raised and the fire swings into the other
grate behind. The firm show a few of their wood mantel-
pieces, steel hob and dog grates and iron mantel registers.
The visitor would be more than hard to please who could
not find something to win his admiration.

The London Building Acts (Amendment) Act, which
came into operation last year, ordains under section 12 that
all trapdoors shall be made to open automatically. To meet
this requirement, the "Bafeco" fire escape was put on the
market by the *Building Acts Fire Escape Company*, and has
received the approval of every district surveyor in London.
It is the patent invention of Mr. E. J. Sadgrove, the archi-
tect. At the stand of Messrs. J. A. King & Co. there are a
number of models that show the apparatus fitted under
different conditions. In one the apparatus raises and
lowers the ladder as well as the roof-trap and ceiling-trap;
another is without the ceiling-trap, a third has a fixed ladder
with only the outer trap in operation, and a fourth shows
how the trap-door and ladder in a flat roof are worked. A

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THE KAHN TRUSSED BAR IS A
SCIENTIFIC & ECONOMICAL REIN-
FORCEMENT.

MARK THE FIXED SHEAR MEM-
BERS. THEY MEAN—TO THE
CONTRACTOR, RAPIDITY AND
ECONOMY OF ERECTION—TO THE
OWNER THEY MEAN EFFICIENCY
AS WELL.

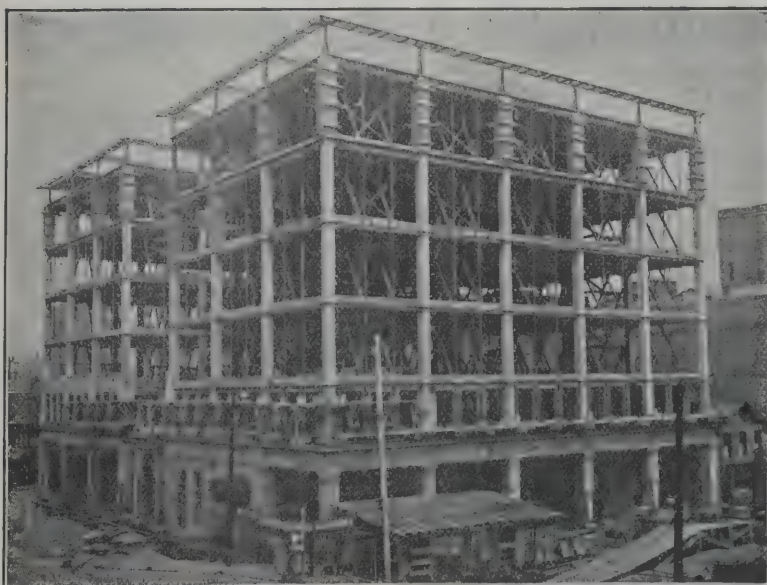
NO LOOSE MEMBERS TO FIX.

WE CHARGE NO ROYALTIES.

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BUILDING EXHIBITION, OLYMPIA, Stand No. 13.

An Example of the Kahn System.



THE UIHLEIN BUILDING.—KIRCHOFF & ROSE, ARCHITECTS.

We want your enquiries for Foundation Rafts, Footings,
Beams, Floors, Landings, Staircases, Roofs, &c.



**TRUSSED CONCRETE STEEL CO.,
CAXTON HOUSE, WESTMINSTER.**

full-size trap-door (fitted as in use) demonstrated the infinitesimal exertion needed to open this trap-door; a slight pull on a handle releases the locking catch (which prevents the trap-door being opened by unwelcome visitors on the roof), and the trap-door opens silently and easily—very little exertion was needed to close it again. At the same stand we see common clay or gault bricks transmogrified into high-class glazed bricks with an impermeable surface. The



sample bricks on view are ordinary building bricks from well-known brickfields near London, and they are glazed with a pure white impermeable glaze which will neither crack, craze nor fly, and is unaffected by the atmosphere—it is unstainable and will always remain white. They triumphantly withstand a rigorous ink test.

A tasteful pavilion, designed by Mr. R. F. Atkinson, has been erected to display the bricks of *C. H. Norris, Ltd.* The quiet charm is due in no small measure to the broken colouring of the brickwork. The "C. H. N. mark" of red hand-made sand-faced brick are manufactured in three shades—light, medium and dark. It is roofed in "Precelly" slates, likewise of various tints.

The Frazzi fire-resisting floors, ceilings, roofs and partitions are shown by the *Frazzi Fireproof Construction, Ltd.*, at the stall of A. W. Green & Co. The partitions are of three-inch blocks, which is a thinness prohibited by most by-laws. However, in some happy spots which are untrammelled by out of-date Acts, we find houses, hospitals and churches erected with them, and the results have been most satisfactory. In certain towns they have been

approved for use on temporary buildings. The Windso authorities are negotiating with the Local Government Board for such modification of the by-laws as would permit the unrestrained use of Frazzi partitions. Frazzi ware is a fine porous terra-cotta made at Cremona, Italy. Its lightness is suggested by the fact that the "Excelsior" partition two and a quarter inches thick, weighs seven pounds to the square foot. They may be built upon the ordinary floors of a building without any special provision for supporting them, and no fixing to walls or ceilings is necessary. Messrs. D. Kirkaldy & Son carried out tests in 1902, and the results proved the great strength of the material. In a test at Cremona couple curved slabs, having a span of 8 feet 6 inches and a rise of 8 inches, the load per square foot was $8\frac{1}{2}$ cwt. For ceiling and roofwork there are straight curved and slightly curved slabs, ceiling slabs and roofing slabs. There are many ways of using them under varying circumstances. In one type the floor is composed of three parts, the joist covers (specially designed for the purpose), the straight slabs 3 inches thick and the ceiling slabs, which may be the hollow slabs $1\frac{1}{8}$ inch thick, or the ribbed slabs $\frac{5}{8}$ inch thick. The upper surface is nearly flush with the joist flange, and the lower surface forms a flat ceiling suitable for plastering. Between the floor and ceiling slabs an air-chamber is formed. It is sound-proof, and is particularly suitable for receiving wood-block or parquet flooring. No centring is required in its construction. The hollow spaces are of great value for carrying gas or electrical mains, and may be used also for ventilation if desired. Frazzi is used for girder and stanchion casings and conduits for electrical cables.

The unostentatious architectural character of the stall of the *Lithographic Stone and Marble Company, Ltd.*, and the *British Building Stone Company, Ltd.*, makes it conspicuous. Its impressiveness is increased rather than diminished after hearing an explanation of the processes to which the stone and marble have been subjected before they arrived at Olympia. It appears that blast-furnace slag has for these nineteen centuries been under a cloud, and it has only now received its due. By the new process the slag is really marble—Connemara green, Rosso Antico, Broccatella, Sienna, Egyptian porphyry, light Cippolino and even lapis

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SOLID OAK PANELLING

DAMP TROUBLES ENDED

BY USING

= PATERSON'S BITUMEN SHEETING. =

Doesn't LEAK.

Doesn't CRACK.

Doesn't ROT.

Absolutely Waterproof.

Keeps the heat out in summer.

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Just the roofing material for all weathers
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Made in various thicknesses and widths.

Write for Booklet "Y" and Sample.

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Sole Makers: JOHNSON & PHILLIPS, Ltd., Victoria Works, Charlton, S.O., Kent.

all— all these and other marbles and stones are waiting use in a heap of furnace slag. Building stones are ned out in a similar manner. As recently as October 12, 1906, we described the process of manufacture, so we ill not repeat our account. The company claim to b in a position to reduce the cost to the building er by at least 25 per cent. In anticipation of the and which they confidently anticipate the company is e enlarged so as to increase their output tenfold.

"The Only" is a name given to Grundy's patents, which sold by the *Sanitary Appliances Syndicate, Ltd.*, and it is l of them that they are "the only fittings which conform modern ideals of sanitary science." A specialty is made school equipment. It is out of the question, owing to limitations as to space, for us to comment in detail on appliances with which the syndicate advance the cause public health. They fill no less than five pages of the ibition catalogue, and comprise patent silent closets, is, gullies, anti-flood and other valves, cisterns, &c. All designated as "The Only," and we have suggested ve the high standard which the company have set up.

The "Notlor" patent chimney-stack cappings are so e-structed that the different parts when bedded and jointed, o having lime concrete poured in holes made for the e- pose and well grouted, are bonded and held strongly e-ther, forming one solid capping over whole of stack, eaving only openings of required size for cementing in g-ots of chimney-pot seatings and flanchings. *Messrs. eley & Taylor* make patent chimney-pots, which are self- ing, detachable and interchangeable.

The "Devon" fire can have made few enemies during its eer. But we venture to suspect that *Messrs. Candy & Co., Ltd.*, the makers, are cordially disliked by a small ugh influential body—we mean colliery proprietors and e-eholders, who see a menace to their profits. Our eaders may remember that joint tests were carried out last ur by the Office of Works and the Coal Smoke Abatement e-ety, under the direction of Sir Henry Tanner, at the e- Government offices, Westminster. During the thirty- e- hours the "Devon" fire consumed 20.43 lbs. of coal, e- less than two-thirds of a pound per hour; while the e-er thirty-six competing grates had an average total on- e-ption of 27.92 lbs., which is an increase of over 25 per

cent. Nevertheless the heat of the "Devon" was nearly 4 per cent. higher, and the smoke produced was 25 per cent. less. *Messrs. Candy & Co.*, with two other firms, were bracketed as first in the test. In the "Devon" fire the coals are placed direct into the sunken slab, and there are no air holes, sufficient draught coming from the top. This peculiarity leads to no difficulty in lighting; the fire may either be laid in the customary way or a little coal may be placed as a foundation layer under the paper. *Messrs. Candy* have always in stock a large variety of designs which are suitable for any description of room. They are in addition showing glazed terra-cotta bricks of many kinds, tiles and much else.

The *Hard York Nonslip Stone Company* have an excellent show of their nonslip stone, applied to both architectural work and paving work. The stone is very pleasing in colour and texture, and as it is made solely from crushed "silex" stone its life and wear are beyond dispute. The special feature of this stone for pavements and mosaics is the fact that it never becomes slippery in wear, and is therefore a very "safe" stone for paving. We commend it to the notice of all interested in paving work.

Anyone contemplating the use of "improved cork pavement" must see the samples shown by *Cork Asphalte, Ltd.*, the sole manufacturers. It is a compound consisting principally of bitumen and cork, and is made for use in court-yards, stables, mews, &c., in homogeneous blocks of uniform size. The three adjectives claimed are non-absorbent, non-slipping and noiseless. Durability is another quality, of which many convincing proofs are available. Twelve years ago it was laid in Tattersall's sale yard and the east suburban entrance of the Great Eastern Railway station, eleven years ago in the L.C.C. stables at Lambeth. Photos taken in 1906 tell that the surfaces have survived wonderfully the severe test. In 1898 it was laid in the Royal Mews, Buckingham Palace; in 1902 one of the officials wrote, "We have been anxiously waiting for centre of mews to be laid with it." In the same year it was put down at Windsor Castle, with "excellent results," to use the phrase of H.M. Office of Works. It is recommended for stair treads.

The *Gilmour Door Company, Ltd.*, might appeal to the public for attention on Imperial grounds, for they originate from Canada. Presumably they are confident of being

Brilliant

Letters, Brilliant Facias and Signs of every description go to the Original Patentees and Manufacturers and **save at least 20%** while securing the highest grade work, instead of the inferior imitations.

1907 prices keener than in 1906, owing enormously increased over. Ask for Catalogue.

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We supply *bona fide* builders with Brilliant letters for window work and facias with full instructions and cements for fixing.

By Brilliant Sign we manufacture GUARANTEED FOR 15 YEARS. Extra charge for our improved on backgrounds. are mendacious imitations.

Note Headquarters for Brilliant Signs and Letters.

38 Gray's Inn Rd., and Branches. W.C.

arded Diploma at Cheap Cottages Exhibition, Garden City, Letchworth.

GOLD MEDAL.

COMBINED RANGE, COPPER, AND BATH WITH HOT-WATER SUPPLY, FOR MODEL DWELLINGS, COTTAGES, &c.

Adopted by the . . . London County Council for Block Dwellings and Cottages. The Corporations and Borough Councils of Battersea, Camberwell, Hornsey, Manchester, Rotherham, Hanley, Gillingham (Kent), &c. Peabody Buildings, Bournville Village, Garden City (Letchworth), Garden City (Belfast), and for many other Municipal and Private Housing Schemes throughout the Country.

The "ELLKAY" FOLDING BATH For BEDROOMS and DRESSING-ROOMS.

The POPULAR "ELLKAY." A CHEAPER BATH FOR ARTISANS' DWELLINGS.

Specifications, Working Drawings and Estimates on application.

ELLKAY & CORNES, LTD.

Bath House, 59 Holborn Viaduct, LONDON, E.C.



BATH-ROOM OPEN. Awarded Royal Sanitary Institute's Medal.

Telephone No. 11,921 Central. Telegrams, "BATHROOM, LONDON."

Side of Fitting; Copper and Bath at back.

strong enough to dispense with such an incidental merit, and prefer to let the doors speak for themselves. Their aim was to build the hardwood doors in such a way as to exclude all possibility of warping, twisting, splitting or blistering, and to render the made-up (say oak) doors equal to the vastly more expensive solid oak doors. Taking the construction of oak doors as typical of the other hardwoods, we might say there is a corrugated oak facing with a core of another wood laid in blocks giving a cross grain. The end of the door is solid oak to about an inch so as to allow of any planing. The panels are five ply, likewise so built as to give an alternating grain and with an oak facing of the same or another wood. The entire door is brought together under great pressure. Their hospital doors (of which 180 have been fitted at University College Hospital) are made with an absolutely flush surface both sides and on a similar scientific principle.

Messrs. Joseph Brookes & Sons, of Hipperholme, Halifax, are exhibiting their noted "silex" stone, a very fine grained natural York stone, specially suitable for steps, landings, pavings, &c. This stone is quarried at a depth of 80 to 90 feet below the surface, and is of such a nature that it will withstand a crushing strain of over 17,000 lbs. per square inch. The stone has been used for many years by H.M. Office of Works and many leading architects, and amongst the recent works carried out may be mentioned the following:—The new War Office, Local Government Offices, Admiralty Buildings, Royal College of Science, extensions to British Museum, &c., in all of which the staircases throughout have been built in this stone. The exhibit includes a few steps for a winding staircase at the British Museum and also steps for the new Public Offices. The finish and masonry of these leave nothing to be desired.

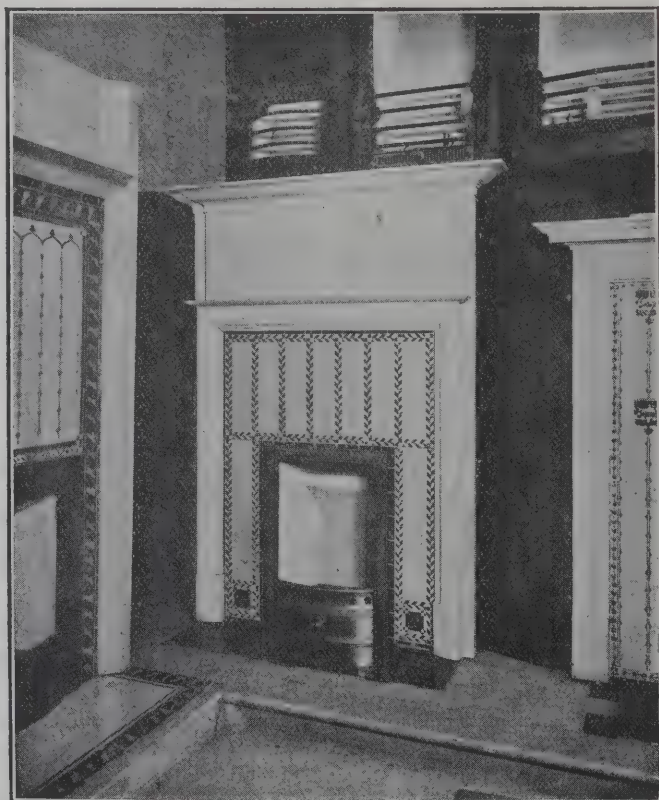
The 15-feet high Austrian oak corner pillars on the stand of *Hofler, Ltd.*, direct immediate attention to their high-class woodwork, which comes from their large factory near Vienna. The firm's art metalwork, however, is produced entirely in London, a fact which may be noted with some pride. For if the woodwork and carving are excellent the other is no less so. Part of the stand is laid with "Durato" flooring in which asbestos largely enters, and which is described as nearly as cheap as linoleum, almost as durable as granite. There are in addition rolls of their

patent asphalted sheet lead damp-course, of which during nineteen years more than ten million yards super have been laid. It consists of a continuous perfectly non-porous foil of lead embedded between two fibrous asphalted layers. Special thicknesses of lead foil are obtainable.

Messrs. Benham & Sons, Ltd., supply a class of goods which is as indispensable to most buildings as bricks and mortar. Indeed, of recent years houses have been built without bricks or tiles, whereas ever increased attention is bestowed on cooking apparatus. Consequently, no builder or architect should neglect to see the present-day apparatus whatever else they may wish to pass over as being of fleeting importance. Anyone who has to make arrangements for fitting up kitchens where cooking is to be done on a large scale should carefully examine the central hot plate shown. It is made of wrought-steel, as this material has proved far more durable than those made of cast-iron. Very heavy metal is employed throughout. There are three ovens and two fires on each side, with a steam-heated closet and hot and cold-water supply, and a plate rack is placed on the top. Their patent "Wigmore" kitchener has a perfect roasting fire, enclosed by folding screen doors and vertical bars, two good ovens, a serviceable hot plate with heavy metal, tiled or cast-iron coverings, and a plate rack (which can be closed by doors, forming hot closet) extending the whole width of kitchener. It is made in all sizes up to 24 feet. Further culinary equipment is seen in a three compartment steam oven, a hot closet or plate warmer, a charcoal and a gas grille, and a "Wigmore" independent boiler and cylinder.

The Cavity Ventilating Building Block Syndicate, Ltd., show their novel system on the stand of Messrs. Sutcliffe, Speakman & Co., Ltd. In the manufacture of the patent blocks almost any material can be used, such as cement, gravel, stone, slate debris, burnt ballast, dust destructor refuse, mine tailings, &c. They are made for 6-inch, 9-inch, 14½-inch and 18-inch walls and upwards. In construction the exterior walls consist of two separate blocks, spaced about 1½ inches apart and bound together by a concrete dowel which gives them the rigidity of solid walls and the advantages of hollow ones. The cavities are so constructed that the buildings are ventilated both horizontally and vertically.

THE WELL FIRE CO., LTD.



THE "PYRAMID" GRATE (Patent).
NEW PRICE LIST ON APPLICATION.

33 Dover St., Piccadilly, W.

SOLE MAKERS:

Bowes' "WELL" FIRE
Patent

AND

"PYRAMID" FIRE

THE "PYRAMID" GRATE has a FALSE HEARTH fixed or movable, the upper side of which is a slab of firebrick upon which the hot ashes fall. This forms a regenerative hot-air chamber under the bars, and secures perfect action and **GREAT ECONOMY**. The underside is formed of cast-iron, and being raised above the ordinary Tile or Stone hearth, it forms a cold-air chamber, and **PREVENTS THE POSSIBILITY** of an unexposed timber under the hearth **BEING IGNITED**. This is a real danger arising from the use of most low types of grate which have not this protection.

PATENTEES & SOLE MAKERS:

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between floor joists. The company have turned to practical use the lessons taught at the 150^l. cottage competition at Letchworth, and their five-roomed villa combines the points of the prize cottage and the recommendations of the National Housing Reform Council. They are prepared to take contracts to erect cottages for that figure. The whole system is based on standardisation. The interior partitions are the same principle line up with the outside walls. The faces can be coated and then highly pressed so as to show marble or mosaic, or anything of that kind. The company are ready to hire out the specially-prepared plant for the purpose of manufacturing these blocks on the ground of proposed building sites ripe for development, also to the owners of granite and other quarries or works where the use can be utilised in the manufacture of the cavity ventilating building blocks, flagstones, tiles, &c.

Messrs. Brookes, Ltd., of Halifax, London and Manchester, are making a special show of the granite productions from their extensive quarries in Norway, Sweden and Guernsey, and the samples shown are very interesting. The architectural work from Ystehede quarry proves clearly that the rock is of a specially fine quality, and the workmanship is not lacking in any respect. In setts and macadam, specimens from Norway and Guernsey are shown, and we think, generally speaking, surveyors and engineers will find that this exhibit is worthy of special attention.

The "Kulm" patent fireproof partitions are made by W. Cullum & Co. in slabs 42 inches long by 11 inches wide and from 2 inches to 4 inches in thickness. Their principal aggregates are volcanic sand and pumice, with Portland cement to bind them. Their introduction where heavy loads have to be carried is not advisable unless other means of support are provided, as might be expected from their great lightness, being 75 per cent. less than brickwork. They have been used in the construction or alteration of many London theatres, clubs, railway stations, hotels, &c. On the same stand there is hung a coil of wire rope made by the Bristol Wire Rope Co., who are the inventors and sole manufacturers of patent ladder grips and improved galvanised flexible steel wire scaffold lashes, &c. The conspicuous coil exhibited should receive more than a momentary glance from passing contractors. It is something that directly concerns them.

The Baumann blinds can act as Venetian blinds or sun blinds or shutters, to suit the exigencies of the moment. They are made of thin white or red pine laths, cut obliquely and fastened to metal bands. The sides run in guide slots. To serve as Venetian blinds they are worked in the ordinary way. To serve as sun blinds the metal frame is thrown forward by a simple projecting apparatus, in which position it can be raised or lowered from within by an endless leather cord. To serve as a shutter, the bottom is locked. A blind 6 feet in length will roll up into a space of 6 inches. Mr. W. Baumann is exhibiting in the annexe.

The Mansfield patent "Self-Centring" socket pipes, of which Mr. H. Rylatt is the patentee, have attracted international attention. They defy careless workmanship, inasmuch as one pipe on being fitted into another cannot be laid otherwise than in perfect alignment, thanks to the "bars" which keep the spigot to the dead centre. The joint is made with Portland cement. In an experiment carried out last month on two 6-inch pipes, in order to test the soundness of the joint, when the head of water sustained by it was 40 feet there was only a very small weeping at top of joint, which proved to be due to a slight air space in the cement. But no sign of moisture showed at the base. According to the report, "The bars showed no tendency to separate from the cement, and they were entirely embedded simply by putting the cement in joint after placing pipes together. The joints stood excellently." The slightly increased cost of the pipes is more than counterbalanced in the reduced cost of laying. H. R. Mansfield shows other sanitary manufactures.

The Timber Corporation, Ltd., possess large jarrah forests in Western Australia. This red hardwood has long enjoyed a high reputation as paving blocks. Jarrah when fresh cut weighs a little more than 70 lbs. per cubic foot, which is reduced to 60 lbs. when it is properly seasoned. It has been utilised for railway sleepers, piles for dock and harbour work, waggon and carriage building, engineering and constructional purposes, building and all general work, fencing, &c. The stand has been converted into a room to show jarrah wood furniture as made by Messrs. Waring & Gillow. The effect is handsome.

Brown & Co., of Glasgow, are exhibiting their "Simplex" window fittings, which, being fitted to either new or old

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casements, enable the windows to be brought into the room for cleaning. In Scotland they attach great importance to this subject. In 1895 Brown's fittings were adopted by the Glasgow Corporation, and, according to the Glasgow Building Regulations Act (1900), it will be a penal offence after July 31, 1907, to have windows above the ground floor unprovided with means of opening inwards for cleaning purposes. The fittings are officially approved also by the Edinburgh Corporation, and we might add that unofficial approval is bestowed on them by all who use them.

Merchants and manufacturers such as *Messrs. W. R. Froy & Sons* must experience curious difficulty in deciding what they will select for exhibitions. At their show-rooms in Hammersmith they have more than 11,500 square feet of floor-space at their command. Olympia demanded exercise of great elective talent if the stock was to be adequately suggested. They show ranges, stoves and builders' ironwork. Those in search of a cheap grate, mantel and surrounds should ask to see the "Sackville."

The Westminster Sanitary Works are well represented. *Messrs. Davis, Bennett & Co.* show two model bath-rooms that would captivate even the great unwashed and render the thought of a thorough cleansing a delight instead of a terror. Baths of all sorts may be seen together with all kinds of adjuncts. Sanitary appliances of many kinds are on show—urinals, sinks, w.c.'s, drainage fittings, &c. They have a fine selection of enamelled tile dadoes.

The *Van Kannel Revolving Door Co., Ltd.*, have every reason to be gratified by the attention bestowed upon their exhibit during the past fortnight. Many of the visitors have never perhaps had a previous opportunity of seeing it, although the door is fitted in several large hotels, restaurants and offices in London. Four door wings are attached to a central pivot, which work in a circular casing. They so revolve that two of the four arms are always in contact with two opposite segments of the casing, thereby excluding any possibility of draught, the entry of fog, &c. These wings can be folded together, two on each side of the half-circle, like a diameter; and, furthermore, they can when so folded be pushed to one side, leaving the circular frame practically empty. The doors are recommended for factories, warehouses, cotton and woollen mills, and work-houses, kitchens, &c., as well as more expensive structures.


A striking panorama has been displayed by the *Road Maintenance and Stone Supply Company, Ltd.* Framed in imitation rockwork is a large view of the lower breaking platform of their quartzite quarries in Cherbourg, with small figures represented as busily engaged in supplying the demand made for this hard compact blue stone by road surveyors and engineers. The company work quarries in Cherbourg, Guernsey, North Wales, Germany and Quenast.

The *Fireproof Company, Ltd.*, are exhibiting dovetail corrugated steel sheeting, and show in a practical form the construction of fireproof partitions, which finish at a minimum thickness of 2 inches, also 3-inch work, to conform to L.C.C. requirements for enclosing lifts and staircases. The sheeting is equally applicable to straight and circular work. As arch centring for concrete floors it provides a good key on the underside for plastering, or it can be left for painting. Their cheap form of fireproof floor has special section beams of bow shape calculated to contain the minimum amount of metal required to carry the load anticipated. No. 3 section is for laying on the tops of wooden joists and forming a thin concrete floor suitable for sculleries of flats and light roofs. Various sections of rolled steel joists have been brought from their stock at Lambeth Works. There is a novel form of damp-course formed of No. 3 section of corrugated sheeting, which can be covered on both sides with cement, forming an impenetrable barrier against the rise of damp. The Camjud partition slabs shown are claimed to be the cheapest fireproof partitions on the market. A feature to particularly note is their hollow fireproof and soundproof partition, which can be constructed at from 5 to 6 inches finishing thickness.

"Dodo" is a distinctive name applied by *Messrs. Duggan, Neel & McCollm, Ltd.*, to their japan; enamel, which can be had in any colour, and flattening. Their stall demonstrates the high quality of these materials, and it cannot fail to bring joy to the decorator.

The direct simplicity of the exhibit of *Sutton & Co.* makes a forcible impression. No futile attempt is made to decorate their imposing collection of stoneware goods, which comprise pipes and connections, conduits and troughs for electric cables, &c.


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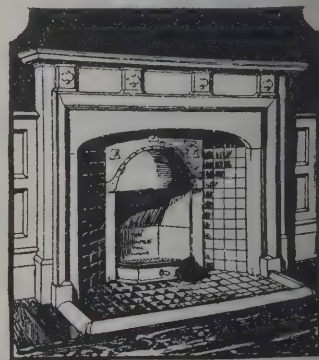


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Published every Friday by **GILBERT WOOD & Co., Ltd.**, at the
Offices, 6-11 Imperial Buildings, Ludgate Circus, London, E.C.

The *Limmer Asphalte Paving Co., Ltd.*, principally obtain their mineral rock asphalte from Ragusa, Sicily; Hanover, Germany; and Montrotier Seyssel, France. The London works are at Learmouth Wharf, Blackwall, E. As everybody knows, the asphalte is used for roofing, flooring, lamp-courses and other purposes. It has been adapted to Bishop's patent non-slipping stair-tread.

The *Bristol Waggon and Carriage Works Company, Ltd.*, include among a large assortment a light builder's, and one for heavier purposes. They show other vans to catch the attention and orders of borough surveyors and similar officials, such as their patent improved four-wheel water-van (which dispenses with the customary distributing pipe or box); an ambulance van; a new and improved patent screw tip waggon with their automatic covers and jack board, which rise clear of the load when the waggon is tipped.

Messrs. J. O. Grant & Taylor are electrical engineers and contractors. The designs of their electric table-lamps must commend themselves. They display numerous other aids and appliances for utilising electricity under many forms.

A large ornamental pond in which goldfish can be watched disporting themselves (an occupation affording harmless amusement to many) is the striking method chosen by G. M. Callender & Co., Ltd., to display the virtues of the lining material "Callendrite"—a pure Trinidad lake bitumen sheeting. It abundantly proves itself to be innocuous to fish and plant life, and could be safely employed for lining reservoirs, swimming-baths, basements, &c.

An interesting exhibit is that of the new jointless flooring "Doloment" at Stand 203 Annexe. Although only recently introduced into this country, the *British Doloment Company* have secured contracts with H.M. Office of Works, War Office, London County Council, &c. The great claim for "Doloment" is that by the patented method and material utilised and the elasticity of the intermediate layer, it overcomes the great difficulty which has hitherto been associated with systems of jointless floors, so that although the foundation upon which it is laid may settle or crack, "Doloment" retains an unbroken surface. This system of flooring can be laid on any surface, whether concrete, cement or wood, and is absolutely non-porous; it is therefore impervious to dust, liquids, insects, &c. The

material permits of fine finish either with an effect of mosaic or marble.

The *Patent Adjustable Bath Company* are showing their patent "Tip-up Bath" at Stand 56, Row B, a useful little novelty for flats, tenement houses and the week-end cottage. Very little space is required for fixing, and as there is no fitted tap over the bath the water rate is not increased. This invention makes it possible to bring the luxury of the bath into every cottage throughout the country. A large number are in use at Bournville and have given every satisfaction.

The space at our command being circumscribed, we are forced to regretfully admit an inability to note all the innumerable interesting and instructive exhibits brought to Olympia. At the end of the official catalogue there is a classified list of exhibits. It appears wisest to follow that order, and to mention such firms as have not been previously noted by us. The makers of *Art Metalwork* include—Crittall Manufacturing Co., Ltd., Gawthorp & Sons, Kupron, Ltd., Stanley Jones & Co., and E. Worrall & Co. *Artificial Stone* is shown by British Doloment Company, Ltd., and other firms, to whom allusion has already been made. *Baths* as supplied by the Patent Adjustable Bath Company, Shanks & Co. (with five bath-rooms fitted up) and Winkle & Co. *Blinds* by Messrs. G. A. Williams & Son. *Boilers, &c.*, are shown by Fenlon & Son, R. O. Meyer, Ltd., and the Phoenix Engineering Company, Ltd. *Brick, Tile and Pipe-making Machinery* shown by P. Bawden, Johnson & Sons, Ltd., T. Middleton & Co., Ltd., Nuneaton Engineering Company, Pullan & Mann, the Rawdon Foundry Company, Ltd., Sutcliffe, Speakman & Co., Ltd. *Bricks, Tiles, Terra-cotta and Sanitary Pipes* are shown by the Bursledon Brick Company, Ltd., W. C. Candy, Coalbrookdale Company, Ltd., S. & E. Collier, Ltd., Crossley & Sons, Ltd., Dodsdown Brickworks, Ltd., W. Exley & Sons, Hygienic Glass Tile Company, Ltd., Improved Construction Company, Ltd., London Brick Company, H. J. & C. Major, Ltd., Mansfield Bros., Prestage & Co., the Silverdale Tileries, the Somerset Trading Company, Ltd., Standard Brick and Terra-cotta Company, Stanley Bros., Ltd., and R. Trower. *Compoboard* is shown by H. G. Goodwin & Son.

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Damp-course, Roofing Felts, &c., are shown by A. W. Anderson, D. Anderson & Son, Chittenden & Co. *Destructors* are represented by Heenan & Froude, Ltd., Horsfall Destructor Company, Ltd., Hughes & Stirling and Meldrum Bros., Ltd. *Door Furniture* is shown by J. Adams & Son, J. Gibbons and Kupron, Ltd. *Doors* of many materials and Designs are exhibited by Stavers & Stavers. *Drain-testing Appliances* are shown by the Banner Sanitation Company, Burn Bros. and the Webb Lamp Company, Ltd. *Drain-cleansing Machines* by H. Hart and Spring Bending Company. The *Drawing Specialties* of V. Brooks, Day & Son, Ltd., and B. J. Hall. *Entrance Gates* by G. F. Braggins & Co. and J. P. White. *Fascias* are shown by Caspar Price & Co., Sir J. Causton & Sons, Ltd., and Stanley Jones & Co.

Floors (fire-resisting) are exhibited by the British Dolomient Co., Ltd., Fawcett, Mark & Co. (who are also exhibiting their new Edwardian chimney pot, which, we are informed, has been adopted by H.M. Office of Works), A. W. Green & Co., Kleine Patent Fire-Resisting Flooring Syndicate, Millar's Karri and Jarrah Co. (1902), Ltd., Plastoment Asbestos Flooring Co., Ltd., and the Stonewood Fireproof Flooring Co., Ltd. *Glass Tiles* are shown by Sir J. Causton & Sons, Ltd., Hygienic Glass Tile Co., Ltd., Newellite Glass Tile Co., Ltd. *Glazing* by Sam Deards. *Joinery* by Allen & Norris, H. G. Goodwin & Son, W. H. Lascelles & Co., Ltd., and Walker & Sons, Ltd. *Ladder Brackets* by E. Leigh. *Ladders* are shown by Granite Silicon Plaster Co., Ltd., Patent Safety Ladder and General Woodworking Co., and Stephens & Carter. *Lifts* are shown by Hoisting Appliances Co. and Medway's Safety Lift and Elevator Co. *Metal Casements, &c.*, by Crittall Manufacturing Co., Ltd. *Paints, Varnishes, Enamels, &c.*, by Aerograph Co., Ltd., D. Anderson & Son, Christopher & Sons, G. Collantier, Colne River Varnish and Enamel Co., the Fillion Co., Holzapfel's Compositions Co., H. R. Justice, John Line & Sons, Ltd., Major & Co., Ltd., Sissons Bros. & Co., Ltd., the Vernolene Co. and H. William & Co. *Partitions (fire-resisting)* are shown by the Acton Concrete Partition Co., Chittenden & Co., Clark & Co., Crittall Manufacturing Co., Ltd., Granite Silicon Plaster Co., Ltd., A. Gray & Co., A. W. Green & Co., Improved Construction Co., Ltd., F. Jones & Co. *Paving Materials* are exhibited by Blichfeldt & Co., Constable, Hart & Co., Ltd., Darbishires' Granite Quarries, Field & Mackay, Freeman, Sons & Co.,

Ltd., Globe Granite Co., W. & J. Glossop, Sydney Howard Imperial Stone Co., Ltd., Jeas Hartshill Granite and Brick Co., Ltd., London Asphalte Co., Ltd., Mackay & Davies Co., Ltd., Mountsorrel Granite Co., Ltd., Penlee and St. Ives Stone Quarries, Ltd., Penyghent Stone Co., Josiah Smart & Son, Tarmac Ltd., Tarspra, Ltd., Tilbury Contracting and Dredging Co. (1906), Ltd. *Pipe Joints* are exhibited by John Knowles & Co. and Yarrow & Co. (Bolton), Ltd. *Ranges, Stoves, Grates, &c.*, by Cakebread, Robey & Co. Coalbrookdale Co., Ltd., Eagle Range and Gas Stove Co., Ltd., Fenlon & Son, J. A. John, Ltd., London Warming and Ventilating Co., Ltd., W. F. Mason, Ltd., Thomas Potterton, Robert Roy & Co., Smith & Wellstood, H. P. Vacher and Walker & Sons, Ltd. *Sanitary Specialties* are shown by the Adams Hydraulics, Ltd., C. Walter Candy, Crossley & Sons, Ltd., Dawson & Co., Ltd., Henry Dean, J. Defries & Sons, Ltd., John Knight & Sons, Jno. Knowles & Co., Mansfield Bros., and Shanks & Co., Ltd. The *Scaffold Fixers*, Hunt & Fage and Stacey, are represented. There are *Sewage Disposal Specialties* by the Ames-Crosta Sanitary Engineering Co., Ltd., Ham, Baker & Co., Improved Construction Co., Ltd., Frank Keep, Patent Automatic Sewage Distributors, Ltd. *Stair Treads* are shown by Diamond Tread Co., Lyte's Metallic Woven Stairtread Co., Ltd., and Safety Tread Syndicate, Ltd. *Stone (building)* is shown by Enderby and Stoney Stanton Co., Ltd., Thames Stone Co., Tilbury Contracting and Dredging Co. (1906), Ltd., Watson & Co., Ltd. *Timber* is shown by Geo. F. Arney, Ltd., and Jas. Latham, Ltd. *Tube Bending Machinery* is exhibited by Jno. Barker & Co. and Kennedy Tube Bending Machine. *Wall Papers* are shown by G. Collantier, Essex & Co., Ltd., Percy Heffer & Co., Ltd., J. Landsberg & Co., John Line & Sons, Ltd. *Window Fittings* by Hasselrodt & Co., Martin's Patents Co., Ltd., Pellett's Patent Window Co., Perfector Window Co., Ltd., Rogers & Co., John G. Rollins & Sons, W. H. Southern, E. Zappert. *Wood Working Machinery* is shown by Bastin & Co., R. Becker & Co., H. W. Cowley & Co., Kirchner & Co., F. W. Reynolds & Co., J. Sagar & Co., Ltd., Wilson Bros.

THE Bethnal Green Borough Council are seeking a site in Cambridge Road for the erection of municipal offices.

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TRADE NOTES.

large show-rooms and warehouse erected by Messrs. Baney & Co., Dale End, Birmingham, have been fitted with a complete warming apparatus by Thos. T. Smith & heating and ventilating engineers, Leicester.

The thirty-seventh "City of London Directory" has been issued by Messrs. W. H. & L. Collingridge. It could have appeared earlier in the year owing to the impossibility of obtaining certain exclusive information. The alphabetical sections are complete, and not only are the names of the owners of houses given, but the floors on which they are found. The biographical section is up-to-date, and the streets in London during the past year are shown on the map. A better index to the City could not be devised for 2s. 6d.

VARIETIES.

The works committee of the Southampton Harbour Board recommend the expenditure of 50,000*l.* on deepening the channel approaches.

An inquiry has been held at the town hall, Derby, on an application by the Corporation to borrow 3,450*l.* to acquire property at the corner of the Strand and Cheapside for the extension of the Art Gallery and Museum.

The Midland Railway Company have purchased property and lands, exceeding 60,000*l.* in value, for the purpose of extending and improving the station, which is now out of keeping with the surroundings.

Messrs. GEORGE CRADOCK & Co., of Wakefield, have received an order from the Glasgow and District Subway Company for a tramway cable to work their line. This rope is 6,300 feet long and 1½ inch diameter, and weighs approximately 57 to 60 tons.

At an inquest in London on a plumber who died as the result of falling from a scaffold, a factory inspector informed the jury that the whole subject of scaffold accidents was under the consideration of a committee appointed by the Local Government Secretary, and the result of their deliberations would be a code of rules which would have statutory force. One of the regulations would be that no scaffold board end would

be allowed to project more than six inches over a putlog unless secured.

MARTINEAU MEMORIAL, NORWICH.

THESE buildings, of which the foundation-stone will be laid to-morrow, are to be dedicated as the centenary memorial of Dr. James Martineau, and are for the use of the Octagon chapel and Sunday school, for which purpose they have been carefully planned after many months of careful consideration by the architect, Mr. H. Chatfield Clarke, F.R.I.B.A., in consultation with the building committee. A site has been acquired on the north side of Colegate Street, adjoining the entrance to the Octagon chapel, and between it and the entrance to the old meeting-house, a site that is closely associated with liberal religious thought in Norwich, and eminently suitable to the needs of this memorial. On this site it is intended that the memorial buildings should occupy one-half, leaving two houses on the other half, the rentals of which will assist the maintenance of the new buildings. The new buildings have been designed externally in keeping with the Octagon chapel and surroundings in the traditional manner of domestic English buildings prevalent two centuries ago. Local materials will be used in facing the walls and the roofs covered with red tiles. There are two storeys in the main building, with a third storey over a portion facing Colegate Street. The ground floor contains two large classrooms and entrance hall, also two stone fireproof staircases to the upper floor, and kitchen accommodation and lavatories. On the first floor are a large lecture hall with raised stage, and a large classroom capable of being added to lecture hall, so that seating accommodation could be provided for nearly 350 persons. There are also on this floor three smaller classrooms and minister's parlour. On the upper floor at the front are a large recreation-room and an ante-room adjoining. Both externally and internally all elaboration of detail in building has been avoided, and any good results will be due only to proportion and effective use of material. The contract for the erection of the building has been placed with Messrs. Scarles Bros., of Norwich, Messrs. J. & J. King, also of Norwich, undertaking the sanitary, plumbing and decorative work. The total cost is estimated at about 4,000*l.*

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NEW CATALOGUES.

THE Ruberoid Company have shown applications of their materials to a variety of buildings in their catalogue, and, if the illustrations do not extend from China to Peru, we see at least buildings in Paris, India, Boston, U.S., South Africa, in addition to a surprising variety in this country. Climate does not appear to diminish the excellence of Ruberoid as a roof covering, damp-course or flooring. It has been in use since 1891, and the years which have elapsed are surely sufficient to test the qualities of any building material. Another advantage is the moderate cost. A square of 100 super feet of 3-ply Ruberoid fixed complete in London is only 1*l.* 7*s.* 6*d.* It can be used for vertical as well as horizontal damp-courses. The catalogue supplies full information about weight, cost, fixing on roofs or on walls or floors, and has, moreover, the great advantage of an arrangement which allows of instantaneous reference, a consideration which busy men will appreciate.

MESSRS. PARNALL & SONS, LTD., have reason to describe themselves as "architectural ironfounders," and they are competent to meet all the responsibilities which the title suggests. Their specialties comprise whatever is made in metal which can be used in the construction and furnishing of buildings. The latest improvements will be found in their products, and from their ability to keep abreast with progress, their trade is not determined by local boundaries. Their latest catalogue (No. F 132) comprises a variety of register grates with easily-adjusted canopies and fall-down bars and tiled hobs, economical cottage and other ranges of various sizes, gates and railings, standard crestings, signs with wrought-iron brackets. In all their attention has been given to form, and the treatment is pleasing and novel. Another section comprises floor gratings, manhole covers, &c. Messrs. Parnall & Sons, Ltd., have made a specialty of weighing machines and weighbridges. One of the latter, after bearing loads amounting to 3,000,000 tons, was tested by the authorities and found to be in good order. To realise the extent of the firm's operations, the whole series of their catalogues would be necessary. We have only referred to one.

THERE are people who will not believe that a thing beauty can give more than temporary joy, and for them it is necessary to prepare new designs periodically. Designs for Anaglypta and Salamander decorations are excellent, for they come from able artists, they cannot be affected by the passing of time, and there is no valid reason to prevent one which is, say, ten years old from being employed and admired to-day. But in manufactures, whims or prejudices of the public have to be accepted, thus it happens that a large volume of fascinating designs has to be supplemented by a new series for 1907. Can be said of the latter which is more laudatory than announce that they are worthy companions of the old designs? The veteran Mr. Owen Davis shows what practised power can accomplish, and co-operating with him are Mr. Haité, Mr. Rainger, Mr. Bayes and others. There are, as usual, ceilings, dados, panelling, diaphragms, fillings, friezes, &c. In some the Italian spirit is manifested, others English Renaissance. The material, having the advantage of relief or repoussé, can be used with propriety for friezes in which fruit, flowers, ships, amorini, as well as conventional forms serve as elements. The number of plates would serve to illustrate lectures or essays on modern ornamentation, for there is no indiscriminate application of forms, but all are adapted to the purpose for which they were intended as well as for the peculiar material. Plans are also given which show the general effect of a repetition of the designs.

THE arbitrator in the dispute between the Coventry District Master Builders' Association and the Builders' Labourers' Society has given his award providing for alteration of rules in regard to what is known as "walk-out time." This is to be allowed to all work beyond one and a half mile from Broadgate at the rate of three miles per hour to be measured from such boundary, the operative to walk home in his own time except on Saturdays. Lodging shall be paid for at all work beyond four miles distance at the rate of 3*s.* per week. Third-class fare to be allowed and out once a week to all work up to ten miles, and at that distance special arrangements to be made between employer and employed.

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THE
Architect and Contract Reporter.

FRIDAY, APRIL 26, 1907.

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As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITION OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

CONTRACTS OPEN.

BACUP.—April 27.—For the erection of a school for St. John's Church. Messrs. Radcliffe & Chadwick, architects and surveyors, 78 King Street, Manchester.

BLACKBURN.—May 11.—For the erection of a new department to Cedar Street Council school, to accommodate 280 children. Deposit 2/ 2s Messrs. Cheers & Smith, architects, 24 Richmond Terrace, Blackburn.

BRADFORD.—For building malt kiln and alterations at the Trafalgar Brewery. Deposit 1/ 1s. Mr. Joseph D. Wood, architect, 3 Newhall Street, Birmingham.

BRADFORD.—May 13.—For the erection of baths and wash-houses, Victoria Street, Bradford, for the Manchester Corporation. Deposit 3/ 3s. The City Architect, Town Hall, Manchester

BRAMLEY.—April 30.—For extensions to the Bramley engineering works. Mr. John A. Webster, architect, 2 Basinghall Square, Basinghall Street, Leeds.

BRISTOL.—May 13.—For the construction and maintenance for twelve months after completion of the superstructure of an engine and boiler-house for the graving dock at the Royal Edward Dock, in course of construction at Avonmouth. Deposit 5/ Mr. W. W. Squire, engineer, Cumberland Basin, Bristol.

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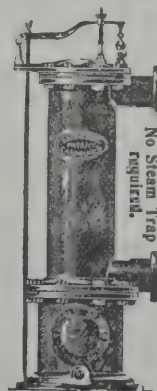
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BROMLEY.—April 27.—For providing and fixing a cookery range at the Raglan Road cookery centre. Mr. R. W. Wentworth Hortop, secretary, the Education Offices, Widmore Road, Bromley, Kent.

BROMLEY.—April 30.—For providing and fixing about 2,226 feet super of panelling in the new municipal buildings in Tweedy Road, together with the necessary police court furniture, &c. Mr. R. Frank Atkinson, architect, 8 Sackville Street, W.

CARLINGHOW.—April 29.—For the whole or any of the mason, joiner, plumber, slater, painting and heating engineer's work in new Sunday schools to St. John's Church. Messrs. Walter Hanstock & Son, architects, Batley, Yorks.

CHELTEMHAM.—April 29.—For the conversion of the sub-station building in Manchester Street into offices, &c., for the electricity department. Mr. J. S. Pickering, borough surveyor, Municipal Offices, Cheltenham.

COVENTRY.—April 27.—For extension of the electricity works, Sandy Lane. Deposit 1*l.* 1*s.* Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

EASTBOURNE.—May 1.—For the erection of a shelter on the Royal Parade, adjoining the Redoubt. Mr. A. Ernest Prescott, borough surveyor, Town Hall, Eastbourne.

EASTBOURNE.—For erection of a public elementary school. The Secretary, Education Committee, Town Hall, Eastbourne.

EXETER.—May 8.—For the erection of a detached house on the Streatham Hall Estate, Cowley Road. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

HANDSWORTH.—May 1.—For the erection of manual workshop, laboratory, cookery and laundry kitchens at the Birchfield Road Council schools. Deposit 1*l.* 1*s.* Mr. J. P. Osborne, architect, 95 Colmore Row, Birmingham.

HULL.—May 3.—For the erection of warehouse and offices in Craven Street. Deposit 10*s.* Mr. Ernest Whitlock, architect and surveyor, 26 Scale Lane.

HUNGERFORD.—April 27.—For the erection of a school-room and the renovation of the Primitive Methodist church. Rev. H. M. Hull, The Manse, Hungerford.

IRELAND.—April 27.—For the erection of a building on Curry's Hill, Drogheda. Mr. F. H. Tallan, architect, 106 West Street, Drogheda.

IRELAND.—April 30.—For the erection and completion of an Orange hall at Scarva, co. Down. Mr. S. Wilson Reside, architect, Margaret Square, Newry.

IRELAND.—May 1.—For the erection of a villa residence at Carrigaloe. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—May 1.—For the erection of two consumptive hospitals at the Clonmel district lunatic asylum, for the joint committee of management. Deposit 2*l.* 2*s.* Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

IRELAND.—May 1.—For the construction of a timber and corrugated iron lifeboat house and timber slipway for the Royal National Lifeboat Institution, upon a site near the Pigeon House Fort at Poolbeg, Dublin. Deposit 1*l.* 1*s.* Mr. John S. Morgan, hon. secretary, 2 Sea View Terrace, Clontarf, Dublin; or of the engineer and architect to the Institution, Mr. W. T. Douglass, 15 Victoria Street, Westminster, S.W.

IRELAND.—May 1.—For erecting offices and stores, Maghera, co. Derry. Mr. W. J. Robinson, C.E., 7 East Wall, Londonderry.

IRELAND.—May 3.—For the erection of a manse at Killarney. Messrs. Robert Walker & Son, architects and civil engineers, 17 South Mall, Cork.

IRELAND.—May 6.—For the following new works, for the Great Northern Railway Co. (Ireland):—Extension of Post Office rooms, Portadown station. Deposit 2*l.* 2*s.* each; forms of tender 1*s.* each. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

IRELAND.—May 6.—For the following new work, for the Great Northern Railway Company (Ireland):—Extension of general offices, Amiens Street, Dublin. Deposit 2*l.* 2*s.* Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

LANCASTER.—May 4.—For new villa for private patients at the county lunatic asylum. Deposit 2*l.* 2*s.* Application by April 20 to Mr. H. Aspinall, architect, Prudential Buildings, Dale Street, Liverpool.

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LEVENSHULME.—For the whole or any portion of the works required in erection of St. Marks Church, Barlow Road. Mr. Charles T. Taylor, architect, 10 Clegg Street, Oldham.

LUCKETT.—May 7.—For erecting improvements, &c., at the Lockett Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

LONDON.—April 27.—For the erection of dwellings for the working classes, on a site known as Brantome Place. Messrs. Joseph & Smithem, architects, 83 Queen Street, Cheapside.

LONDON.—May 3.—For Admiralty extension block IV. (superstructure). Sir Aston Webb, R.A., 19 Queen Anne's Gate, S.W.

MILE END.—May 4.—For additions to Tubswick farmhouse, Mile End. Mr. Herbert Goodyear, borough engineer and surveyor, Town Hall, Colchester.

SCOTLAND.—May 2.—For mason, carpenter, slater, plasterer, plumber, painter and glazier's work of additions and alterations to 20-2 East Church Street, Buckie. Mr. T. D. Robertson, architect, Keith.

SCOTLAND.—May 6.—For the mason, carpenter, plumber, plasterer and painter's work of house and shop to be erected in Aberchirder, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SOUTHALL.—May 14.—For construction of an underground convenience, for the Southall-Norwood Urban District Council. Mr. Reginald Brown, A.M.I.C.E., &c., engineer and surveyor, Public Offices, Southall, Middlesex.

STAUNTON-ON-WYE.—April 30.—For repainting and repairing the exterior of the charity buildings. Mr. Richard James, clerk, Board-room, Staunton-on-Wye, Herefordshire.

WALES.—April 27.—For the erection of twenty-four houses at Deri, near Bargoed. Mr. D. M. Davies, architect, 24 Cardiff Road, Caerphilly.

WALES.—April 29.—For rebuilding Gobiath Welsh Calvinistic Methodist chapel, Cwmdare, near Aberdare. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

WALES.—April 30.—For the rebuilding of the Penydarren tavern, Merthyr. Mr. C. M. Davies, architect, High Street.

WALES.—April 30.—For alterations to premises at William Street, Ystrad Rhondda. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—April 30.—For alterations at Conservative Club, Treorky. Mr. J. Rees, architect, Treorky.

WALES.—May 6.—For the erection of a cookery school, with the necessary offices, boundary walls, &c., at the rear of Duffryn school, Mountain Ash. Deposit 2*l.* 2*s.* Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALKER.—April 29.—For the erection of twelve cottages on the model cottage exhibition site, Walker, Newcastle-on-Tyne. The City Property Surveyor's Department, Town Hall, Newcastle-on-Tyne.

WAREHAM.—May 1.—For the erection of almshouses, boundary walls and fences, &c., at Wareham, Dorset. Mr. G. Clavell Filliter, North Street, Wareham, Dorset.

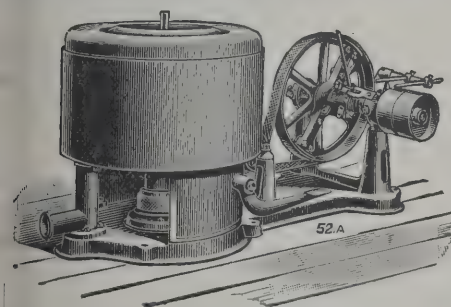
WITHIEL.—May 7.—For enlarging the playground and alterations to offices at the Withiel Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

WORKINGTON.—April 29.—For enlarging the kitchens and providing additional nurses' quarters at the infirmary. Send names to Messrs. Oliver & Dodgshun, architects, Carlisle.

YARDLEY.—May 14.—For the erection of a Council elementary school in Church Road, Yardley, near Birmingham. Deposit 2*l.* 2*s.* Applications may be made on or before April 30 to Mr. Anthony Rouse, quantity surveyor, King's Court, Colmore Row, Birmingham. Mr. Arthur Harrison, architect, 109 Colmore Row, Birmingham.

THE Tonbridge Urban Council have agreed to apply to the Local Government Board for power to borrow 3,500*l.* for a dust destructor, and 2,700*l.* for filter beds, a total of 6,200*l.*

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TENDERS.

ASHBOURNE.

For the erection of grammar school. Mr. E. M. LONGSDON, architect, Bakewell.	
Bowman & Sons	£12,400 0 0
Birch & Sons	12,198 0 0
Wildgoose	10,684 0 0
Fish & Sons	10,643 0 0
Heath & Sons	10,601 0 0
Cox, Wilson & Sons	10,500 0 0
J. & J. Warner	10,450 0 0
Smith & Sons	10,450 0 0
Kershaw	10,200 0 0
Hodges	9,895 0 0
Cuthbert	9,750 0 0
Lowe & Sons	9,090 0 0
THORBY, Norbury, Ashbourne (accepted)	9,000 0 0
Parker & Sons	8,981 0 0

BLABY.

For laying 430 lineal yards of 9-inch and 12-inch cast-iron pipes and 2,630 lineal yards of 9-inch and 12-inch stoneware pipes, &c. Mr. J. TURNER, engineer, South Wigston.	
Moss & Sons	£5,250 0 0
Henson & Son	5,155 0 0
Palmer	5,094 0 0
Manton	4,969 0 0
Smart	4,897 0 0
Johnson & Langley	4,813 0 0
Hickman	4,719 0 0
Macdonald	4,700 0 0
Ward & Tetley	4,679 0 0
Keetch & Wainer	4,640 0 0
Orton	4,550 0 0
Holme & Son	4,510 0 0
Wilmott	4,468 0 0
Wright & Co.	4,437 0 0
Harper	4,407 0 0
BARRY, Radcliffe-on-Trent (accepted)	4,211 0 0

BRIGHTON.

For the erection of detached house in Dyke Road. Messrs. OVERTON & SCOTT, architects, Brighton.	
Packham, Sons & Palmer	£1,405 0 0
Brown & Sons	1,390 0 0
Penfold	1,347 0 0
Lewer	1,200 0 0
Simmonds Bros.	1,198 0 0
Kerridge	1,175 0 0
Chilton	1,139 0 0
CRUTTENDEN, Brighton (accepted)	1,025 0 0

For erecting junior house school, for the Roedean school. Messrs. J. W. SIMPSON & M. AYRTON, architects, Gray's Inn, W.C. Quantities by Messrs. G. M. SIMPSON & N. EVILL.

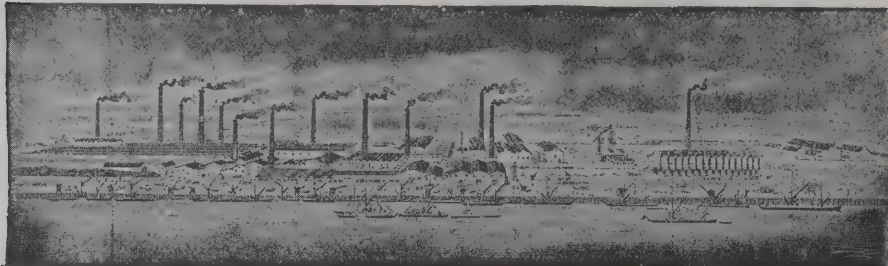
Penfold	£18,960 0 0
Denne & Son	18,867 0 0
Potter Bros.	18,130 0 0
Longley, James & Co.	17,448 0 0
Holt, Walker & Sons	17,200 0 0
Parnell & Son	17,162 0 0
Johnson & Co.	16,990 0 0
Barnes & Sons	16,976 0 0
Lawrance & Sons	16,885 0 0
Lorden & Son	16,789 0 0
Patman & Fotheringham	16,563 0 0
Shepherd & Co.	16,464 0 0
Flint	16,147 0 0
Blay	16,000 0 0
Stephens, Bastow & Co.	15,996 0 0
Cook & Sons	15,985 0 0
Minter	15,977 0 0

CHESTERFIELD.

For alterations to Corporation shops. Mr. N. SMITH, borough surveyor.	
Collis & Sons	£1,685 0 0
Wright	1,590 0 0
KIRK, Chesterfield (accepted)	1,432 0 0

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Shaddock	£38,031	11	6
Mereweather & Sons	29,650	0	0
Hodson & Son	27,900	0	0
Lovell	27,342	0	0
Parkinson	26,928	0	0
Page & Co.	24,944	16	6
Moss & Sons	24,636	8	0
Binns	24,498	15	0
Jesty & Baker	24,281	7	0
Dobson	24,125	5	0
Vanstone & Sons	23,997	0	0
Mitchell & Sons	23,889	2	11
Powell	23,862	14	8
Smith & Marchant	23,808	18	10
Wright & Co.	23,671	18	0
Langley & Westmoreland	23,654	11	9
Ireland	23,413	0	0
Wallis & Co.	23,384	0	0
Banfield & Fletcher	23,268	0	10
Collingwood & Co.	23,113	0	0
Tabor	22,677	0	0
Ewart	22,643	3	9
Nunn	22,499	7	0
Rutter	22,472	13	0
Ashley	22,424	1	9
Jones & Sons	22,414	13	0
McKnee & McNally	22,275	1	2
Macdonald	21,968	10	6
Neal & Co.	21,600	0	0
Deane	21,574	4	1
Pollard & Co.	21,572	2	0
Collins & Co.	21,514	10	0
Wright & Son	21,484	2	0
Riley	21,121	5	1
Brebner & Co.	20,668	18	0
Doleman	19,991	19	0

CLUTTON—continued.

Crawford	£19,500	0	0
COOPER & Co., Bristol (accepted)	19,343	18	8
Engineer's estimate	21,760	0	0

COCKERMOUTH.

For telescoping of gasholder 71 feet diameter.

Hanna, Donald & Wilson	£1,125	0	0
Holmes & Co.	1,070	0	0
Westwood & Wrights	1,062	0	0
Ashmore, Benson, Pease & Co.	948	0	0
Barrowfield Ironworks	930	0	0
Dempster & Sons	895	0	0
Walker	888	0	0
Dempster	885	0	0
Cockey & Sons	777	0	0
NEWTON, CHAMBERS & Co., Thorncliffe Ironworks, Sheffield (accepted)	673	0	0

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For works in connection with new cemetery for the Glyn-corrwg district.

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Contract No. 2.

Scott, Rutherland	922	0	6
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Contract No. 3.

Shaw, Gowerton	227	0	0
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DUBLIN.

For rebuilding premises in Chatham Street. Mr. L. A. M'DONNELL, architect. Quantities by Mr. G. METCALFE.

Monks	£1,030	0	0
M'Loughlin & Harvey	1,020	0	0
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ERDINGTON.

For erecting wing to the No. 2 north pavilion at the work-house. Messrs. C. WHITWELL & SON, architects, Birmingham.

LEE & SONS, Aston Manor (*accepted*) . . . £3,654 0 0

GREAT YARMOUTH.

For additions to Surbiton Lodge, for Mr. D. T. S. Reed. Messrs. WM. B. COCKRILL & SONS, architects, Great Yarmouth.

Cockrell	£495	0	0
Wales	425	0	0
Bensley	403	0	0
Millichamp	393	15	0
Epps	379	0	0
Fuller	375	0	0
Woods (<i>accepted</i>)	365	8	0

ILFORD.

For alterations and additions at the White Horse public-house, Broadway, Ilford, E., for Mr. W. D. Golding. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E. Quantities by Mr. L. E. G. COLLINS, 31 Great St. Helen's, E.C.

Todd & Newman	£1,499	0	0
Steadman & Co.	1,482	0	0
Jerram	1,455	0	0
F. & A. Willmott	1,430	0	0
Maddison	1,379	0	0
Sheffield Bros.	1,368	0	0

JARROW.

For relaying back streets with tar macadam. Mr. J. PETREE, borough surveyor.

Hadfield	£1,080	17	6
Kennedy	1,033	19	0
Glen	867	17	1
Meredith	866	11	10
Simpson	754	3	0
WALLACE, Newcastle (<i>accepted</i>)	710	12	9

LEVEN, N.B.

For erection of police station.

Accepted tenders.

Wilkie & Gibb, mason.
W. & A. Robertson, joiner.
Nicoll, plumber.
J. & T. Stobie, plaster.
Black, slater.
Smith & Son, cell doors.
Keay, heating.

LONDON.

For the erection of stabling, &c., Kensington, for Messrs. Slaters, Ltd. Mr. R. J. LOVELL, architect.

Perry & Co.	£2,705	0	0
Roffey & Co.	2,649	0	0
Wisdom Bros.	2,607	0	0
Minter & Co.	2,595	0	0
Roome & Co.	2,365	0	0
SPENCER, SANTO & Co., Kensington (<i>accepted</i>)	2,286	0	0

For providing and fixing a carriage lift for lifting vehicles, &c., into the wheelwrights' shop, for the Kensington Borough Council.

Smith & Stevens	£168	0	0
Waygood & Co. (<i>recommended</i>)	102	10	0

For fitting-up shop, 4 Chadworth Buildings, Garden Row estate.

Sage & Co. (1905)	£128	0	0
Lascelles & Co.	89	0	0
WALL (<i>accepted</i>)	83	0	0

For providing and fixing two boilers at Central School of Arts and Crafts, Holborn, tender accepted in January having been withdrawn.

Davey, Paxman & Co.	£2,188	0	0
Thames Iron Works, Shipbuilding and Engineering Co.	2,163	0	0
Thornycroft & Co.	2,030	0	0
Adamson & Co.	1,976	0	0
Tinkers	1,850	0	0
Oldham Boiler Works	1,822	11	0
CLAYTON, SON & Co., Leeds (<i>recommended</i>)	1,221	0	0

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For supply of 300 electrical equipments and 250 car bodies.		
Metropolitan Amalgamated Railway Carriage and Waggon Co.	£51,675	0 0
Thornewill & Warham	50,700	0 0
Peckham Engineering Co.	49,500	0 0
Mountain & Gibson, Bury (recommended)	49,350	0 0
Mountain & Gibson*	45,600	0 0
Mountain & Gibson*	45,510	0 0
Mountain & Gibson*	45,030	0 0
Mountain & Gibson*	44,250	0 0
Heenan & Froude	43,500	0 0
Kerr, Stuart & Co.	40,800	0 0

* Not in accordance with specification.

For manufacture, delivery and erection of eight overhead travelling hand cranes required for the Hackney, Clapton, Holloway, Islington, Lewisham, Forest Hill, Tooting and Stockwell sub-stations.

Butters, Bros. & Co.	£2,635	0 0
Pickerings	2,253	0 0
Johnson & Son	1,995	0 0
Flohr (alternative)	1,964	0 0
Adamson, Ramsbottom & Co.	1,870	0 0
Carrick & Ritchie	1,789	0 0
Applebys	1,746	0 0
Henderson & Co.	1,685	0 0
Spencer & Co.	1,669	0 0
Carrick & Ritchie (alternative)	1,669	0 0
Broadbent & Sons	1,598	0 0
Heywood	1,579	0 0
Broadbent & Sons (alternative)	1,545	0 0
Larmuth & Co. (alternative)	1,435	0 0
Larmuth & Co., Salford (recommended)	1,427	0 0
Flohr*	1,346	0 0

* Not to specification.

For supply of special trackwork in connection with tramway at Elephant and Castle.

Hadfield Steel Foundry Company, Sheffield (recommended)	£2,875	0 0
Lorain Steel Company of America	2,650	0 0

LONDON—continued.

For the erection of special school for mentally defective children and training centre in Mowlem Street, Bethnal Green.

Porter	£5,577	0 0
Williams & Son	4,210	0 0
Willmott & Sons	4,108	0 0
Killby & Gayford	4,061	0 0
Perry & Co.	4,037	0 0
E. Lawrance & Sons	3,967	0 0
Chessum & Sons	3,918	0 0
Symes	3,909	0 0
W. Lawrence & Son, Waltham Cross, recommended)	3,564	0 0
Architect's estimate	3,950	0 0

For providing and fixing a Cornish boiler for use in connection with the heating arrangements of section A (art block) of the L.C.C. Hammersmith Technical Institute, tender accepted in January having been withdrawn.

Tinkers	£650	0 0
Oldham Boiler Works Co.	582	0 0
Spurr, Inman & Co.	570	0 0
Adamson & Co.	560	0 0
CLAYTON, SON & Co., Leeds (recommended)	511	0 0

For supply and erection of two hydraulic filth hoists and gear for the new sand-pit and screening chamber at the Crossness outfall works.

East Ferry Road Engineering Works Co.	£1,470	0 0
Cochrane	1,420	0 0
Ashton, Frost & Co.	1,320	0 0
Thames Iron Works, Shipbuilding and Engineering Co., Greenwich (recommended)	1,128	3 9

For setting-back fence and gates at Lee in connection with Lewisham High Road improvement.

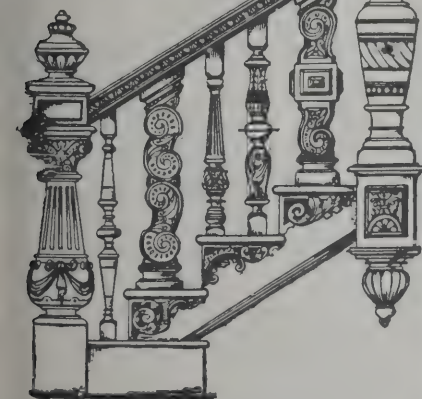
Coleman & Co.	£340	0 0
Lapthorne & Co.	213	0 0
Turnbull	179	10 6
Sharpington, Herne Hill (recommended)	135	0 0
Valuer's estimate	149	0 0

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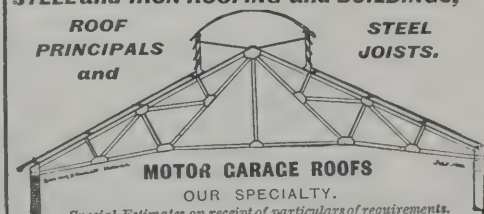
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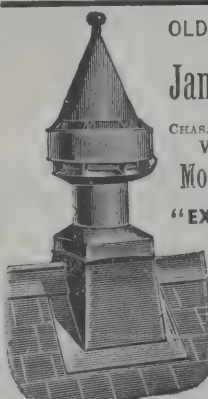
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ROCHFORD.

For erecting receiving and mental wards at the work-house. Messrs. GREENHALGH & BROCKBANK, architects, Southend-on-Sea. Quantities by Mr. G. T. G. WRIGHT.

Smith & Son	£3,085	0	0
Flaxman	2,948	0	0
Norden	2,855	0	0
Elvy & Son	2,781	0	0
Hammond & Son	2,745	0	0
Moss & Co.	2,720	0	0
Woodhams	2,683	0	0
Leaney	2,680	0	0
Whur & Campkin	2,650	0	0
F. Davey	2,589	0	0
Burrill	2,555	0	0
Whur	2,517	0	0
Westgate & Co.	2,508	0	0
W. E. Davey	2,478	6	4
F. & E. DAVEY (accepted)	2,464	0	0

SCOTLAND.

For the erection of lifeboat house, Port Logan Bay, near Stranraer. Mr. W. T. DOUGLASS, engineer, 15 Victoria Street, Westminster, S.W.

Sloss & Son	£780	0	0
Purdie	769	0	0
McINTYRE, Ayr (accepted)	744	0	0

SOUTHEND-ON-SEA.

For laying tar macadam on western esplanade from Palmeira Parade to Grosvenor Road. Mr. E. J. ELDFORD, borough engineer.

Smart & Sons	£2,439	0	0
Tarmac	2,112	0	0
Constable, Hart & Co.	1,926	0	0
Oak & Co.	1,863	0	0
Sheppard & Co. (slag)	1,570	0	0
EDWARDS (accepted)	1,476	0	0
Sheppard & Co. (Kentish rag)	1,369	0	0
Aylesford Stone Quarry Co.	1,319	0	0

SOUTHEND-ON-SEA—continued.

For the making-up of the following streets. Mr. E. J. ELDFORD, borough engineer.

Crowstone Road.

Jackson	£1,622	0	0
Parsons & Parsons	1,621	0	0
Buxton & Jenner	1,403	0	0
ILES (accepted)	1,390	0	0
Engineer's estimate	1,621	0	0

Ailsa Road.

Jackson	462	10	0
Parsons & Parsons	441	0	0
ILES	405	0	0
BUXTON & JENNER (accepted)	400	0	0
Engineer's estimate	418	0	0

King's Road (first section).

Parsons & Parsons	410	0	0
Jackson	402	0	0
Buxton & Jenner	368	0	0
ILES (accepted)	365	0	0
Engineer's estimate	398	0	0

Myrtle Road.

Jackson	270	0	0
Parsons & Parsons	245	0	0
ILES	228	0	0
BUXTON & JENNER (accepted)	222	0	0
Engineer's estimate	240	0	0

Back Passage, Hamlet Court Road.

Parsons & Parsons	206	0	0
Jackson	178	0	0
ILES	165	0	0
BUXTON & JENNER (accepted)	144	0	0
Engineer's estimate	143	0	0

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STRATFORD.

For certain alterations and decorations at the Greyhound public house, West Ham Lane, Stratford, E., for Mrs. E. J. Whitaker. Mr J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E.

Sheffield Bros.	£330	0	0
Spittle	325	0	0
Maddison	319	0	0
Symes	315	0	0
Bragg	297	7	6
Calcutt	184	10	0

SUTTON-ON-SEA.

For the erection of two bungalows on the Brooklands Estate, Sutton-on-Sea, Lincs, for Mr. Richard Brooks. Mr. R. W. ADKIN, F.S.I., architect, 14 Queen Street, Cheapside, E.C.

Thompson & Sons	£1,430	0	0
Greenfield	1,425	0	0
Sime	1,340	0	0
MOORE, Sutton-on-Sea, Lincs*	1,250	0	0

* Accepted, subject to modifications.

SWANSEA.

For the widening of Neath Road, Landore, and constructing boundary walls, &c.

Jenkins & Co..	£693	0	0
Bennett Bros..	656	0	0
Stevens	490	6	9
J. & F. Weaver	470	0	0
Marles & Son	455	0	0
WALTERS & JOHN, Morriston (accepted)	454	10	0

UCKFIELD.

For alterations and additions to public hall. Messrs. OVERTON & SCOTT, architects, Uckfield.

Brown & Sons	£765	0	0
Saunders Bros.	755	0	0
Farrant	739	0	0
Chilton	719	0	0
Pelham	706	10	0
SMITH & SON, Maidstone (accepted)	612	0	0

UPSTREET, KENT.

For the erection of oak fencing, for Mr. E. Morfclk. Mr. R. W. ADKIN, F.S.I., architect, 14 Queen Street, Cheapside, E.C.

Miles	£202	17	0
Wood	170	2	3
Winand & Son	144	0	0
Horton & Son	124	8	9
STENNING & SON, Redhill (accepted)	121	0	0

UPTON PARK.

For the erection of proposed music academy, Plashett Road, Upton Park, E., for Mr. S. Higgs. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E.

Webb	£999	10	0
Symes	800	0	0
Bragg	750	0	0
Phillips	650	0	0
Quarterman	595	0	0

For certain alterations and decorations at the Boleyn tavern, Barking Road, Upton Park, E., for Mr. H. Iggulden. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E.

Tucker	£285	0	0
J. & H. Cocks	224	0	0
Chapman & Sturton	172	10	0
Sheffield Bros.	172	0	0
Calcutt	162	0	0

WALTHAMSTOW.

For heating apparatus, Edinburgh Road schools. Mr. H. PROSSER, architect.

Price, Lea & Co.	£314	0	0
Dargue, Griffiths & Co.	288	10	0
Cassidy	272	0	0
Musgrave & Co.	263	10	0
Wontner-Smith, Gray & Co.	259	15	0
Boyd & Sons	246	0	0
Palowkar & Son	242	0	0
Grundy	235	10	0
Russell & Co.	212	10	0
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WRANGLE.

For an addition, alterations and repairs to the Wesleyan chapel, and also for reseating. Mr. J. ROWELL, architect, Boston.

Cade	£399	o	o
Greenfield	369	o	o
Shaw	360	10	o
Jessop	348	o	o
Wood	345	o	o
Woods	343	o	o
Richardson & Son	329	o	o
COMER, Boston (accepted)	321	o	o

YOUGHAL.

For new hall at auxiliary lunatic asylum. Messrs. W. H. HILL & SON, architects, Cork.

MURRAY & SONS, Youghal (accepted) £2,138 o o

TRADE NOTES.

MESSRS. CLARK & Co. have arranged with Mr. H. Mason, 40 Brazennose Street, Manchester, to represent them for the sale of their "Xelite" plaster in Lancashire, Cheshire and Staffordshire.

MESSRS. JOYCE, Whitchurch, Salop, have this week sent out a very large quarter clock with four dials to Greymouth, New Zealand. The same firm are making a new striking clock for Cowbit Church, near Spalding, and another for Harpswell Church, Gainsborough. Also two illuminated clocks for the Salford Corporation, for their new tram depôt at Pendleton.

THE Auctioneers' Institute will hold its annual general meeting on May 9 at the Institute, 34 Russell Square, London. The coming of age of the Institute will be celebrated by a banquet at the Hotel Cecil on Thursday, May 9, at 6.30 for 7 P.M., when many distinguished guests will be present. The president, Mr. Henry D. Buckland, will occupy the chair.

"ZINGESSOL" DECORATION.

DISTEMPER painting has antiquity in its favour, for there is no doubt it was known to the monk Theophilus, who about the beginning of the thirteenth century recorded his own observations and the traditions with which he was acquainted. There are old examples, in Italy especially, which are sometimes supposed to be works in fresco, which if not entirely executed in distemper, owe their surfacing to that material, for there is no doubt that walls which were begun in fresco were finished in distemper. Attempts have been made from time to time in England to employ the kind of paint for decoration. If any of our readers should be engaged in restoring a building in which they are found, and even if the figures and ornament are not twenty years old, we strongly advise them to avoid interfering with the painter's work. If they are touched with a damp cloth or even with a feather brush they vanish as if by magic. The reason is that "Zingessol," which is a genuine washable distemper, had not been discovered by Mr. J. B. Orr, of Widnes. The chancel arch of Great Sankey Church has just been decorated by Mr. R. H. Webster with that paint, and thus again demonstrated its fitness for the highest class of work. The subject selected was "The Six Days of Creation." In the centre stand the two archangels, St. Michael and St. Gabriel. The symbols which suggest the mysterious operations are enclosed in circles outlined in red, and which are flanked by angelic figures. Beneath in bold letters is the inscription, "All Thy works praise Thee, O Lord." The ground adopted is a reposeful green. The lining of mouldings and medallions is in red, and the ground of the inscription is in a warm yellow. The white robes of the angels, who appear to guard the Tree of Knowledge, stand out in strong contrast. A work of this kind is restful as well as suggestive, and there is also the advantage of endurance. Similar adornment could not offend the most orthodox churchgoer, and would enhance the appearance of many interiors at a moderate expense.

THE markets committee of Edinburgh Town Council have instructed the deputy city superintendent of works to prepare an estimate as to the probable cost of the whole scheme for the new markets and slaughter-houses at Gorgie.



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ATHEDRAL SERIES.—CARILLON: THE CHOIR, TRIFORIUM, AND
CLERESTORY (SOUTH SIDE).

BUILDING AND BUILDERS.

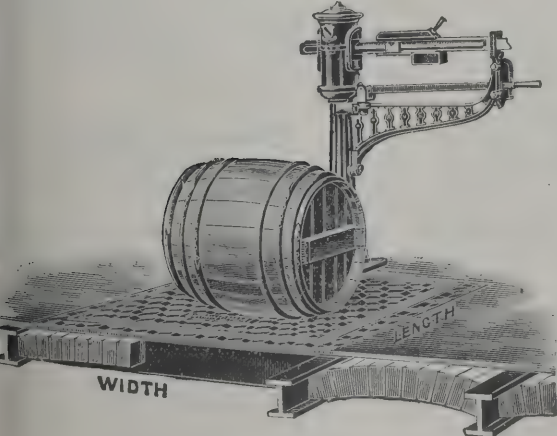
is proposed to erect an assembly hall and public
ary at Lindfield, Sussex.
The Aberdeen water committee have decided to cover
the reservoirs with cement concrete arching supported by
piers, at a cost of 23,600l.
The Sir John Maxwell school in Bengal Street, Pollok-
shaws, Glasgow, is to be re-erected in order to accommo-
date 1,200 children.
The Manchester Corporation have applied for authority
to borrow money for hydraulic purposes. The station in
Water Street is estimated to cost 50,000l.
The Gorton Council has received a letter from the Local
Government Board stating that they are not prepared to
confirm a by-law requiring the construction of external
walls of all new buildings as hollow walls. The require-
ment, they say, would be unreasonable.
The Court of Governors of the University College of
North Wales have recommended their Council to insist that
a fair-wages clause be inserted in all building contracts.
Mr. H. T. Hare, the successful architect in the recent com-
petition, hopes to have the drawings ready for the quantity
surveyor in two months' time.
At the meeting of the Hackney Borough Council the
Finance committee reported that they had examined the
priorities, bonds, contracts, agreements, conveyances and
other documents in the possession of the Council. With
regard to sureties for the performance of contracts, they
found that in several instances committees had been in the
habit of recommending the acceptance of sureties who were
not in the employment of or interested in the contracting
firm. They were of opinion that this practice was unde-

sirable, and recommended that no person employed by the
contractor, or interested in the contractor's business, should
be accepted as a surety, and that this recommendation be
sent to the committees concerned.
At the last meeting of the York City Council it was
moved that the recommendation that the tender of Messrs.
Young & Son for plasterwork be accepted should be deleted,
and this amendment was seconded. The complaint was
that the firm had employed a second apprentice some two
or three months before the first apprentice was out of his
time, against the regulations of the Society. The amend-
ment was lost, only five members voting for it.
At the Midland Institute, Birmingham, last week, under
the chairmanship of Sir William Cook, the annual meeting
of the Birmingham and District Council for the National
Registration of Plumbers was held. A resolution was
unanimously agreed to declaring the confidence of the
meeting in the co-operation of master plumbers, operative
plumbers and public representatives, as offering the best
means of securing the registration of plumbers on lines
suited to the present conditions of the plumbing industry
and fair to the interests of plumbers and the public. The
resolution also pledged the council to use its best efforts to
promote that object generally, and particularly by appealing
to the Government to initiate the legislation necessary for
the purpose in the interests of the public health.
The Hornsey Town Council has adopted a detailed
scheme, prepared by Mr. E. J. Lovegrove, the engineer
and surveyor, for the erection of 120 additional workmen's
dwellings at Highgate upon land secured from the Eccle-
siastical Commissioners. The scheme provides for the
erection of twenty-two cottages rented at 12s. 3d. weekly;
twenty-six at 10s. 6d.; twenty-four at 9s. 9d.; twenty-two
at 9s.; and twenty-six at 7s. 6d. The estimated capital ex-
penditure for the erection of the cottages, draining, fencing
and laying out and sewerage of the roads is 39,690l., to which
must be added 5,700l., the cost of the land, making a total
of 45,390l. The money is to be borrowed for sixty years,
and the suggested rentals will provide an income of
3,040l. 14s., sufficient to meet the annual repayment of
capital and interest, rates, taxes, &c., and to leave a
margin of 9½ per cent. of the rental value for empties
and repairs.



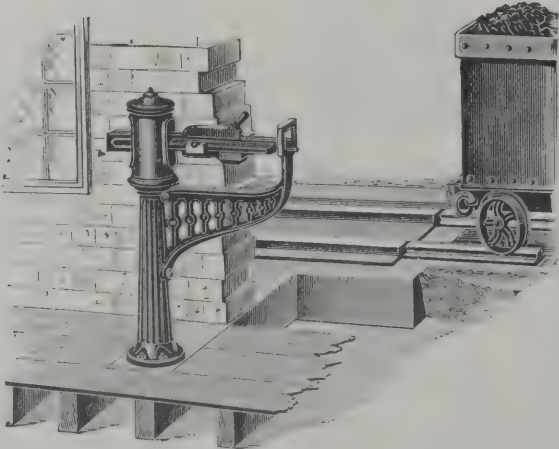
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VARIETIES.

THE Duke of Portland has begun a scheme of extensive improvements on the houses of the crofters on his northern sporting estate of Berriedale, which will abolish all thatched roofs and give every crofter a substantial slated model cottage.

THE Birmingham Drainage Board have passed a resolution which authorised an application to the Local Government Board for sanction to a loan of 45,000*l* for the construction of 7 acres of bacteria beds at Minworth Greaves.

DR. REGINALD DUDFIELD, medical officer of health for Paddington, has been appointed to represent the Incorporated Society of Medical Officers of Health on the registration committee for the national registration of plumbers.

DURING the residence of the Lord High Commissioner at Holyrood Palace the lighting has hitherto been done by oil lamps, but this year a departure will be made by the introduction of petrolite safety lamps, of which about eighty will be used.

THE Glamorgan County Council are using drastic measures to save householders from lead poisoning. They are requesting Councils not to grant certificates of habitation to any houses where the water supply is in any danger of being poisoned through the use of leaden service pipes.

THE Leeds Corporation are about to advertise for tenders for the construction of the Leighton reservoir, an undertaking which is roughly estimated to cost 450,000*l*. Their engineer advises them that it will be better, having regard to the difficulties of the task and the magnitude of the undertaking, if, with the other works the Corporation have in hand, they let it by contract.

For the convenience of passengers travelling to and from Frankfort-on-Main by the Harwich route the Great Eastern Railway Company has arranged for through carriages to be run on and from May 1 between the Hook of Holland and Frankfort, *via* Mayence, in connection with the arrival and departure of the steamers. Passengers will be due to arrive at Frankfort at 4.5 P.M. and on the return journey to leave at 1.40 P.M.

THE general purposes committee of the Southport Town Council recommend the Council not to accept the amended offer made by a syndicate for leasing a portion of the foreshore for entertainment purposes. The offer proposed a rental of 1,000*l* per annum for a twenty-one years' lease with the option of renewing for a further twenty-one years should the land not be required for building purposes. The part of the foreshore mentioned consists of some 50 acres of land and water.

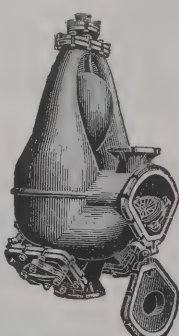
LORD ELCHO (chairman of the improvements committee of the London County Council), in reply to a question on Tuesday, said he sincerely hoped they would soon be able to revise the conditions of letting the Council's surplus lands. They had recently been considering the whole question of the surplus lands in Westminster, Hackney and elsewhere, and he hoped, in about a fortnight's time, to bring up a report on the subject which would be satisfactory to the Council.

LETCHWORTH COTTAGES AND BUILDINGS, LTD., has been formed by First Garden City, Ltd., chiefly for the purpose of erecting cottages for unskilled labourers at the Garden City estate at Letchworth, Hertfordshire. The share capital is to be 30,000*l*. A cottage costing 150*l*, including architect's fees and builder's profits, and containing three bedrooms, a good size living-room, scullery, with bath, &c., may be taken as one of several types. Such cottages have actually been built upon the estate for the sum named, and they can be readily let at 4*s*. 6*d*. per week. To this must be added rates representing (including water rate) another 8*d*., making 5*s* 2*d*. per week in all. The company will put the work of building out to contract. Applications may be made for the 12,750 Four per Cent Guaranteed Preference shares of 1*l*. each which are now offered.

MR. W. H. ORRETT, the United States Consul-General at Kingston, in a report to the Washington Bureau of Manufactures, says that although the recent catastrophe was naturally in every respect deplorable, yet it has taught the people of Jamaica invaluable lessons in building construction. The Government very wisely has under consideration a building law which aims at a uniform class of reconstructed buildings to more readily stand the violence of nature or fire, and it would appear that steel with rein-

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Steam Pump.



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and concrete will play an important part in this reconstruction of the principal business houses and banks. The members having appealed to the British Government for an imperial loan of nearly a million and a half to be used for construction purposes, he takes it that if it is granted stringent provisions will be made in its application so as to insure buildings being erected as earthquake and fire-proof as possible so as to safeguard the loan. Hence it is obvious that these buildings will be constructed principally of steel and reinforced concrete.

Mr. F. W. HARRIS, chemist to the Corporation, has prepared a report on the unsatisfactory ventilation of the Glasgow Council Chamber. His tests showed that a minimum figure for respiratory impurity of 4.14—twice as high as the Chaumont's limit for good ventilation—was obtained when 35 to 40 members were present; it was 7.31 when 100 members were on the floor of the House. The respiratory impurity in the House of Commons does not exceed 2. The analysis of the samples of air contained a proportion of carbonic acid gas in excess of the legal limit adopted for public buildings. Two of the samples, giving respectively 11.31 and 11.31 parts carbonic acid gas per 10,000 parts air, were in excess of the limit which Dr. Haldane concluded was reasonable to expect under ordinary circumstances in public buildings. He states it is obvious that the chief cause of inefficient ventilation is the inadequacy of the volume of air forced into the chamber. Another contributing factor is the impure quality of the air forced into the chamber through the two inlets situated nearest the speaker's room.

NEW waterworks have been completed at Basingstoke at a cost of nearly 20,000*l*. The scheme was planned by Mr. R. Phipps, the borough engineer and surveyor. The well and pumping-station is near Basingstoke station, and quite isolated from dwellings. The well is 60 feet in the chalk, with 35 yards of headings at the bottom, and yields an ample supply for the town and for the railway station, which takes one-third of the total. The water is described by the county analyst as "a typical chalk water—of the purest that can be obtained." The two well-heads, of 14 inches diameter, are of the three-throw type, the pumping capacity being 40,000 gallons an hour. The horse-power of the engines is about 65, but the actual

work done by the pumps requires only about 40 horse-power. The motive power for the machinery is supplied by a suction gas plant. The new works include a high-service reservoir at Cliddesden and new mains to the old reservoirs at South View, which supply the low levels, and to the new reservoir, which has a capacity of 240,000 gallons.

THREE years ago it was decided to construct the terminus of the Soudan railways at Port Soudan, the name given to an inlet on the west coast of the Red Sea, formerly known as Sheikh Bargout, 700 miles south of Suez and thirty-five miles north of Souakin. According to the local consul the town is at present composed of temporary wooden buildings, occupied by a population of about 5,000. Water is laid on from wells to houses belonging to the Government, and also to a series of hydrants in case a fire should break out. The possibilities for British trade in a new market such as this demand special consideration. Mr. Hohler thinks that competition might be made with Austria-Hungary in supplying cheap furniture of almost all kinds—cupboards, bentwood chairs, tables, &c. There is an excellent opening for ironware, light girders for building in particular. These are at present supplied from Belgium. They are considerably lighter and much cheaper than those of British make, and are apparently strong enough for the work they have to do. There is no reason whatever why British manufacturers could not produce these girders. The demand for them will be very considerable when the land tenure question is settled and the building of the town commences in earnest. Germany supplies a quantity of house fittings, locks, door handles, clasps for French doors, &c., also enamelware of a cheap quality. Here again there is an opening.

THE BUILDING TRADES EXHIBITION, OLYMPIA.

SOME of the exhibitors were careful to draw attention to the fact that what they displayed had not been specially prepared for Olympia, but was a fair example of their productions. In the case of *Elliott's Moulding and Joinery Company, Ltd.*, of Newbury, there was no need for this, at any rate so far as the most conspicuous feature of their stall was concerned. We have already expressed admiration for the imposing door in oak and yellow pine which

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The most economical, efficient, and reliable Boilers on the market.

Heating Power, 1,000 to 10,000 feet of 4-inch Pipes.

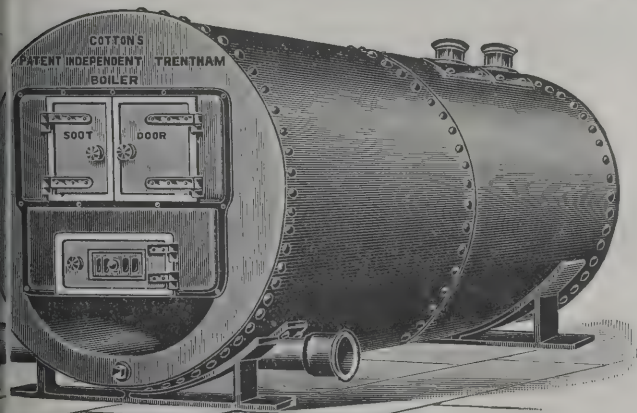
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PATERSON'S BITUMEN DAMP COURSE.

Sole Makers: **JOHNSON & PHILLIPS, Ltd.,** Victoria Works, Charlton, S.O., Kent.

was made for the front entrance of New York Lodge, Bourne End, a residence being fitted up for a wealthy American. Unfortunately (and yet fortunately) the owner arrived in England. As a consequence, Messrs. Elliott had to remove the doors from Olympia to Bourne End and erect them post haste. We say fortunately because it has provided us with an opportunity of seeing another highly creditable specimen of the workmanship turned out from Newbury. This time it is a solid Spanish mahogany circular vestibule in course of preparation for the Capital and Counties Bank, Weston-super-Mare, according to the design of the architects, Messrs. Hans Price & William Jane. Presumably Messrs. Elliott sell their doors as fast as they can make them, because the present example has yet to receive finishing touches at the Newbury works. Most people would, however, presume that the woodwork had already reached its highest state of perfection, for it is difficult to see how it can be improved upon in appearance.

If Messrs. Phillips & Son, Speedwell Works, Birmingham, had their way safe-breakers would rapidly become an extinct race. There can be little doubt that they are dying out even now, thanks to modern ingenuity. But Messrs. Phillips are pitiless and wish to remove their very means of subsistence. The greatest burglar artist will have to confess himself outmanœuvred when he tries persuasion on their new patent channel bolt, and, seeing his occupation disappearing, will perhaps contemplate the possible advantages of honesty. Of recent years he has been finding more and more difficulty in getting at the bolts of safes and forcing them back. What will his feelings be on finding that the door is one huge bolt, and that the harder he tries to force it (supposing he had succeeded in drilling a hole in the side) the more secure it becomes? On the outer edge of the safe door is a special rolled-steel channel section shaped something like a square hook. When the door is closed and the handle turned this section fits into another similarly shaped section, but with the hook reversed. Therefore every fraction of an inch is locked. Should the hinge be removed it still remains as firmly locked. Water, if played on the surface, would have no opening through which to penetrate. This channel bolt is fitted to all sizes of safes. Protection of another kind is offered by their patent keyhole safety plug. This is intended to enable a safe, of which two or

more keys are in use, to be secured against any but master key. To achieve this one key is supplied which can unscrew at the point where the handle projects beyond the keyhole. The master key is inserted and then twisted once or twice so as to detach the handle. The key then acts as an immovable plug until the handle is again screwed on.

The Colne River Varnish and Enamel Company, of W. Drayton, Middlesex, were anxious to show visitors (as we may tell them) what their specialties were capable of, and therefore arranged to decorate any woodwork introduced into the charming brick pavilion of C. H. Norris, Ltd., including its bold wooden cornice and porch pillars, painted with their snow-white flat japan, christened "Dialene." The splendour of the green front door was due to the special front door varnish. "Dialene" is made in a shell and glossy japan. It is said of it that it has a covering capacity, is easily worked, will not show over time, may be washed with ordinary soap and does not turn creamy. A sight of the pavilion was ample proof on the latter point. The price list of the twenty-six decorative varnishes made by the company compares favourably with those of other high-class varnish makers.

The Building Exhibition was not without its tribute of loyalty to the royal family. Walter C. Candy, Birmingham, showed small tile panels of the King and Queen, and moreover, had the gratification of presenting a pair to the Prince and Princess of Wales on the occasion of their memorial visit. It is a far cry to turn to their sanitary specialties. But it is with these that the stand was mostly concerned. They comprise pipes, tiles, bricks, sinks, ridges, quarry lavatory basins, chimney-pots, &c. Candy's "Wallap" upright supply closet is remarkable for its adaptability in receiving the fall pipe from the cistern, for its strength, its cheapness, and for its facility in fixing. Their lock sink drainer and plug is fixed to the sink at the works, but easily be taken out for cleaning the pipe, and serves three purposes—(1) it retains water in sink for washing, (2) it prevent back smells from sink or gulley, and (3) it stops draught up the sink pipes. In conjunction with sink they have patented an outlet pipe to flush at an angle in the direction of the yard gulley. Part of the stand was

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GUARANTEED PURE TRINIDAD BITUMEN

SHEETING AND DAMP COURSES.

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Offices and Saw Mill—HENDON LODGE.
Deal, Batten and Board Stocks—SOUTH DOCK.

Hardwood Yard—LAWRENCE STREET
Timber Ponds—CLAXHEATH

mental wooden pavilion roofed with plain and decorated
eiley tiles.

"Marpedo" and "Antirod," manufactured by J. H. Fuller
Co., Ltd., at Reading, were both represented at the stall
of the Grooved Wallpaper Co. "Marpedo," the sanitary
water paint, is obtainable either as a paste or as
powder. The latter is prepared specially in a pure
form for ceilings and outside or inside walls. It is calcu-
lated that for ordinary work a 7-lb. tin of powder will
cover about 70 square yards (a case containing sixteen
tins costs 36s.), while 1 cwt. of paste will cover about
100 yards on plaster walls, non-porous surfaces, or
second-coat work, and costs from 30s. to 40s. "Marpedo"
has been for many years past popular as an economical and
effective covering for walls, and a substitute for oil paint
distemper. Messrs. Fuller & Co., Ltd., in addition,
brought their "Antirod" to the notice of visitors. As its
name implies, it is a patent chemical wood preservative,
which is also applicable to stone. Decay in timber in
exposed positions is frequently due to the fact that the
changes in temperature, moisture, &c., cause the fibre of
wood to contract and expand, and the rain dissolving
the soluble albumin leaves innumerable minute open-
ings exposed to the further action of the elements. We
should note that "Antirod" by direct chemical action coagulates
the soluble albumin, thus forming substances that are
practically insoluble and therefore unaffected by moisture or
change of temperature; the surface of the wood treated
with "Antirod" presents a most powerful resistance to the
decay. From practical tests it has been proved that
ordinary deal will take up as much as 10 per cent. of its
weight of "Antirod," and the more sappy the wood the
more "Antirod" it will absorb.

The "Durabar" patent draught, dust and weather ex-
cluder and water bar which was shown during the last few
years is the invention of Mr. A. R. Groome, A.R.I.B.A., of
Hereford. It is very simple in its construction, there is no
complicated mechanism or springs, neither is there any pin-
striking plate projecting out at the end of the excluder to
catch in one's clothes. It is brought into action by the
lifting of the door, and rapidly and silently raises itself up
from the floor or other surface immediately the door is
closed, so that there is no rubbing or wearing of the carpet,

&c., or of the excluder itself. It appears as if it would be
as durable as it is simple. It can be applied to old or new,
interior or exterior, single or double doors, and to inward-
opening casement windows. It is made in two patterns,
A and B. Pattern A can be affixed without the aid of a
joiner, it being simply screwed on to the surface of the
door, and rather adds to the appearance of it. Pattern B
is applied underneath, the bottom of the door being rebated
to receive it, and when fixed it is practically out of sight.
The sole makers of the Durabar are the Draught, Dust
and Weather Excluder Company, whose offices are Palace
Chambers, Hereford.

The exhibition at Olympia has excelled its predecessors
in the number of visitors and the interest taken in the
contents of the stalls. It must be allowed that on no
former occasion was so creditable a display brought
together, and the exhibitors, we hope, will be amply repaid
for their enterprise.

A HEATING DISPUTE.

THE following letter has been addressed to the convener
or chairman of the Dundee School Board by Mr. J. H.
Langlands, the architect, concerning the contracts for heating
in two of the schools:—

"After the serious charges which appeared in the letter
addressed to the board by Messrs. G. H. Nicoll & Co. and
Mr. Keay I deem it my duty to the board and to myself to
put you, as convener, and, through you, the board, in pos-
session of a full explanation of the matter. On July 6,
1905, offers were taken in for the heating of the Harris
Academy. Messrs. A. L. Peacock & Co. were the lowest
and the successful contractors, and they carried out the
work to my entire satisfaction, and I have pleasure in
knowing that the system has all along worked remarkably
well. Messrs. G. H. Nicoll & Co. and Mr. Keay were un-
successful offerers. It is alleged that whereas the specifica-
tion required wrought-iron fittings, cast-iron fittings have
been substituted, to the disadvantage of the board, and that
full payment was made. The specifications, of which the
complainants had copies, made no mention as to whether
wrought-iron or cast must be used, and the contractors
would be entitled to use the latter, both pipings and fittings,
if sufficient weight were used; but absolutely not an inch

THE "DRAWWELL" GRATE

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First in the Final Tests

at the recent test with Firegrates at
the New Government Offices in Whitehall,
under the direction of a sub-committee of
the Coal Smoke Abatement Society, in
conjunction with Sir Henry Tanner and a
committee of experts, for smoke abatement,
heating power, fuel economy, and suit-
ability for public and private buildings.

**N.B.—All Grates bear the Trade Mark and Name of
"Drawwell" on firebrick to insure against imitation.**

This Grate can only be supplied through
Builders' Merchants, Ironmongers, &c.,
but Drawings and Particulars can be
obtained from

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London Showrooms, Saracen's Head Buildings, Snow Hill, City,

W. B. CLARKE, Agent.
where the "Drawwell" can be seen in action.



of cast-iron piping was used. The piping is entirely of wrought-iron. Another charge is that, whereas the specification demands a double system of piping, the job has been carried out on the one-pipe system. This is incorrect. The double system (flow and return mains) was faithfully carried out, as may be seen by you or any party who will take the trouble to examine. It is true there is only one riser and one valve to each radiator. Before commencing I was doubtful whether in an old building such as the portion in question single risers could be successfully used owing to the arrangement and plan of the building, and I therefore specified $\frac{3}{4}$ -inch return pipes and valves for each radiator to be used, if found necessary. In the course of construction I found that single risers were practicable, and accordingly carried out the job with them. The actual piping used on the job, which includes the risers, was measured, as can be seen from my measurement book, before the account was paid, and piping and valves not used were deducted. The contractors' offer was 220*l.*, and the total amount paid was 245*l.* 13*s.* 3*d.*, or 25*l.* 13*s.* 3*d.* over the contract. This was made up as follows:—When ordering the fan from the makers they warned me that a 36-inch fan going at the speed necessary for the amount of air required to pass would be liable to cause such noise as would be disagreeable in the classrooms immediately over, and on this practical advice I substituted a 48-inch fan at an additional cost of 18*l.* During the execution of the work the teacher complained of the want of heat in the workshop, and I introduced a radiator there at a cost of 5*l.* 10*s.* The balance, 2*l.* 3*s.* 3*d.*, was caused by incidental small items. With regard to the covering of pipes, it is correct that moulded asbestos was specified and ordinary asbestos used, but that was found more suitable as there were so many bends. The material is the same, the only difference being that in the one case it is brought moulded on the job in sections and fixed round the pipes by straps, while in the other it is brought in the plastic state and plastered round the pipes in position. When finished the one is as expensive as the other. It will gratify me if the board, or any neutral expert they may appoint, would examine and sift the whole charges which have been made against me, with, as it appears to me, an intention to injure my professional reputation. In regard to the allegations made as to An crum

Road school and New East End school system, I will prepared to give such explanations as, I am convinced, must be satisfactory to yourself and the board."

THE STORY OF THE BRICK.

THE building brick is such a common thing that one may excused for supposing that it always existed, and so simple that it needed no discoverer, yet there was a time when it did not exist. It was "necessity, the mother of invention" which called it, like many other things, into being. A recent Babylonian expedition of the University of Chicago says the director, Professor Banks, in the *Scientific American* while excavating at Bismya discovered that the brick first employed in Mesopotamia nearly 10,000 years ago, that level alluvial plain, absolutely without stones for building material, but with an abundance of clay, primitive when he wished for a house more substantial than one reeds constructed its walls of the common clay soil of ground. Experience taught him that if the clay was moulded and dried in the sun it would be more durable. When he laid a chunk of moist clay in the sun to dry, made the first brick.

In the lowest strata of the ruins of the exceeding ancient city of Bismya, walls of these shapeless bricks were discovered; it was at a very early period that Babylonians began to form the clay in a rectangular mould as the modern Arabs of the desert still continue to do.

The man who first discovered that bricks could be burned was that half-naked Babylonian of about 4500 B.C. who, while poking among the ashes of his old camp fire, saw that the once moist clay beneath it had become hard and red. The first bricks which he burned were exceedingly crude in shape, flat on the bottom where the moist clay had rested upon the ground to dry, and rounded on the top. Although the form was suggestive of the rectangular, bulging sides gave it a somewhat circular appearance, soft mud, if placed upon the ground to dry, would assume this shape. These early bricks were small and thin, measuring about 20 centimetres in length and 5 in thickness, yet as time progressed they rapidly grew to about twice that size.

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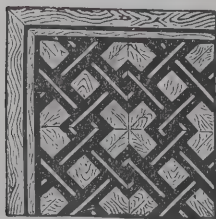
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bricks from his kiln is but imitating the brickmaker of
years ago. The earliest known mark which appears
the surface of the ancient brick was made by pressing
of the thumb or of a round stick into the soft clay.
bricks became larger, an interesting system of
marks was adopted by the royal builders. The first
of the series consisted of but a straight line drawn
across the surface of the brick; the next genera-
tion drew the mark by drawing a line diagonally and the
third added a diagonal line forming a Saint Andrew's cross.
The fourth generation drew two parallel lines lengthwise
the surface of the brick, the fifth drew them diagonally,
and the series continued with three, four and five lines.
The dynasty came to an end
far from 3800 B.C. the Semites invaded Babylonia,
Sargon, the king of about that date, modified the brick
square shape, a form which has continued in the
to the present time. He also discarded the ancient
of brick marks to adopt a stamped impression of
one and titles. His son, Naram Sin, finding the large
of Sargon, which measured 42 centimetres square
in thickness, too cumbersome, reduced them to about
centimetres square. A thousand years later, or about
B.C., the size had been reduced to about 30 centi-
metres, with the thickness of 6 centimetres. Thus they
came to the end of the Babylonian Empire, and the
of Nebuchadnezzar at Babylon were entirely con-
d of them.
The brick inscription, which first appeared in 3800 B.C.,
was engraved but more frequently stamped, was
placed upon every brick of a structure. Naram Sin
had a few of his bricks with the brief legend, "Naram
the Builder of the Temple of Ishtar." Of later kings
inscriptions, which were longer, appeared upon a
number of bricks. I found in the Bismya temple
one of every twenty bricks of Dungi of 2750 B.C.
marked with nine lines. Nebuchadnezzar stamped nearly
every brick in his numerous vast constructions with a
inscription which read:—
Nebuchadnezzar, king of Babylon,
The restorer of the temples Esagil and Ezida,
The first-born son of Nabopolassar, king of Babylon."
The mason of about 2800 B.C., while laying the square

brick, found that to end the courses evenly it was necessary
to break a brick into halves. The manufacture of half-
bricks then began, and thus arose a brick of the shape and
approximately the size of those employed in our own
country and in Europe. Together with the half-brick, as
architecture became more complicated, the Babylonians
employed other forms for binding the corners of walls,
building columns and wells, and for ornamentation. Some
were circular or semicircular, some were wedge shape with
a rounded base or with the point missing; some were
square, with one or more edges concave or convex, and of
others a square from one corner had been omitted.

In laying the bricks those of a plano-convex shape,
which were employed about 4500 B.C., were set in the wall
upon one edge and held in place with bitumen, the black
pitch which comes from the hot springs at Hit, upon the
Euphrates, or more frequently with mud. While the use
of both bitumen and mud continued, some from the edge of
the Arabian plateau was employed before Nebuchadnezzar's
time. It is now the common cement of Mesopotamia.

Thus the brick and the brick stamp arose. Several
thousands of years were required for its evolution from
the lump of clay to the form which the Babylonians re-
garded as perfect. In durability and in the variety of
shapes the skill of the early brickmaker has never been
surpassed. At Bismya we found bricks from 4500 B.C. as
perfect as upon the day they were made, and our large
desert house was constructed mostly of them. Our desert
well was walled up with bricks 5,000 years old, and they
will still be perfect long after the ordinary brick from the
modern American kiln shall have crumbled to dust. In
the latter days of Babylon, after the process of glazing had
been discovered, huge designs of animals in various colours
were represented in relief upon the brick walls, and so
perfect was the design that each brick was moulded as care-
fully as the sculptor now shapes the various stones which
are fitted together to form a richly carved monument.

To the archæologist this discovery of the origin and
development of the brick and their stamps is of more than
usual interest. It not only increases his knowledge of the
life of early man, but, what is more valuable, it presents
him with a clue by which he may determine at a glance the
comparative if not the absolute age of the ruins of the many

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buried Babylonian cities if only the fragment of a brick remains.

TARRING ROADS.

In connection with the competitions being carried out by the Roads Improvement Association, acting on behalf of the Royal Automobile Club and the Motor Union of Great Britain and Ireland, for (1) the best machine for spreading tar upon existing road surfaces, and (2) the best preparation of tar suitable for road purposes, seventeen entries have been received—eight tar-spreading machines and nine preparations of tar. It has been provisionally decided that the experiments in connection with the competitions should be carried out in the proximity of London about the middle of May. The following is a list of the various competitors:—

Tar-Spreading Machine Competition.

Thomas Aitken, County Buildings, Cupar-Fife, one machine.

Emulsifix, 55 Cross Street, Manchester, one machine.

Johnstone-Lassailly Patent Road Binder Company, 45 Parliament Street, London, one machine.

Tarmaciser, Ltd., 7 Victoria Street, London, one machine.

Tarspra, Ltd., 20 Victoria Street, London, three machines.

Thwaite & Thorp, 29 Great George Street, Westminster, one machine.

Tar Preparation Competition.

A. I. Craig, c/o. Wishart & Sanderson, 15 York Place, Edinburgh, two preparations.

R. S. Clare & Co., tar distillers, Liverpool, one preparation.

Ermenite, Woodbank, Matlock Bath, one preparation.

Gas Light and Coke Company, London, one preparation.

Hahnite, 3-4 Great Winchester Street, London, one preparation.

Kay Bros., Ltd., St. Petersgate Mills, Stockport, one preparation.

T. G. Marriott, 328 Renfrew Street, Glasgow, one preparation.

Tar (Patents) Solidifying and Distilling Company, Ltd., 15 Mansion House Chambers, London, one preparation.

BRIDGE CONSTRUCTION.

At the ordinary meeting of the Institution of Civil Engineers on the 16th inst., Sir Alexander Kennedy, LL.D., F.R.S., president, in the chair, the papers read were "The Pyrmont Bridge, Sydney, N.S.W.," by P. Allan, M.Inst.C.E., "Swing-Bridge over the River Avon at Bristol," by W. I. Savile, Assoc.M.Inst.C.E.

The Pyrmont Bridge across Darling Harbour replacing the old bridge built by a private company in 1857 is a new bridge and its approaches extend from Sussex Street on the city side to Murray Street on the Pyrmont shore a distance of 1,825 feet, the length of the bridge proper being 1,210 feet. There are three 30-feet clear openings in the Sydney approach for vehicular traffic to wharves; while the Pyrmont side the Darling Island Railway passes under a steel bridge of 25 feet span. Electrical motive power is used for working the swing-span, also for roadway lighting, the whole being operated by one man from a conning-tower on the centre of the swing-span. The approaches are imposing in character, owing to the north or exposed, sides of abutments and retaining-walls built faced with Pyrmont freestone. The clear headway at high-water mark is 25 feet under the side spans, which are twelve in number, with trusses of the Howe type slightly modified.

The wrought-iron caisson forming the pivot-pier has a diameter of 42 feet, is 53 feet 1½ inch in length, and the concentric rings of which it is composed are connected by angle-bar bracing, the inner ring being splayed out at bottom to form a cutting edge. It was sunk by dredging to the rock, which had a dip of 8 feet in diameter.

The first section, weighing 50 tons, was put together on an ironbark frame suspended by wire ropes from the already erected permanent protecting platform. The lifts were eased off till floating point, when section after section was built on, until the harbour-bed was nearly reached, weighting being done by depositing concrete between the walls. Care had been taken previously to level off the bed and the caisson was brought to true position by forcing wedges between timber guides against the side of

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For Index of Advertisers, see page x.

and the piles of the platform. Once grounded, the material was removed by means of a bucket dredger rock was reached. Bores having disclosed 25 feet of sandy clay, it was intended to excavate in the dry in opening rock sufficiently to enable the cutting edge to bed on the solid for its whole periphery. When the was pumped out the caisson listed 11 inches out of but only two small leaks occurred. Excavation proceeded on the high side, the caisson being lowered 2 feet in eight hours, when a "blow" filled the chamber in a few minutes, but did not alter the plumb. This was less due to the stiff clay not following the cant, the head eventually breaking the seal.

The advantage of a dry foundation was considered so that pumping-out was decided upon, despite the alternative of excavation and depositing of the bottom of concrete by divers which had been provided for in the contract. A large bank of clay was put in position for excavation of the remaining 6 feet of rock in the wet and proceeded with by "jumpers." During excavation the caisson was kept near the top of the inner wall. Upon rock being cleared about 1 foot, water was pumped down about 1 foot, and the caisson was allowed to settle, this being done until the contract depth was reached. Non-competence of strata and any consequent tilting was immediately dealt with, the cutting edge being ultimately bedded in its correct position with its top only 2½ inches out of level—within the margin of 1 foot allowed. The plumb sides of the caisson and the simple expedient of having four spirit-levels figured on the inner wall materially assisted in achieving this accuracy.

Details are then given as to how concrete was deposited in the caisson where the cutting edge was not bearing, and how the inside of the chamber was made secure before pumping out. Upon lowering the water only three small leaks were noticed, which, when led to a sump, could be kept down by pumping. Concreting was then carried on day and night up to 12 feet above the cutting edge. From this point the caisson was filled with rubble sandstone concrete, the concrete weighing up to 3 tons. The total weight on the caisson, excluding friction and buoyancy, is 6,800 tons. The rest-piers are of concrete with masonry tops, the outer one, being founded on rock, whilst that on the

Sydney side is carried on fifty-eight piles driven to the rock 64 feet below low-water mark. The site for the latter was excavated by a ladder dredge to a level clay bottom 32 feet below low-water, piles being driven to the rock with a follower, and finished alternately 2 feet and 3 feet 6 inches above this level. Sheathing was then built round, and a box for concreting was formed. After divers had removed accumulated silt, &c., sand was deposited over the whole area to obtain a clean bottom. The method adopted for depositing concrete (1,850 cubic yards in nineteen days) through water by special tripping boxes and for overcoming "slurry" are fully described.

The four N-shaped main girders forming the swing-span have horizontal tops with curved bottom booms, and are 223 feet in length, with a depth of 15 feet at the centre and 5 feet at the ends. Owing to the high speed of swinging a rigid deck span was essential, which was obtained by rivetting the buckled plates to the projecting bottom flange-plates of the top booms. The swing is of the rim-bearing type, its weight of 850 tons when swinging being distributed by means of small girders to equidistant points on the drum.

Great ingenuity was displayed by the supervising engineers in England in arranging for the treads and tracks of the turn-table to be faced up true, the diameter (35 feet) being so large that provision for turning could not be given effect to without building special lathes. The method adopted is fully described. When the parts were erected the sections fitted accurately, and the fact that the span has coasted 70 degrees after cutting off the current shows the easy running of the track.

Difficulty was experienced through the pivot moving, and owing to the rollers seizing and tearing off the ends of the radial rods. The steps taken to overcome these defects, which became serious, are fully detailed. The results were gratifying, for in the three years after effecting these alterations the swing-span was opened 18,816 times without a hitch or any expenditure for repairs, whilst there is not an idle roller, thus showing complete distribution of the weight.

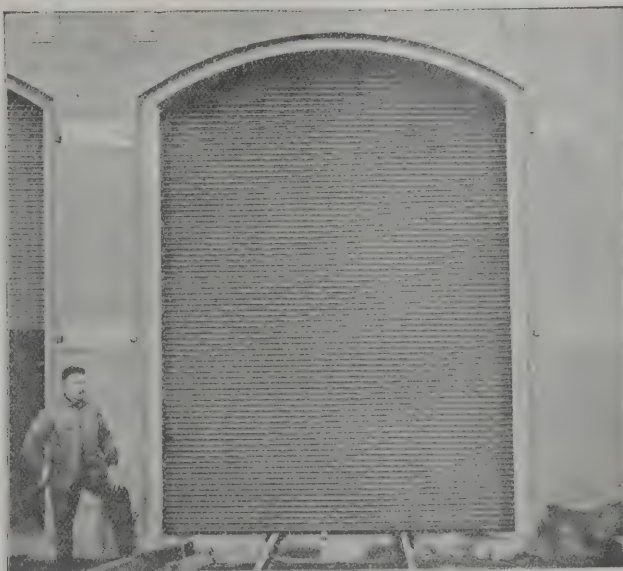
The electrical equipment for operating the swing-span consists of two 50 horse-power motors, located on a machinery platform within the drum, and driving a main

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horizontal shaft connected by vertical shafts and bevel-gearing to the rack at the top of the pier. The motors have a guaranteed starting effort of 5,384 lbs. at 3.143 inches radius from the centre of the armature shaft; also an armature-speed of 509 revolutions per minute in 24 seconds with load, and current not exceeding 130 amperes in either motor. Results are given of exhaustive tests made of the power and cost for opening the span. The quickest opening was 30 seconds, costing 0.357*d.*; whilst the most economical run took 55 seconds, costing 0.192*d.*, with a maximum effort of 48 horse-power.

Tables show the cost and speed of lifting the ends of the span and working the gates, while a full description of the working is given, together with details of the design of the controlling brake and the latch and catch for securing the span. The motor-gear and solenoid brakes for the gates are also described, with an account of the difficulty experienced before obtaining satisfactory results.

Current is supplied by the Railway Commissioners at 1*d.* per Board of Trade unit. During the four years 1902-6 the swing was opened 24,610 times, the cost of the current being 83*l.* 6*s.* 5*d.* The total cost of the work was 112,500*l.* The bridge was begun in 1899 and opened in 1902.

The second paper describes a bridge built by the Corporation of Bristol to carry a carriage road and a double line of the Great Western Railway across the river Avon. Part of the cost was borne by the Great Western Railway Company.

The bridge is part of a scheme of railway extension at the Bristol city docks, its main object being to provide a junction with the Great Western main line at the west end of the docks, and thus relieve the congestion caused by goods traffic at Bristol station. It also improves the road communication between Bristol and its southern suburbs.

The total length of the bridge, including approach-spans, is about 600 feet. The main feature is the swing-span, which is 202 feet 6 inches long, pivoted on a pier in the river. The two arms of this span are unequal, their lengths being 121 feet 6 inches and 81 feet respectively. All the river traffic passes through the channel spanned by the long arm, where there is a clear waterway 85 feet wide.

The swing-span and one approach-span on the north side are double-decked, the roadway being carried on the

high level and the railway on the low level. The remaining spans are on the high level and carry only the roadway, the railway being on the ground-level is carried by girders only where it is actually crossing the river.

The work was divided into four contracts, namely foundations, superstructure, machinery and interlocking.

The foundations contract includes the following work:

(a) Two river-piers, carrying respectively the pivot and the north end of the swing-span. These piers, which are of masonry and concrete, were both built as single-pile dams, and are founded on hard marl. The south abutment and approach, founded partly on concrete taken down to the marl and the remainder on pitched piles. (c) The north approach, where there are masonry abutments, two of which are founded on piles and the third is partly on piles and partly on two concrete columns, taken down to a hard bed of gravel.

The superstructure contract includes the swing-span, which the swinging weight is about 1,000 tons, and approach spans on the north side and one on the south side of the river. The paper gives particulars of the construction of all these spans and the methods of erection. A description is also given of the turntable of the swing-span and a tabular statement shows the weight of steelwork of each of the spans.

The turning-machinery consists of two three-ton reversible hydraulic engines, situated in a tower above the roadway. These engines, by means of gearing, drive vertical shafts, each of which carries a pinion at its lower end which engages in a circular rack on the lower roadway. Only one of these engines is required to be used at a time, the other being provided in case of a breakdown. Four 60-ton hydraulic presses are fixed, one at each end of each main girder, and by means of these the ends of the girders are jacked up to enable sliding blocks to be moved into position under the girders when the bridge has been closed, or to be withdrawn when the bridge is to be opened. When these sliding blocks are in position they transmit the reactions to the abutments, and the main girders are supported at each end and at the turn-table.

The paper gives a description of the navigation lights and signals, and also of the interlocking with the railway signals.

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THE
Architect and Contract Reporter.

FRIDAY, MAY 3, 1907.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. Business communications to the Managing Director,

P. A. GILBERT WOOD,

Managing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

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NOTICE TO ADVERTISERS.

In no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

Of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

KINGSTOWN, CO. DUBLIN.—July 1.—For designs for buildings for housing the very poor. First prize 100l., second 20l. Particulars on payment of 1s from Mr. M. A. Manning, town clerk.

LONDON.—The metropolitan borough of Bethnal Green invite designs for municipal offices, council hall and committee-rooms. Premiums of 100l and 50l. Particulars and conditions on payment of 2l. 2s., returnable on receipt of design. Mr. Robert Voss, town clerk, Town Hall, Bethnal Green, E.

WEYMOUTH.—July 30.—The Town Council of the borough of Weymouth offer 100 guineas for design for pavilion on north side of pier. Further particulars from Mr. H. A. Huxtable, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ABINGDON.—May 31.—For building manual instruction and cookery centre at the Council school. Deposit 2l. 2s. Send names to the Secretary to the Education Committee, The Forbury, Reading.

BARNSELY.—May 6.—For excavating and levelling for proposed extensions, also erection of three warehouses, Peel Street. Mr. P. A. Hinchcliffe, 14 Regent Street, Barnsley.

BIDDULPH AND BIDDULPH MOOR.—May 25.—For proposed Council schools to accommodate 708 and 306 children respectively. Deposit 2l. 2s. and 1l. 1s. Mr. Graham Balfour, director of education, County Education Offices, Stafford.

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BLACKBURN.—May 4.—For repointing St. George's Presbyterian church and schools, Preston New Road. Mr. F. J. Parkinson, architect, 9 Richmond Terrace, Blackburn.

BLACKBURN.—May 11.—For the erection of a new department to Cedar Street Council school, to accommodate 280 children. Deposit 2*l.* 2*s.* Messrs. Cheers & Smith, architects, 24 Richmond Terrace, Blackburn.

BODMIN.—May 13.—For the erection of a private residence and certain other works in Priory Avenue. Mr. William J. Jenkins, architect, Bodmin.

BRADFORD.—May 13.—For the erection of baths and wash-houses, Victoria Street, Bradford, for the Manchester Corporation. Deposit 3*l.* 3*s.* The City Architect, Town Hall, Manchester.

BRISTOL.—May 13.—For the construction and maintenance for twelve months after completion of the superstructure of an engine and boiler-house for the graving dock at the Royal Edward Dock, in course of construction at Avonmouth. Deposit 5*l.* Mr. W. W. Squire, engineer, Cumberland Basin, Bristol.

CHESTERFIELD.—For the erection and completion of nurses' home, together with various alterations and additions to and reconstruction of present buildings, for the Governors of Chesterfield and North Derbyshire hospital and dispensary. Deposit 2*l.* 2*s.* Mr. W. Cecil Jackson, architect, 29 Knifesmith Gate, Chesterfield.

CHILSWORTHY.—May 16.—For the enlargement of Wesleyan chapel and new stable and carriage-house at Chilsworthy, Holsworthy. Mr. R. Cory, Chilsworthy, Holsworthy, Devon.

CRANBROOK.—May 8.—For the erection of a chimney-shaft and repairs to cookhouse and other buildings at the workhouse. Mr. C. Payne, surveyor, Cranbrook, Kent.

CRANBROOK.—May 14.—For alterations at the police-station. The County Architect, 86 Week Street, Maidstone.

DUNDEE.—May 6.—For erecting branch library at Strathmartine Road. Mr. James Thomson, city architect, Municipal Offices, 91 Commercial Street, Dundee.

EAST PRESTON.—May 13.—For addition of a room and other work at the infectious ward at the East Preston work-

house, near Angmering station, Sussex. Mr. Harold Potter, architect, 41 Warwick Street, Worthing.

EXETER.—May 8.—For the erection of a detached house on the Streatham Hall Estate, Cowley Road. Messrs. E. Harbottle & Son, architects, County Chambers, Exeter.

FENTON.—May 13.—For the builder's work required for the construction of public underground conveniences Victoria Place. Mr. S. A. Goodall, surveyor, Town Hall, Fenton, Staffs.

FOULSHAM.—May 10.—For the enlargement and improvement of the Foulsham Council school, Norwich. Deposit 1*l.* 1*s.* Messrs. Morgan & Buckingham, architects, 1 Upper King Street, Norwich.

HAWORTH.—May 13.—The West Riding standing joint committee invite whole tenders only in connection with following works, viz.:—Haworth new police station, Haworth new police station, Knaresborough court-house (additions and alterations). Deposit 1*l.* in each case. Mr. J. Vickars, county architect, County Hall, Wakefield.

HEXHAM.—For the restoration of Slaley Church. A. B. Plummer, F.R.I.B.A., diocesan architect, Newcastle-on-Tyne.

HIGHFIELD AND BIRTLEY.—May 14.—The Durham County Council invite sole tenders for erection of new school at Highfield (near Rowlands Gill) and Birtley. Plans, specifications and general conditions of contract can be seen and bills of quantities obtained as follows:—For Highfield school, at the office of Messrs. Liddle & Browne, Prudential Buildings, Mosley Street, Newcastle-on-Tyne; for Birtley school, at the office of Mr. J. W. Rounthwaite, 13 Mosley Street, Newcastle-on-Tyne.

IRELAND.—May 6.—For the following new works, the Great Northern Railway Co. (Ireland):—Extension Post Office rooms, Portadown station. Deposit 2*l.* each; forms of tender 1*s.* each. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

IRELAND.—May 6.—For the following new work, for the Great Northern Railway Company (Ireland):—Extension general offices, Amiens Street, Dublin. Deposit 2*l.* Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

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IRELAND.—May 9.—For the following works for the Londerry County Council, viz. to alter, repair, and make ons to the Coleraine court house. Not to exceed County Surveyor's Office, County Court House.

IRELAND.—May 14.—For erecting an organ chamber and works at the First Presbyterian church, Bangor. s. Young & Mackenzie, architects, Scottish Provident ings, Belfast.

IRELAND.—May 17.—For building a parochial house at e. Mr. Edward J. Toye, architect, 20 Great James e, Londonderry.

IRELAND.—May 24.—For erecting church near Doagh, e committee of Donegore Second Presbyterian church. V. D. R. Taggart, architect, 2 Wellington Place, st.

IGHLEY.—May 9.—For the mason, joiner, slater, per and ironwork required in erection of a workshop ulbourne Street. The Keighley Ironworks Society, ley.

NCASTER.—May 4.—For new villa for private patients county lunatic asylum. Deposit 2/ 2s. Application ril 20 to Mr. H. Aspinall, architect, Prudential Build- Dale Street, Liverpool.

EDS.—May 6.—For the whole or any of the several s required in the erection of twelve back-to-back s in Harehills Lane. Forward names to Messrs. as Winn & Sons, architects and surveyors, 84 Albion e, Leeds.

IGH.—May 4.—For the erection of receiving wards at orkhouse. Mr. J. C. Prestwich, architect, Bradshaw- Leigh, Lancs.

ITTLEBOROUGH.—May 4.—For the erection of 170 el yards of river wall at their sewage works. Mr. oe H. Wild, clerk and surveyor, Littleborough, Lancs.

ITTLE BROUGHTON.—May 9.—For the erection of loose- &c., at the Hill Farm, Little Broughton, near Cocker- th. The Estate Office, Cockerhmouth Castle.

CKETT.—May 7.—For erecting improvements, &c., l Luckett Council school, Cornwall. Mr. B. C. Andrew, ect to the committee, Biddicks Court, St. Austell.

LYMINGE.—May 9.—For building an office and founda- tions for a weighbridge at the workhouse. Mr. R. Loner- gan, clerk, 11 Cheriton Place, Folkestone.

MACCLESFIELD.—May 7.—For the erection of a store and fitters' shop at the gasworks and a brick boundary wall to gasholder yard. Deposit 10s. Mr. Newbigging, engineer, Town Hall, Macclesfield.

MANCHESTER.—May 8.—For supplying and fixing tiled dados at the Mansfield Street (Ardwick) and Seymour Road (Clayton) municipal schools. Deposit 1/ 1s. Manchester Education Committee Offices, Deansgate, Manchester.

MILE END.—May 4.—For additions to Tubswick farm- house, Mile End. Mr. Herbert Goodyear, borough engineer and surveyor, Town Hall, Colchester.

MILFORD HAVEN.—May 4.—For the erection of three dwelling-houses in Dewsland Street. Mr. Alex. S. Chugg, architect and surveyor, 14 Waterloo Road, Milford Haven.

RADCLIFFE.—May 25.—For the construction of public conveniences in the Coronation Park. The Council's En- gineer, Council Offices, Radcliffe.

ST. NICHOLAS.—May 6.—For the erection of a cottage at St. Nicholas, near Cardiff. Mr. C. H. Kempthorne, architect and surveyor, Albert Chambers, High Street, Cardiff.

SCOTLAND.—May 6.—For the mason, carpenter, plumber, plasterer and painter's work of house and shop to be erected in Aberchirder, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

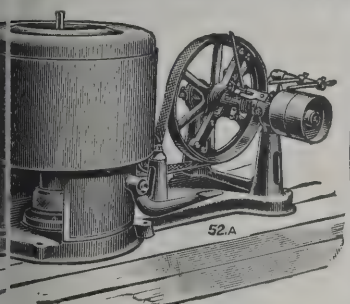
SCOTLAND.—May 8.—For the mason, carpenter, plumber, slater and plasterer's work of a cottage to be erected at Upper Manbeen, Elgin. Mr. John Wittet, architect, Elgin.

SCOTLAND.—May 8.—For the mason, carpenter, plumber and slater's work of restoration after fire at Stoneyfield, Pluscarden, Elgin. Mr. John Wittet, architect, Elgin.

SCOTLAND.—May 22.—For the erection of a battery- house and relative works at Hamilton, for the Lanark County Council. Deposit 1/ 1s. Mr. W. L. Douglas, C.E., district engineer, District Offices, Hamilton.

SOUTHALL.—May 14.—For construction of an under- ground convenience, for the Southall-Norwood Urban District Council. Mr. Reginald Brown, A.M.I.C.E., &c., engineer and surveyor, Public Offices, Southall, Middlesex.

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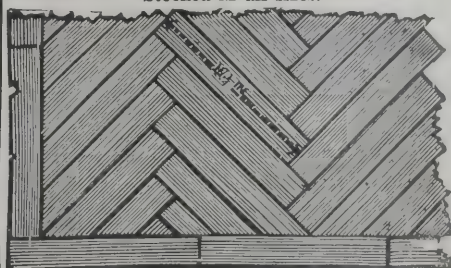


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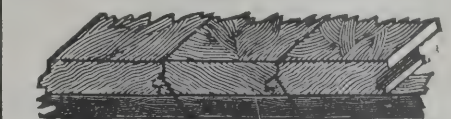
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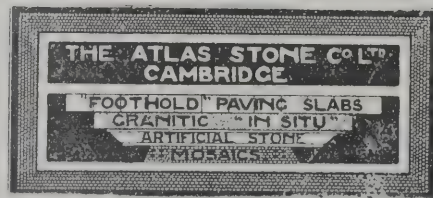
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WALES.—May 5.—For the erection of a shop and premises, Pentre. Mr. J. Rees, architect, Pentre.

WALES.—May 6.—For the erection of a chapel at Merthyr Vale, for the Methodist Connexion. Mr. William Dowdswell, architect, Treharris.

WALES.—May 6.—For the erection of a cookery school, with the necessary offices, boundary walls, &c., at the rear of Duffryn school, Mountain Ash. Deposit 2*l.* 2*s.* Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALES.—May 10.—For the erection of three houses at Troedyrhiw. Mr. J. Llewellyn Smith, architect, Aberdare.

WALES.—May 14.—For the erection of a residence, stables, &c., at Llandovery, Carmarthenshire. Deposit 1*l.* 1*s.* Mr. Arthur S. Williams, architect, Llandilo.

WEYMOUTH.—May 14.—For erecting bakery and stabling, 50 Dorchester Road. Mr. S. Jackson, architect and surveyor, Bridge Chambers, Weymouth.

WITHIEL.—May 7.—For enlarging the playground and alterations to offices at the Withiel Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddicks Court, St. Austell.

WOKINGHAM.—May 31.—For the building of a manual instruction and cookery centre at the Westcott Road Council school. Deposit 2*l.* 2*s.* Secretary to the Berkshire Education Committee, The Forbury, Reading.

WOLVERHAMPTON.—May 13.—For extensions to the electric-lighting station at Commercial Road. Deposit 1*l.* 1*s.* Mr. George Green, borough engineer, Town Hall, Wolverhampton.

YARDLEY.—May 14.—For the erection of a Council elementary school in Church Road, Yardley, near Birmingham. Deposit 2*l.* 2*s.* Applications may be made on or before April 30 to Mr. Anthony Rouse, quantity surveyor, King's Court, Colmore Row, Birmingham. Mr. Arthur Harrison, architect, 109 Colmore Row, Birmingham.

MR. WILLIAM CURLING ANDERSON, of Crystal Palace Park Road, Sydenham, vice-chairman of the Associated Portland Cement Manufacturers, who died on March 25, left a fortune of 137,023*l.*

TENDERS.

ASHFORD.

For supply and fixing a suction gas plant and engine at Bybrook sewage works. Mr. W. TERRILL, surveyor.

Plant for 7-inch pump.

Dynamic Gas Co.	£910	c.
Capel & Co.	735	10
Crossley Bros.	721	c.
Campbell Gas-Engine Co.	700	c.
Tangyes, Ltd.	690	
Bilbie, Hobson & Co. (for Hornsby & Sons)	686	10
F. Clark (for National Gas-Engine Co.)	620	c.
F. Clark (for Hornsby & Sons)	600	c.

Plant for 6-inch pump.

Dynamic Gas Co.	885	0
Campbell Gas-Engine Co.	695	0
Bilbie, Hobson & Co.	616	10
Davey, Paxman & Co.	570	0
F. Clark	535	0
F. Clark (for National Gas-Engine Co.) (accepted)	500	0
Hughes	512	0
National Gas-Engine Co.	490	0

BIRSTALL.

For levelling, paving, flagging and completing Union Street. Mr. ARTHUR WALKER, surveyor.

Starkey	£260	1
Ward & Tetley	239	13
Kershaw	222	4
H. Barraclough	220	10
W. Barraclough	220	5
Coop & Son	218	15
Farrar	213	7
BROOK, Halifax (accepted)	213	1

BRENTWOOD.

For the erection and completion of the Westbury Project, King's Road. Mr. H. R. BIRD, architect and surveyor, Brentwood, Essex.

Taylor Bros.	£497	0
BURTWELL, Brentwood (accepted)	402	0

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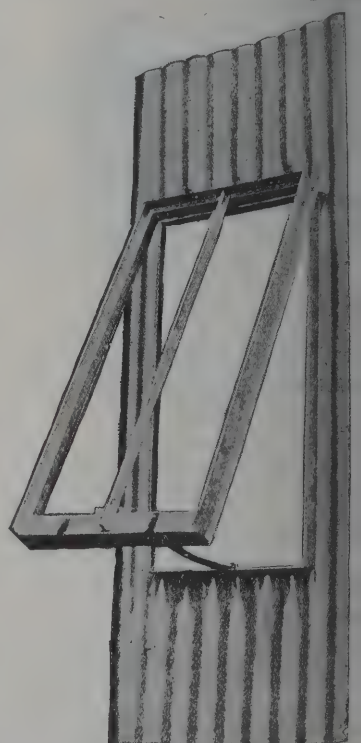
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Bier & Sons	370	0	0
Woolcloth	367	10	0
Allen & Gowers	351	0	0
ALBANK & SON, Great Waltham (accepted)	345	0	0

FARINGDON.

erecting a shop and dwelling-house in the Corn Market. Messrs. DREW & SONS, architects, Swindon.			
EL BROS., Faringdon (accepted)	£500	0	0
Alterations, &c., at the Volunteer inn. Messrs. DREW & SONS, architects, Swindon.			
BLACK, GARDEN & CO., Highworth (accepted)	£187	10	0

HALIFAX.

erecting a boiler-house and setting of a Lancashire boiler at Ford Hill Colliery. Mr. H. F. SHARP, architect, Queensbury.			
Sith	£240	0	0
Duke	215	0	0
Wassley & Radcliffe	200	10	2
Berterworth & Brooke	200	0	0
Stall	188	15	0
Wansworth	186	0	0
Span & Sons	185	11	8
Ham	183	14	0
Wattmough	183	7	6
B. M. FORTH, Queensbury (accepted)	179	0	0
Sicks	177	5	0

HAWARDEN.

er construction of a service reservoir, for the Hawarden District Waterworks Company. Mr. WM. SIMMONS, engineer, Buckley.			
Wassam	£1,549	10	0
Wansfield & Co.	1,488	5	2
F. & Parry	1,063	0	0
Edwards	1,053	11	9
Wilsou	1,035	19	1
WRIGHT & SON, Hawarden (accepted)	929	12	2

HARROGATE.

For construction of light railway, for the Harrogate Gas Co. Mr. EDW. WILSON DIXON, M.I.C.E., 3 East Parade, Leeds.			
Treglown & Co.	£28,952	0	0
Whitaker Bros.	26,310	0	0
Atkinson & Sons	22,290	0	0
Tait & Gordon	21,584	0	0
Morrison & Mason	21,431	0	0
Stark & Sons	20,365	0	0
Lovatt, Ltd.	19,798	0	0
Hardy & Atkinson	18,992	0	0
Short	17,683	0	0
Nowell & Sons	17,245	0	0
Hill & Co.	16,632	0	0
Brebner & Co.	16,286	0	0
Schofield & Co.	16,103	0	0
Monsley	15,994	0	0
Nuttall & Co.	15,864	0	0
Lumb	15,465	0	0
Parkinson	15,615	0	0
Firth	15,505	0	0
Dickson	15,475	0	0
Pattison & Sons	15,181	0	0
Matthews	14,838	0	0
Hobbs	14,549	0	0
Bentley	14,535	0	0
Parker & Sharp	14,513	0	0
Mackay & Son	14,318	0	0
Smith Bros.	14,182	0	0
Young & Son	13,620	0	0
Graham & Sons	13,462	0	0
Braithwaite & Co.	13,362	0	0
HOLME & KING, Liverpool (accepted)	13,218	0	0
Moffatt & Co.	12,902	0	0
Engineer's estimate	14,500	0	0

HIGH EASTER.

For the erection of a cottage. Mr. R. MAWHOOD, architect.			
Harman	£215	0	0
Harris	213	6	9
Gowers	210	0	0
ALLEN & GOWERS, Chelmsford (accepted)	200	0	0

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Firth & Co.	4,170	3	3
Lock, Andrews & Price	4,014	7	9
Brebner	3,998	3	0
Macdonald	3,975	7	8
Meredith Bros.	3,950	0	0
McCann	3,887	0	0
Meredith	3,842	0	0
Holloway	3,799	0	0
H. Law	3,753	0	0
Westwood	3,717	19	3
G. Law	3,717	0	0
Osenton	3,695	0	0
Byard & Son	3,666	0	0
Vale & Sons	3,625	0	0
Riley	3,604	10	9
J. & A. Brazier	3,250	0	0

HEYWOOD.

For the erection of boundary wall and railing at the free library in Church Street. Mr. J. AINSWORTH SETTLE, A.M.I.C.E., borough engineer.

S. & A. Taylor	£395	0	0
Blakely & Wild	370	0	0
Barker	361	0	0
BERRY, Heywood (accepted)	356	0	0

HIGH WYCOMBE.

For private street improvement works, Grafton Street. Mr. T. J. RUSHBROOKE, borough surveyor.

Lee	£383	14	3
Gibbons	367	13	10
Free & Sons	352	6	0
Langley & Johnson	347	10	6
SMITH (accepted)	345	0	0

HEXHAM.

For the erection of an additional classroom and a book and stationery room at the girls' department of the Victoria school. Mr. M. J. GUMMOW, architect, Wrexham.

DAVIES BROTHERS, Hill Street (accepted) £480 0 0

HUMBERSTONE.

For the erection of Wesleyan chapel and school. Messrs. GELDER & KITCHEN, architects, Hull.

KIME (accepted) £1,076

ILFORD.

For alterations at the White Horse public house, Broadway. Mr. J. M. H. GLADWELL, architect, Stratford, Quantities by Mr. L. E. G. COLLINS, 31 Great St. Helen's, E.C.

Todd & Newman	£1,499	0	0
Steadman & Co.	1,482	0	0
Jerram	1,455	0	0
F. & A. Willmott	1,430	0	0
Maddison	1,379	0	0
Sheffield Bros.	1,368	0	0

IRELAND.

For alterations to corridors, male side, main building, Armagh asylum. Mr. R. H. DORMAN, county surveyor.

Simpson £345 0

MARTIN & Co., Armagh (accepted) 335 0

LEEMING.

For additions to stores at Leeming, Oxenhope, York. Messrs. JOHN HAGGAS & SONS, architects, Keighley.

Accepted tenders.

Waddington Bros., Oxenhope, mason.

Wright, Oxenhope, joiner.

Nelson & Son, Springfield Place, Bradford, slater.

Holmes, Oxenhope, plasterer.

Lambert, Haworth, plumber.

Bailey, Oxenhope, painter.

Total, £520 9s. 2d.

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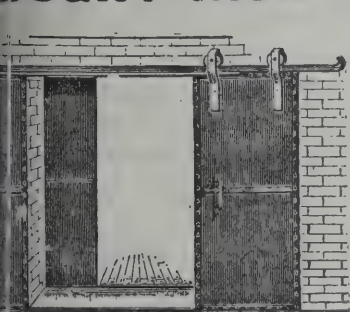
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LONDON.		
Foundations, James Street, Bethnal Green. Messrs. Joseph & Smithem, architects, Cheapside, E.C. Quantities by Mr. C. W. LATTER, 14 Great James Street, E.C.		
Johnson & Son	£2,259	0 0
General & Co.	2,210	0 0
Europe & Colls	2,168	0 0
Hay & Sons	2,150	0 0
Soy & Horner	2,086	0 0
Is & Wardrop	2,047	0 0
oway Bros.	2,030	0 0
utt & Co.	1,996	0 0
hne & Co.	1,991	0 0
ir & Son	1,985	0 0
ilis & Son	1,920	0 0
icer, Santo & Co.	1,800	0 0
ARENCE & SONS (accepted)	1,770	0 0
Providing and fixing two independent boilers and low-pressure hot-water apparatus at the Dempsey Street school, Stepney.		
Witner-Smith, Gray & Co.	£1,169	0 0
htside Foundry and Engineering Co.	899	0 0
ell & Co.	890	0 0
e & Warren	869	0 0
ies & Sons	864	0 0
awkar & Sons	837	0 0
tens & Sons	823	0 0
E Bradley	798	10 0
anon & Sons, Ltd., 107 London Road (recommended)	709	10 0
itect's estimate	745	0 0
Steam-heating installation on the vacuum system and hot-water apparatus at Section A, Art Block of London County Council Hammersmith technical institute.		
rtall & Co.	£1,595	0 0
oss & Attwood	1,585	0 0
urwood, Sons & Co.	1,580	0 0
F. May	1,566	0 0
E Bradley	1,550	0 0
pson & Co, Ltd., Grosvenor Road (recommended)	1,383	0 0

LONDON—continued.		
For providing and fixing three independent boilers and low-pressure hot-water apparatus at the Franciscan Road school, Westminster.		
Defries & Sons	£780	5 0
Price, Lea & Co.	746	0 0
Palowkar & Sons	735	0 0
Wenham & Waters	721	0 0
Kinnell & Co.	715	0 0
Stevens & Sons	714	0 0
Brightside Foundry and Engineering Co.	703	0 0
G. & E Bradley	645	10 0
Cannon & Sons	639	10 0
Cash & Co., Caxton House, Westminster (recommended)	635	0 0
Architect's estimate	650	0 0
For the supply and delivery of (1) track rails and fastenings, &c., and (2) slot rails and conductor tee rails, &c., to be used for the construction or reconstruction for electric traction of further portions of the London County Council tramways.		
(1) Track Rails, &c.		
Steel, Peech & Tozer	£18,213	2 6
P. & W. MacLellan	18,140	18 9
Lorain Steel Co.	17,056	10 0
Barrow Hematite Steel Co.	16,731	17 6
Scott	16,570	0 0
Bolckow, Vaughan & Co., Ltd., London (recommended)	16,173	17 6
Chief engineer's estimate	16,194	17 6
(2) Slot Rails and Conductor Rails.		
Steel, Peech & Tozer	6,985	12 6
Bolckow, Vaughan & Co.	6,972	10 0
Scott	6,237	10 0
Frodingham Iron and Steel Co., Doncaster (recommended)	5,804	10 0
P. & W. MacLellan	5,367	10 0
Chief engineer's estimate	5,804	10 0

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LONDON—continued.

For installing electric lighting, bells, telephones and fittings, and wiring for motors, at the Central School of Arts and Crafts and the London Day Training College, Holborn.

Foot & Milne	£2,285	0	0
Barlow Bros. & Co.	2,027	0	0
Weston & Sons	1,981	0	0
Glover & Co.	1,950	0	0
Jackson Bros.	1,920	0	0
Sunderland & Co.	1,910	0	0
Brightwell	1,834	0	0
Cunnington & Co.	1,811	0	0
Ekins & Co.	1,800	0	0
Lund Bros. & Co.	1,780	0	0
Sweet Bros.	1,680	0	0
Wippell Bros. & Row	1,670	0	0
Cowtan & Sons	1,597	0	0
Smeeton & Page	1,554	18	6
Vaughan & Cook	1,500	0	0
Seth Bros.	1,462	0	0
Penrose & Co.	1,440	0	0
Potter & Sons	1,432	0	0
Higgins & Griffiths	1,419	0	0
Fryer & Co.	1,397	0	0
Barton & Sons	1,375	8	0
Aberdeen Electrical Engineering Co.	1,358	0	0
Lea & Warren	1,328	0	0
Reliance Electrical Co.	1,168	2	0
COZENS, Queen Victoria Street (recommended)	1,154	0	0
Chief engineer's estimate	1,420	0	0

For fitting-up the shop No. 225 Waterloo Road, on the Webber Row estate, Southwark.

Haskins Bros.	£106	0	0
Sage & Co. (1905)	97	0	0
Lascalles & Co., Ltd., London (recommended)	71	0	0

NORWICH.

For cutting, making and sewerage a new road, off Crome Road. Messrs. MORGAN & BUCKINGHAM, architects and surveyors, Norwich.

Yelf	£368	0	0
Stowers & Son	310	0	0
F. R. Hipperson	292	0	0
Edwards	264	16	0
W. G. Hipperson	263	4	5
Howes, Norwich (accepted)	250	0	0

OAKENGATES.

For the construction of sewers and other work at Ketley Bank. Messrs. BERRINGTON, SON & MARTIN, engineers, Wolverhampton.

York & Co.	£1,105	0	0
Pearce	1,075	0	0
R. & J. Millington	1,065	0	0
Westwood	1,020	12	6
Speake	985	5	0
Reading	950	0	0
Owens	949	0	0
Law	937	0	0
Crawford	920	0	0
HOLMES, Wellington, Salop (accepted)	878	0	0

READING.

For the erection of Lady Wantage Hostel, University College. Messrs. CHAS. SMITH & SON, architects, Reading.

Margetts & Son	£27,990	0	0
Collier & Cattley	26,479	0	0
Kingerlee	25,587	0	0
McC. Fitt	25,378	0	0
Hughes	24,550	0	0
LEWIS BROS., Reading (accepted)	24,550	0	0

SOUTHAMPTON.

For improvement works in Kingsley Road. Mr. J. A. CROWTHER, borough engineer.

Douglas	£694	15	9
Grounds & Newton	693	17	3
OSMAN, Southampton (accepted)	660	0	0
Borough engineer's protecting tender	720	0	0

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SCOTLAND.

For extension to Riccarton Cemetery, and erection of lodge, mortuary, &c., for the Riccarton Parish Council. Messrs PEARSON & RONALDSON, engineers and architects, Kilmarnock.

Contract No. 1.—Drainagework.

Hutchison	£1,462	16	11
Donald	1,417	6	2
Allan	1,381	2	1
Crawford	1,317	9	7
Lapraik	1,311	12	2
PICKEN, Kilmarnock (accepted)	1,219	8	1

Contract No. 2.—Mason, brick and diggerwork

Calderwood	1,366	7	0
Reid & Sons	1,354	9	9
Timothy	1,319	4	6
McCrone	1,286	18	10
Boyd & Forrest	1,274	6	7
BROWN, Newmilns (accepted)	1,181	0	3

Carpenter, joiner and glazier.

Dickson	145	10	1
Boyd & Forrest	145	9	1
Wilson	136	14	9
McGregor	117	11	4
McMILLAM, Hurlford (accepted)	113	3	5

Slater and plumber.

Boyd & Forrest	104	15	0
Stevenson	100	1	11
LUCAS, Hurlford (accepted)	93	0	1
Yuille & Sons	90	6	6

Plasterwork.

Boyd & Forrest	24	7	1
G. & W. ROME, Kilmarnock (accepted)	21	14	0

Fencingwork.

Stewart & Sons	96	5	6
Pat n & Sons	94	9	0
CRAWFORD, Hurlford (accepted)	88	13	7

SUTTON-ON-SEA.

For the erection of two bungalows on the Brooklands estate. Mr B. W. ADKIN, architect, Cheapside, E.C.

Thompson & Sons	£1,430	0	0
Greenfield	1,425	0	0
Kime	1,340	0	0
MOORE, Sutton-on-Sea*	1,250	0	0

* Accepted subject to modifications.

WAINFLEET ST. MARY'S.

For the erection and completion of farmhouse and outbuildings.

Turner & Sons	£334	10	0
Shaw	329	10	0
Waite	303	0	0
Walker	295	0	0
PARKER & SON, Wainfleet (accepted)	294	0	0

WALES.

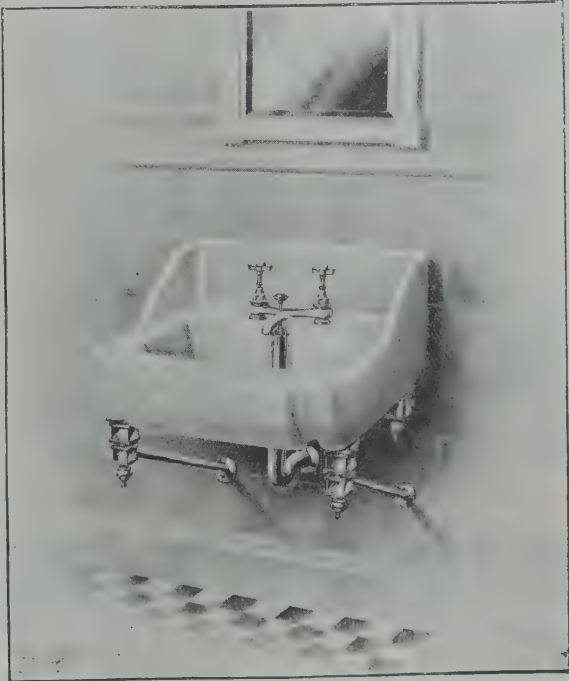
For erecting business premises, &c, High Street, Newport, Mon. Messrs. HABERSHON, FAWCKNER & Co., architects, Newport and Cardiff.

Dean & Son	£5,900	0	0
Case	5,754	0	0
Moore	5,650	0	0
Clarke	5,543	0	0
Brownscombe & Son	5,499	0	0
Partridge	5,425	0	0
G. F. Leadbeter	5,387	0	0
J. H. Leadbeter	5,297	0	0
Poulton & Whiting	5,230	0	0
Morgan & Co.	5,227	0	0
King & Son	5,198	0	0
Blackburn	5,159	0	0
Matthias	5,120	0	0
Charles	5,110	0	0
Powells	5,069	0	0
Linton	5,046	0	0
Moon	4,997	0	0
Blake	4,939	0	0
Williams	4,749	0	0
Reed	4,745	0	0
JEWELL & SONS (accepted)	4,600	0	0
Jordan & Son	4,570	0	0

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WALES—continued.

For erecting a foundry, King's Parade, Newport, Mon.
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Newport. Quantities by Mr. JOHN R. ROWLANDS.

Moore	£1,435	0	0
Brownscombe	1,430	0	0
Richards	1,369	0	0
Clarke	1,341	0	0
Partridge	1,335	0	0
J. H. Leadbeter	1,323	0	0
Clements & Co.	1,295	0	0
G. F. Leadbeter	1,287	0	0
Morgan & Co.	1,275	0	0

Herbert & Co, Alexandra Joinery Works
(accepted)

Powles (withdrawn)

For the erection of a chapel at Caergwrlle. Mr. M. J.
GUMMOW, architect, Wrexham.

Probert	£1,385	0	0
Lewis Bros.	1,375	0	0
Roberts	1,300	0	0
Moss	1,280	0	0
Peters	1,260	0	0
Simmonds	1,219	0	0
I. Williams	1,200	0	0
T. Williams	1,080	0	0
JONES, Wrexham (accepted)	1,077	10	0

For enlargement of head post office.

			Cr.
Stephens, Bastow & Co.	£13,550	0	0
Davies & Sons	13,370	0	0
Williams	13,092	0	0
Allan & Sons	12,302	0	0
Turner & Sons	12,316	0	0
Blake	11,280	0	0
KING & SON (accepted)	11,090	0	0

For the construction of an approach road to the site of the
proposed County school at Mountain Ash. Mr. W. G.
THOMAS, surveyor.

Williams Bros.	£128	10	0
Webb	119	12	2
SUTHERLAND, Abercynon (accepted)	117	1	8

WALES—continued

For the erection of a minister's house at Pentre. Mr. W. D.
MORGAN, architect, Pentre, Rhondda.

HARRIES, Abercynon (accepted)

WARLEY.

For the erection of detached house, Headley Chase. Mr.
H. R. BIRD, architect and surveyor, Brentwood.

Dix	£651	0	0
Jarvis	639	0	0
Burtwell	565	0	0
Dowsing & Davis	550	0	0

WEST HAM.

For making up Crofton Road, Cumberland Road, Tinto
Road, Wanlip Road and Wigston Road. Mr. JOHN G.
MORLEY, borough engineer.

Adams	£4,327	14	7
J. Jackson	4,091	18	8
Manders	4,043	9	9
Griffiths	4,026	8	8
Hewett & Sons	3,847	0	7
D. T. Jackson	3,614	2	1
Anderson	3,563	5	2
PARSONS & PARSONS, Ilford (accepted)	3,521	7	9

WHITEHAVEN.

For the erection of a Bethel mission hall. Messrs. PICKER-
ING & CROMPTON, architects, Whitehaven.

Accepted tenders.

Young, Catherine Street, builder.

T. & W. Robinson, Egremont, Cumberland, joiner.

Stratton, King Street, plumber.

Wilson, Cross Street, plasterer.

Burrow, Station Street, Workington, slater.

Woodnorth, Duke Street, painter.

Total, £1,200. Rest of Whitehaven.

WOOTTON BASSETT.

For alterations at the Borough Arms inn. Messrs. DREW &
SONS, architects, Swindon.

Lay	£173	15	0
Flewelling	167	15	6
Spackman	159	14	0
TIDEMAN BROS., Swindon (accepted)	152	0	0

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WORKINGTON.

the erection of house and shop at corner of Corporation Road. Mr. J. E. WILDRIDGE, architect, Workington.

Accepted tenders.

Johnston, builder	£304	10	0
Bragg, joiner	123	12	8
Walker, plumber	51	5	0
McGlasson, plasterer	37	10	0
Wildridge, painter and glazier	32	0	0
Burrow, slater	19	12	6

TRADE NOTES.

The vicar, wardens and clock committee of St Saviour's parish church, Ringley, near Manchester, have placed the order for a new clock with four illuminated dials and to make the hours, with all the latest improvements inserted, with Messrs. W. Potts & Sons, clock manufacturers, of Leeds and Newcastle-upon-Tyne.

The Boyle system of ventilation (natural) has been applied to Moorfields schools, Bristol. The architect, Mr. John Mackay, Bristol, has reported that the system has proved highly successful, and is giving the greatest satisfaction. He also states that he considers this a very successful example of the efficiency of a natural system of ventilation when correctly applied, as the air in the halls, classrooms, &c., is at all times kept pure and sweet and there are no draughts.

At a meeting of the Law Society held on April 26, Mr. S. Rubinstein moved a resolution bearing on the urgent need of bringing to an end the experimental trial in the County of London of the system of compulsory registration of solicitors. The resolution was carried unanimously.

NEW CATALOGUE.

The description of their marbles, granites, mosaics and tiles which Messrs. Fenning & Co., Ltd., have prepared compels attention by the announcement on the cover of a special offer of polished granite at less than cost price. The coloured illustrations will suggest some of the varieties which are supplied by the firm, and which are exemplified in several important buildings. Among the buildings are the Baltic Exchange; Alliance Insurance offices, Capel Court; Holborn Tube station; Shoreditch town hall; Bank of England, Law Courts, London; Kingsway House, Kingsway; Manchester Stock Exchange; Bank of England, Manchester; Scottish Amicable offices, Manchester; Central Buildings, North John Street, Liverpool; Granite Buildings, Stanley Street, Liverpool. There are stock sections which can be used for several purposes, including shop fronts. It should also be noted that Messrs. Fenning supplied the material and erected the War Memorial, Aldershot, which is an excellent example of its class.

THE question of the pay and position of plumbers in the Navy has been considered in the past, and no reason is seen for its reconsideration at the present time. The rating is among the lowest paid of the artisan class, as the work requires less skill than that of the more highly-paid classes. The rating was established in 1860 with pay at the rate of 2s. 3d. a day (continuous service); this rate was increased to 2s. 5d. in 1864, and again to 3s. in 1867. It may be mentioned that some of the concessions to other classes have been in the direction of equalising their pay with that of plumbers. There are other ratings who do not rise to chief petty officers—e.g. blacksmiths, coopers, painters. As plumbers do not serve as chief petty officers, they are ineligible for the addition to pension, which is granted only for service as such. Re-engagement pay of 2d. a day is given only to seamen ratings. Plumbers' mates, being second-class petty officers, receive an increase of pay on advancement to the rating of plumber (first-class petty officer). They are also eligible for additional pay according to the number of good-conduct badges earned.

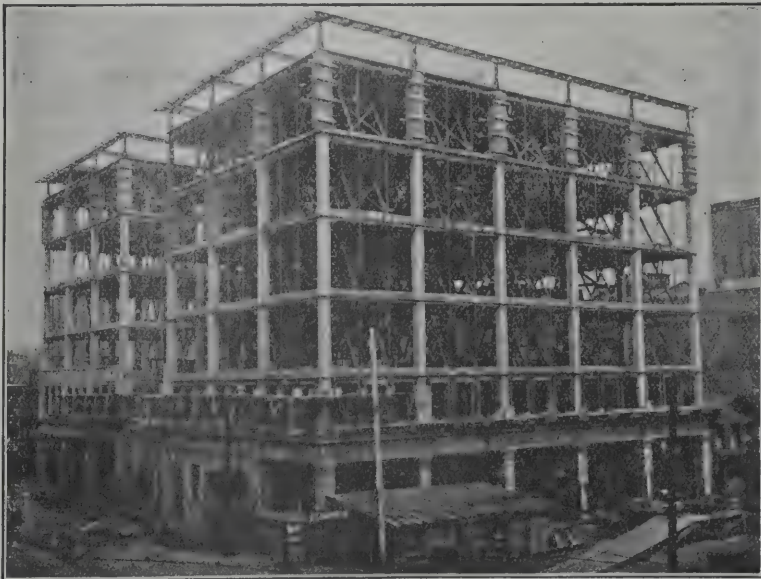
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ELECTRIC NOTES.

THE electric-lighting committee of Edinburgh Town Council are considering a letter from the secretary of the Scottish National Exhibition, 1908, as to the supply of electricity for the exhibition. It is understood that the letter estimates provisionally that 100 arc lamps and from 20,000 to 30,000 incandescent lights will be required.

At the meeting of the Belfast tramways and electricity committee, the sub-committee appointed to consider the desirability of purchasing the Cavehill and Whitewell tramway system, the only local tram not owned by the Corporation, recommended the purchase of the entire tramway for the sum of 60,000*l.* This recommendation was adopted, subject to confirmation by the Council. The intrinsic value of the undertaking was set down at 40,000*l.*, but the price now proposed to be paid is that which the Corporation were prepared to offer before the Cavehill Company promoted their original Bill some few years ago.

THE law regarding the concessions of water-power in Switzerland has recently been modified, and the *Feuille Fédérale Suisse* of April 17 contains a copy of the new provisions. The utilisation of water-power is to be supervised by the Swiss Federal Government, which will enact laws regarding the granting and holding of concessions, as well as the transmission and distribution of electric-power, the provisions necessary for safeguarding public interests and insuring the rational utilisation of water-power. The Cantonal Governments may grant concessions and fix and levy the dues payable for the use of water-power. The taxes must not be too onerous. In case of sections of water common to several cantons the Federal Government is empowered to grant the concessions and to fix the dues payable to the cantons.

THE Post Office authorities are seeking for the insertion of a clause in some tramway bills by which it shall be lawful for the Postmaster-General, by himself or his agents, to use for the support of any telegraph the posts, standards and brackets erected in any street or public road by the Corporation in connection with the tramways, to lengthen, adapt and alter them for that purpose, subject to the conditions that no obstruction shall be caused to the traffic

along or user of the tramways, that not less than fourteen days' notice shall be given, that the Postmaster-General shall pay the expense of altering such post, standard or bracket for the protection of the public, &c, and that the Postmaster-General shall at his own expense make good any damage or injury and shall indemnify the Corporation against any expense to which they may be put.

THE parochial electors of Coventry at a public meeting held on Saturday approved the introduction into the Corporation Water Bill now pending in Parliament of provisions and amendments relating to the Corporation's electricity undertaking in order to provide for electricity being supplied to the parishes of St Michael Without, Holy Trinity Without, Stivichall, Allesley, Coundon, Stoke, Foleshill and Exhall. It was stated that a scheme had been adopted by the Council which made provision for immediate extensions at an estimated cost of 27,000*l.*, and for further ultimate extensions estimated to cost an additional 180,000*l.* The extensions would probably make adequate provision for the needs of the city for the next five years, but it might be necessary after that, should the city continue to grow at its present rate, to erect an auxiliary station and carry out other works, the cost of which was estimated at 125,000*l.* The capital expenditure on the electricity undertaking, including the 27,000*l.* for extensions, amounted to about 212,000*l.*

A REPORT by Mr. Sankey, borough electrical engineer of Whitehaven, explains the possibility of reducing the yearly deficit incurred on the borough electric supply. It is necessary to distinguish between supply during lighting hours and supply during non-lighting hours. There is a means of doing this by a meter with two sets of dials, the change from one dial to the other being automatically done by clockwork, which may be set to any time; 4½*d.* per unit is charged for current used from sunset to 11 P.M., but from 11 P.M. till the following sunset the charge will be 1½*d.* per unit, and after 2,500 units 1*d.* Two-rate meters being somewhat expensive, there will be a fixed charge per quarter of 5*s.* for meter and time switch, and also a minimum charge of 13*s.* 4*d.* should a consumer not use "power" to this value. That is a minimum of 18*s.* 4*d.* per quarter.

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A LOCAL GOVERNMENT BOARD inquiry was held at Althamstow on Wednesday concerning a proposal to borrow 26,295/ for the purposes of the Council's electricity undertaking, and was adjourned *sine die* by the Board on the ground that the loan asked for was excessive.

THE British Chamber of Commerce, Genoa, has supplied the Manchester Chamber with particulars, prepared by the Association of Italian Manufacturers, Milan, of an international competition for the best scheme for the prevention of accidents from contact with live wires. The extent to which electricity is used as the driving power in mills and works in the North of Italy compels the interest of Italian manufacturers in this subject. In the synopsis of the requirements it is stated that the invention must "eliminate the danger of a contact (of whatever resistance) between the primary and secondary circuit of separate current transformers and their respective lines. The apparatus must be simple, robust, economical and adaptable to existing installations. It must come promptly into action whenever the potential to earth of the low-voltage circuit reaches the double of the normal value in a single-phase and two and a half times the normal value in a three-phase system, and it must prevent the excess of potential becoming permanent. The apparatus must not bring the transformer out of action in the event of atmospheric discharges or of such partial reduction of insulation of service lines to earth as may be tolerated in practice, so that the adoption of the system may not render the work of the installation more difficult." With each system competing for the prize an apparatus must be supplied which will enable it to be submitted to practical tests

VARIETIES.

THE Derwent Valley Water Board have accepted the tender of Messrs. Orson, Wright & Co., of South Wigston, for Leicester, for the construction, completion and maintenance of the Whatstandwell to Belper section of the Derwent aqueduct, including the Ambergate reservoir.

THE Middle Ward district committee of Lanark County Council have agreed to apply to the standing joint committee for permission to borrow 6,000/ for the erection of sand filters at Glassford. It was also agreed to erect as an experiment two mechanical filters at Redleeshill.

FARRINGTON STREET, and especially the southern part, has developed of late in a remarkable way. For those who desire to erect a large building in so important a thoroughfare a suitable site will be offered for sale by auction on the 14th inst. It contains 22,000 square feet of clear space. Many years may elapse before a like opportunity again is offered.

THE roads and works committee of the Portsmouth Corporation have accepted the tender of the London Asphalte Company for laying about 18,000 square yards of asphalte at a cost of 8s. 9d. per square yard. One condition of the contract is that the roads shall be maintained in good condition for a period of five years, this being two years longer than was specified by the committee.

THE Isthmian Canal commission will hereafter have power to solve all questions relating to the canal without referring them, as heretofore, to Washington. The members of the commission will reside on the Isthmus and hold weekly meetings. The work is to be distributed so that each commissioner has charge of a certain department, for which he will be responsible. Lieut.-Col. Goethals, who succeeds John F. Stevens as chief engineer, will be chairman of the commission.

THE Birmingham education committee have accepted the report of the technical education and evening schools sub-committee, which recommended the acceptance of a tender for the purchase of a 50-ton testing machine for the Municipal Technical school. The sub-committee were of opinion that the time had arrived when the machine should be provided if the work of the school in the important subject of engineering was to be efficiently carried on. The machine was for the purpose of exhibiting to the students the strength of various materials. Its provision had been twice deferred in response to the wishes of the finance committee. It will cost 615/.

THE Local Government Board have approved the equating of the Bradford waterworks loans, regarding which an

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inquiry was held some time ago. At present the water-works loans of the Bradford Corporation are spread over varying periods, and it was contended that it would be very advantageous to have an equation as compared with having to set aside a large sum over a short period and a small sum over a long period. Mr. G. A. Thorpe, the Bradford city treasurer, therefore, drafted a scheme for equation of the loans over a period of about sixty years, by which a sum of 20,000*l.* a year less will have to be put aside, thus affording considerable immediate relief to the ratepayers.

THE works committee of the Holborn Borough Council reported to the last meeting that they had received a proposal from the trustees of the Bedford estate for the formation of a new thoroughfare from Torrington Square to Montague Place, terminating in face of the new north front of the British Museum. The expenditure of the trustees of the British Museum on the purchase of contiguous land and on the enlargement of their buildings was estimated to reach 400,000*l.*, and if the scheme was accepted the trustees of the Bedford Estate would give up land to the value of about 70,000*l.* The committee stated that they proposed to submit specifications, &c., to the London County Council. The estimated cost of the work was about 10,000*l.*, 6,000*l.* of which would be borne by the London County Council and the balance by the Council. After discussion, the matter was referred back to the committee for further consideration.

THE waterworks committee of the Manchester Corporation, in the course of their annual report, make mention of the growing appreciation of the Corporation's hydraulic water supply, and the report adds:—"The demand is now nearly equal to the full capacity of the plant installed, and application has, with the approval of the Council, been made to the Local Government Board for additional borrowing powers in respect of the erection of another pumping station in Water Street, the site for which has been acquired. The work of construction will be commenced as soon as the necessary arrangements are completed and sanction given. The total number of machines agreed for is 1,974 and the total output of power-water for the year amounts to 232,278,100 gallons, 97 per cent. of which has been measured by the meters on consumers' premises. The total length of

hydraulic mains now laid is 20 miles 1,663 yards." The committee's revised scale of charges for water-power, which comes into operation at the beginning of next year, will, it is claimed, offer increased facilities for the use of the power and be of great advantage to small consumers.

AN interesting presentation of a silver tea and coffee service was made on April 30 to Mr. Charles E. Whitehead, one of the managing directors of Messrs. C. C. Dunkerley & Co., Ltd., Manchester, in recognition of his connection of half a century with the firm. In a short address preceding the ceremony, which was made in the presence of the other directors and the assembled staff, the chairman of the company, Mr. William Warburton, referred in terms of warm eulogy to Mr. Whitehead's services, and a suitable acknowledgment was afterwards made by the recipient. The tray, forming part of the service, bore the following inscription:—"Presented to Charles Edward Whitehead by his fellow directors, shareholders and the staff of C. C. Dunkerley & Co., Ltd., in commemoration of fifty years' service with the firm, and as a token of high esteem and regard. April 27, 1857—April 27, 1907."

MR. JUSTICE WALTON, in the King's Bench Division, gave judgment on Monday in the action of Chessum *v.* Macdonald & Hunt, which has been before the Court from time to time for weeks past. The plaintiffs, J. Chessum & Son, builders, of London, sought to recover 507*l.* odd from Messrs. Macdonald & Hunt, of Birmingham, on proper adjustment of accounts between the parties at the conclusion of a sub-contract let by plaintiffs to defendants for the plumbing and painting of certain artisans' dwellings at Dalston. Plaintiffs claimed that the actual settlement was made on an erroneous basis, arrived at in consequence of one of plaintiffs' clerks having mistakenly debited them with certain sums. Defendants originally denied all liability, but in February last, upon the decision of some of the points at issue by the judge, admitted liability for 389*l.* His Lordship, after allowing a contra account made by defendants, now gave judgment for plaintiffs for 409*l.* and costs.

THE Birmingham and District Housing Reform Council at their initial meeting last week adopted the following

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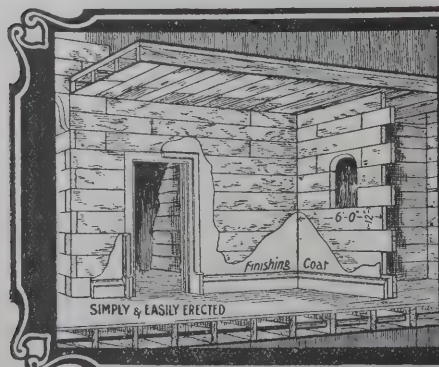
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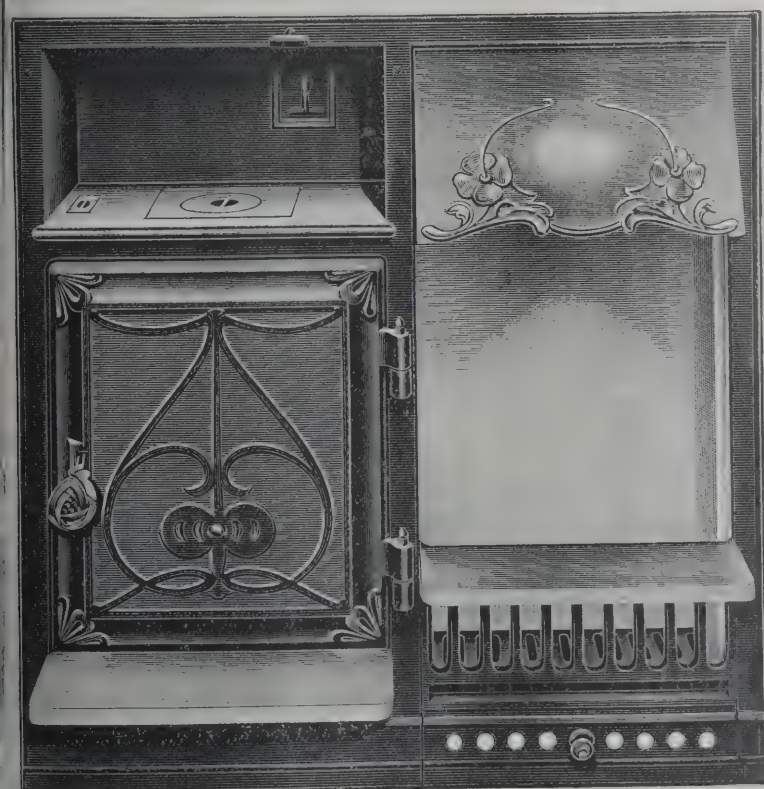
objects:—To promote the study of the housing question and to assist the National Housing Reform Council in obtaining:—1. Alteration of by-laws: (a) To provide that in future building development of suburban districts such extra provision shall be made for air space as shall prevent the formation in them of new crowded areas; (b) to promote the universal adoption and practical employment of a by-law similar to the Birmingham by-law No 4c, which permits the local authority to reduce their requirement as to the width of the metalled portion of roads other than main roads, so as by lessening the cost of development of new building areas to allow of the building of decent working-class houses at a moderate cost. 2. New Legislation: (a) To empower the public authority to determine the position of main roads; (b) to provide for the adjustment of the by-laws of neighbouring public authorities as regards the planning of and building regulations in suburban districts; (3) to provide means whereby public authorities may, when necessary, purchase land without undue inflation of market prices.

THE York City Council have under consideration a proposed extension of the scheme for the bacteriological treatment of sewage, the additional work for which is estimated to cost 49,190*l.* 18*s.* The sewerage committee report that they are satisfied that the bacteriological treatment of the sewage is the better system to adopt in preference to the precipitation process hitherto in use. The experiments for the bacterial treatment of the sewage have been in operation for some time past and have proved satisfactory, and the system has been adopted within recent years by many corporations and other public bodies. The scheme of the city engineer in respect of these works provides for the following works being carried out, viz.:—(1) An automatic screening arrangement to be worked by the flowing sewage; it would be placed near where the sewage emerges from the bell-mouth pipe at the end of the rising main. (2) Widening the sewage channel so as to reduce the velocity of flow, and induce the deposit of sand and other mineral matter in a chamber to be constructed near the north-west corner of tank No. 1. (3) The conversion of the present six precipitation tanks into open septic tanks; and (4) the construction of twenty large and six small

filters six feet deep, having an area of 18,880 superficial yards, with supply pipes, circular distributors and effluent collecting channels. The total filter area, with the two existing filters, will equal 20,144 square yards. In addition to the above works and to meet the requirements of the Local Government Board, it would be necessary to provide streaming filters for storm water. They would be about three feet in depth below ground level, and cover a total area of 13,500 superficial yards.

INTERNATIONAL EXHIBITION AT MANNHEIM.

To celebrate the 300th year of the town's civic freedom, the municipal authorities have long had in preparation a jubilee exhibition of a novel description. The exhibition, which is under the patronage of the Grand Duke of Baden, will consist of an international display of art and of horticulture and floriculture, and the contributors to both sections comprise not only many of the foremost artists and men of science in the Fatherland, but also in other countries. A site on the Friedrichs Platz, comprising some ninety acres, has been allotted to the purposes of the exhibition. The exhibition will consist partly of buildings containing water-colours, paintings and sculpture by eminent artists, and, to a greater extent, of grounds beautifully laid out in a novel manner, in accordance with the ideas of artists, garden architects (a recognised profession in Germany) and leading horticultural firms. A portion of the grounds is divided into plots, which have been handed over to various experts to whom a free hand is given to carry out their own ideas of ornamental and practical gardening. The schemes comprise a natural amphitheatre formed by tiers of flowers, an old Roman garden, a garden of old-fashioned flowers, a model villa garden, a Japanese garden containing many rare tropical plants, a landscape formed with creeping and climbing plants, and a fine specimen of "carpet" gardening. There are two elaborate rose gardens, a well-equipped palm house and an orchid house; and among other prominent features may be mentioned the section laid out as a Black Forest landscape and the amusement park intended primarily for the frolics of young people. An imposing fountain in the grounds will be illuminated at night.



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BUILDING IN EDINBURGH.

THE burgh engineer, in his report on the past year, says that as a gauge of the condition of the building trades, the returns of the Dean of Guild Court for the past year seem to indicate that the state of trade was no worse than in the year preceding, but the figures show rather a slight improvement in the total of work for which warrant was granted. The total number of warrants granted during the year was 769, compared with 739 for the previous year, the total estimated value of the work being 735,290*l.* and 681,515*l.* for these years respectively. In analysing the class of buildings and the figures which comprise these totals, a notable feature is the increase in the number (although not a corresponding increase in value) of self-contained houses for which warrants have been granted during the last four years, and a reduction in value of tenement houses within the same period. It would be premature to take this as a sign of the times, pointing to the ultimate extinction of the common stair dwellings, and the expansion of the system whereby each house will be separate and distinct from its neighbour and each family housed under its own roof, but there can be no question that there are many who desire to escape from the joint responsibilities and other drawbacks of the common tenement, for the greater privacy and advantages of a self-contained house. To meet this demand, an increasing number of small self-contained houses and "flatted villas" are being erected in the various suburban districts. These houses have generally the same accommodation as tenement houses, and have the benefit of a separate and distinct entrance, and in most cases the additional advantage of a private garden or green. Two storeys is the ruling height for this class of building, with separate houses on the ground and upper floors, and if the architectural features have the same characteristics as the ordinary tenement, they at least bulk largely to the eye, and have not the same barrack-like appearance as the four-storey block which has so long found favour, if not with the general public at least with the builder. With a minimum width of 60 feet between building lines, as now enforced, and buildings generally two-storeys high, "Newer Edinburgh" may present very different features from the older parts of the city. Turning

to the work certified as completed, the value totals at 527,465*l.* for the year 1906, compared with 483,376*l.* for the previous year. Villas, self-contained houses and property, however, figured out at 344,240*l.* for last year, as against 439,376*l.* for 1905, a reduction of 95,136*l.*, while the figures for public and other buildings amount to 183,225*l.*, an increase of nearly 140,000*l.* above the figures for the previous year.

The number of houses and other buildings for which warrants were granted in 1906 were as follows:—Villas, 60, 84,610*l.*; self-contained houses, 339, 240,200*l.*; public or other buildings, 144, 158,020*l.*; alterations, 548, 72,860*l.*; tenements of shops and dwelling houses, 65, 179,600*l.*—total, 735,290*l.*, as compared with the following figures for 1905:—Villas, 51, 73,800*l.*; self-contained houses, 264, 187,850*l.*; public or other buildings, 141, 179,952*l.*; alterations, 507, 34,673*l.*; and tenements of shops and dwelling-houses, 62, 205,240*l.*—total, 681,515*l.* The number of warrants granted in 1906 was 769, as compared with 739 in 1905, 862 in 1904 and 802 in 1903.

SMOKE PREVENTION IN FACTORIES AND ELECTRIC-SUPPLY STATIONS.*

COAL is a natural product which contains carbon, hydrogen, oxygen and nitrogen in some form of physical state and chemical combination which is not yet solved. For practical purposes coal may be regarded, however, as a mixture of solid carbon and gaseous hydrocarbons, and it is the latter, namely, the hydrocarbon gases—methane, ethylene, acetylene and others of the same series—which cause the difficulty in burning coal without smoke.

The solid or fixed carbon unites with oxygen before it rises from the bars of the grate as carbon dioxide or carbon monoxide gas, and once in this form it is never reduced within the furnace or flues to the solid state. The heat required to convert the molecule of fixed carbon into gaseous carbon is also supplied by the combustion of the next lying

* From a paper by John B. C. Kershaw, F.I.C., read at the meeting of the Society of Arts.

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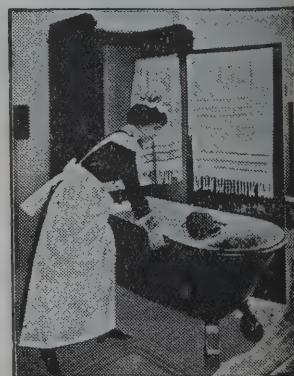
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molecule of fuel, and the combustion of the whole mass of fixed carbon is therefore progressive, and demands only two conditions, namely, an initial temperature of 700 degs. C., and an adequate supply of air above and through the mass of glowing fuel.

The hydrocarbon gases given off by all fuels on heating are much more troublesome to burn completely to carbon dioxide gas and aqueous vapour. These hydrocarbon gases vary from 6 per cent. in South Wales steam coal to 35 per cent. in the bituminous coal from the northern coalfields, and the difficulty of obtaining smokeless combustion is therefore greatest with the cheaper and more generally-used bituminous fuels. In the first place, the conversion of the solid carbon and hydrogen of the fuel into the gaseous state demands a large amount of heat, and this heat is necessarily drawn from the solid fuel lying on the bars of the grate, and not from the burning gases.

A great reduction of temperature occurs therefore during the gasifying process, and unless the addition of fuel be wisely controlled, the temperature of the furnace may be brought so low that ignition of these gases fails to occur, and the gases are then simply distilled from the coal, and pass up the chimney unconsumed, as a brown and choking vapour.

These hydrocarbon gases, when escaping unconsumed at a low temperature, do not liberate soot, but they are deleterious to health, and their suppression on that account is certainly called for. Moreover, they represent a large proportion of the total heat value of the fuel, and their escape unburned is not conducive to the economical working of the plant.

Taking an ordinary bituminous fuel of the following composition—70 per cent. coke, containing 10 per cent. ash and 60 per cent. fixed carbon and 30 per cent. volatile matter—we find that the fixed carbon in each pound of fuel burnt will produce 4,920 calories, while the volatile hydrocarbons will produce 2,859 calories, or 36 per cent. of the whole. To allow any portion of these gases to escape unburned is therefore a foolish waste of heat energy, and yet it is one which occurs regularly at the moment of firing in badly-managed boiler plant, especially when an unskilled man is in charge of the boilers. For the complete and yet economical combustion of these hydro-carbon gases as they

rise from the mass of fuel upon the bars of the grate three conditions are essential, namely:—

1. A temperature sufficiently high to cause the instant ignition of the gases. This is found by experiment to be about 670 degs. C.

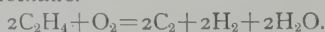
2. A sufficiency of air, preferably heated, to combine with the carbon and hydrogen of these gases, but not a large excess of the same.

3. A good admixture of the air and the hydrocarbons. It is necessary not only that these conditions should be present initially, but that they should be maintained during the liberation of the hydrocarbon gases.

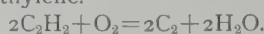
If the temperature be allowed to fall below 670 degs. C. the gases will not ignite, while if the air supply be deficient, or if the admixture be bad, only partial combustion will occur, and solid particles of carbon will separate, which will later coalesce to form smuts and soot. The chemical changes which lead to smoke formation may be represented for practical purposes by the following equations, although Bone and Drugman have shown by recent researches that the changes are much more complex than was formerly supposed:—



Methane.



Ethylene.



Acetylene.

Smoke is then caused, as a general rule, by failure to maintain conditions 2 and 3 of perfect combustion. When smoke is once formed, it is not possible on a large scale to secure its combustion, and only some form of smoke-washing apparatus will remove it from the chimney gases.

All the so-called "smoke-consuming" appliances are, therefore, mere devices to secure more perfect combustion of the hydrocarbon gases at the moment of their liberation, and in nine cases out of ten they do not involve any novelty of principle or of construction.

Practical Methods for Smoke Prevention.

The facts given in the preceding section of this paper show that the smoke problem is one which chiefly relates to the use of bituminous fuel, and that the perfect com-

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bustion of the other classes of fuels, liberating less than 15 per cent. of volatile hydrocarbon gases on heating, is not a difficult matter.

The furnaces originally designed and installed for boilers will, as a general rule, maintain the three conditions essential for perfect combustion with such fuels, and it is for this reason that in many of the London generating stations the high-priced South Wales steam coal is being used for steam-raising purposes, with notable effect upon the costs of supply.

The considerations advanced, however, show that bituminous fuel requires for its perfect combustion a large brick-lined chamber maintained at a temperature of from 700 degs. to 1,000 degs. C., in which the hydrocarbon gases and the heated air can mix thoroughly, and burn to CO₂ and H₂O, before they are allowed to come into contact with the water-cooled plates or tubes of the boiler. The size of this chamber must be proportioned to the volume of hydrocarbon gases liberated by the fuel, and therefore the character of the fuel supply ought to be taken into consideration when designing and erecting the boiler plant. If the furnace is to be hand-fired some automatic device is also necessary, whereby the draught is almost entirely cut off while the furnace door is opened for clinkering and firing purposes. When the firing is finished and the furnace door is closed, some mechanical device is again required for regulating the volume of air admission above the fire, and the period for which this secondary air admission occurs. Mechanical stokers with automatic and regular or continuous feed obviate this difficulty of an intermittent secondary air supply, and it is for this reason that they have become so popular in large steam-generating plants. Finally, with all systems of firing, the complete combustion of bituminous fuel demands some device for thoroughly mixing the heated air and hydrocarbon gases in the combustion chamber.

It is not my intention in this paper to give further descriptions of the methods by which bituminous fuels may be burned without smoke emission, and with high efficiency, in the furnaces of steam boilers and of heating apparatus generally. There are a large number of patented appliances and devices for attaining smokeless combustion now on the market. In so far as these embrace the features that have

just been described, they may be held to be useful, though the validity of the patents may in many cases be doubted. I have no hesitation in stating, however, that where these appliances are in use, though only relating to the maintenance of one of the three essential conditions, the emission of black smoke has been greatly curtailed if not altogether stopped.

A plant designed and erected in accordance with the whole of the practical recommendations given above would be capable of burning the cheapest types of bituminous fuel with high efficiency and with absolute smokelessness. I am hopeful that at a not very distant date I may be able to point to many such steam-generating plants in this country.

The Hamburg Smoke Abatement Society.

Two of the chief difficulties confronting the factory owner or station superintendent desirous of improving the work of his heating or steam-raising plant are those arising from lack of expert aid in its control and the scarcity of competent firemen. In large works a specially trained chemist or engineer is sometimes given the sole charge of the boiler-plant, with notable results as regards smoke abatement and economy, but in small works this plan is, of course, impracticable.

As regards the supply of competent firemen, this has always been deficient, and I have no hesitation in stating that a very large proportion of the smoke produced in this country is due to the low class of unskilled and untrained labour employed for firing the heating and boiler installations.

The Hamburg Smoke Abatement Society is a voluntary association of steam-users with works in or near to the city of Hamburg, which was formed in October 1902 for the purpose of assisting its members in the better management of their steam-raising plant. The work of this Society lies chiefly in the two directions indicated above. In the first place, a staff of engineers with special experience in boiler management is retained by the Society, and these advise and report upon the boiler installations of its members. Special steam-raising tests are carried out at regular intervals of time, and every effort is made to bring each boiler installation up to a high level as regards smoke-

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lessness and efficiency. This solves the difficulty of "expert aid" for the small steam-user.

In the second place, the Society retains the services of two or more firemen instructors—these visit the different works of the members of the Society, as desired, and carry out a course of instruction for the firemen employed. In this way a body of competent firemen has been created in the city of Hamburg, upon which the members of the Smoke Abatement Society can depend for efficient stoking of their boiler plants."

A third direction in which the Hamburg Society carries out most useful work is in testing and reporting upon the value of new smoke abatement appliances or systems of firing. The Society possesses a small model steam-raising installation where these trials can be carried out under the supervision of its own staff of firemen and engineers, and the reports upon these trials, issued to its members, form another valuable feature of its activities. Further information about the work of the Society will be found in a paper contributed to the Conference on Smoke Abatement, held in London in 1905, and I may perhaps be allowed to quote here the concluding paragraphs of that paper:—

"The practical lesson which we in this country may learn from the above account of the work of the Hamburg Society is, I think, that the smoke problem is to be solved, like many another problem, by application of that old English method of self-help which is now sadly out of fashion. Manufacturers and fuel-raisers generally in this country must be taught that the emission of black smoke is largely preventable, and that the smokeless combustion of fuel promotes economy when carried out under proper supervision. It is for this reason that I have given instances from the annual reports of the Hamburg Society to prove the saving in fuel consumption which results from the working of steam-boiler plants on scientific lines, with properly trained stokers.

"What is wanted in this country is some society or organisation which will provide fuel-users with the technical advice and oversight required for obtaining the smokeless combustion of fuel in their own works. The Hamburg Society, in my opinion, is such an organisation, since it is showing manufacturers how to combine together to attack the evil at its source, namely, the boiler and heating instal-

lations in their own works. It would be well if similar societies were started in every large centre of manufacturing industry in this country."

Conclusions.

I shall not be surprised if I am told in the course of the discussion which is to follow the reading of this paper, that I have advanced no new theory to account for factory smoke, and have proposed no new plan or remedies for securing its abatement. This is perfectly true, more true, perhaps, than some of my critics themselves realise. The principles of smokeless combustion enunciated in this paper were first put forward by Mr C. Wye Williams, a Liverpool engineer, in the year 1839, and the following extracts from Williams's book, entitled "The Combustion of Coal," will prove to you that he had a fairly correct knowledge of what was required to secure smoke abatement:—

"It may be asked how it has happened that hitherto this (the smokeless combustion of fuel) has not been effected? I answer because the chemistry of combustion has been neglected, not in the laboratory, but in practice, and because the construction of our furnaces has been too much left to those who know little of the chemical properties of the materials which are consumed in them. . . ."

"A charge of fresh coal thrown on a furnace already in an active state, so far from augmenting the general temperature, or giving out heat, becomes at once an absorbent of it. . . ."

"I have proved during the last fifteen years that, even in the largest establishments and in the furnaces of steam boilers, the great nuisance of smoke may be avoided, and even with the accompaniment of considerable economy. . . ."

"In marine and cylindrical land boilers the combustion chamber is invariably made too shallow and too restricted."

Williams clearly pointed out that the combustion of bituminous fuel involved two distinct things, namely, the liberation and combustion of the volatile gases in a suitable chamber and the combustion of the solid coke on the bars of the grate. In one place he described how he proposed to put into practice these principles of fuel combustion, and showed drawings of boiler furnaces with properly designed and scientific arrangements for providing a secondary and heated air-supply behind the bridge. He was very sarcastic

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at the expense of inventors, who even in his day were patenting devices for "consuming smoke," instead of attempting to show how to prevent its original formation.

The above extracts prove that this was altogether a remarkable book to have been written and published nearly sixty eight years ago.

Williams's book was reprinted in 1854 and 1886, but its teaching appears to have had little effect upon the practice of boiler engineers, who still persisted in designing and erecting boilers with wholly inadequate combustion space for the class of coal that was burned.

The results of trials carried out by the Manchester Association for the Prevention of Steam-Boiler Explosions in 1867-8 were similarly ignored by boiler-makers and their users, for here again it was proved conclusively that the bituminous fuels of the Wigan coalfield could be burned with high evaporative efficiency and without smoke emission under steam boilers, if proper attention were given to the design of the furnace, and to the control of the firemen and of the draught. The methods of attaining comparatively smokeless combustion and an evaporative efficiency of $9\frac{1}{2}$ lbs. of water per lb. of fuel in these Wigan trials were practically those recommended by Williams twenty-nine years earlier, and the chief novelty of Mr. Fletcher's report is the insistence upon the need for good stoking. In his opinion stoking was an art and should be treated as such, "and not as a slap-dash random process which any untaught labourer could accomplish."

The information I have placed before you to-night in my paper is then merely a restatement in more scientific form of the principles and practical recommendations contained in the writings of engineers who were studying and experimenting upon this subject during the mid-Victorian era. Is it therefore valueless as a practical contribution to the problem of smoke abatement? I think not. There is an altogether mistaken notion abroad that some new theory of combustion or some startlingly new form of steam generator is required before we can hope to reduce the emission of smoke in our factories and centres of manufacturing industry. No greater fallacy has ever entered the minds of engineers and hindered progress towards reform.

If the principles and methods described by Williams and Fletcher half a century ago, and redescribed by myself

in this paper, are recognised and properly carried out, bituminous fuel of the cheapest type can be burned to-day without smoke emission.

The clouds of black smoke which hang about and float away in inky streams from the chimneys of more than half the factories and electric-supply stations in this land are therefore simply an indication of the indifference or ignorance of the engineers who designed and supplied the heating and steam-raising plant.

With a properly designed plant, placed under expert control and manned by properly trained and skilled firemen, smokeless combustion is an assured consequence.

I therefore say that the production of smoke in the cases to which my paper refers is not only a waste of fuel, but is an unnecessary evil, and that it is an anachronism which reflects sadly upon our national want of thoroughness in the application of scientific principles to industrial practice.

KEYHOLD TENURE.

THE curious custom of keyhold tenure still prevails at Crowland, the abbey town in the Lincolnshire fens, where there are a number of cottages which are neither copyhold, freehold nor leasehold. They were originally built on waste land, and in each case the possessor of the key holds an undisputed tenancy. Although some of the occupiers have replaced the mud and thatched dwellings of antiquity with brick and slated buildings, they have no power to sell or will them away, for they have no deeds. On a tenant dying the first person to cross the threshold takes his place if he so desires. Many devices have been resorted to to obtain the keys. One man even went to the extent of dropping down the chimney of a cottage the tenant of which was dying. He watched the occupier's passing and then coolly took possession. Another obtained a mortgage on his cottage, and, after securing the money, laughed at the mortgagee and retained possession. The oldest keyholder has entered on his hundredth year. His name is Mark Wenham, and he has occupied his cottage sixty years without paying rates or taxes. The properties carry a county vote, but the Poor Law guardians always refuse to grant relief to the tenants.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

COMPETITIONS OPEN.

BIRKENHEAD.—May 17.—The Corporation of Birkenhead invite tenders for a central public library on a site fronting to Market Place South and Albion Street. The competition is limited to architects practising or residing within the borough. Premiums of 50, 30 and 25 guineas will be awarded by an assessor. Deposit one guinea. Mr. A. Gill, town clerk, Town Hall, Birkenhead.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

KINGSTOWN, CO. DUBLIN.—July 1.—For designs for buildings for housing the very poor. First prize 100l., second 20l. Particulars on payment of 1s. from Mr. M. A. Manning, town clerk.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ABINGDON.—May 31.—For building manual instruction and cookery centre at the Council school. Deposit 2l. 2s. Send names to the Secretary to the Education Committee, The Forbury, Reading.

BARDOLPH FEN.—May 22.—For the pulling-down of the present buildings and the erection of new chapel, school and other buildings, for the United Methodist Free Church, Rev. W. J. Christopher, Mount Pleasant, Downham Market.

BARNSELY.—May 15.—For the erection of two shops, Sheffield Road. Mr. Ernest W. Dyson, architect and surveyor, 10 Regent Street, Barnsley.

BEDFORD.—For alterations and additions to the Swan hotel. Mr. Thos. Thurlow, architect, High Wycombe, Bucks.

BIDDULPH AND BIDDULPH MOOR.—May 25.—For proposed Council schools to accommodate 708 and 306 children respectively. Deposit 2l. 2s. and 1l. 1s. Mr. Graham Balfour, director of education, County Education Offices, Stafford.

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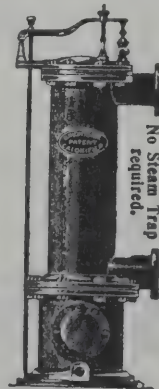
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BRADFORD.—May 13.—For the erection of baths and wash-houses, Victoria Street, Bradford, for the Manchester Corporation. Deposit 3*l*. 3*s*. The City Architect, Town Hall, Manchester.

BRISTOL.—May 13.—For the construction and maintenance for twelve months after completion of the superstructure of an engine and boiler-house for the graving dock at the Royal Edward Dock, in course of construction at Avonmouth. Deposit 5*l*. Mr. W. W. Squire, engineer, Cumberland Basin, Bristol.

CARLISLE.—May 24.—For the erection of two attendants' houses—viz. one at Stanwix sewage-disposal works, one at Wetheral and Great Corby sewage-disposal works—for the Carlisle Rural District Council. Mr. Joseph Graham, engineer, Bank Street, Carlisle.

CHILSWORTHY.—May 16.—For the enlargement of Wesleyan chapel and new stable and carriage-house at Chilsworthy, Holsworthy. Mr. R. Cory, Chilsworthy, Holsworthy, Devon.

COVENTRY.—May 20.—For the old grammar school renovation and new classrooms. Deposit 1*l*. 1*s*. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

CRANBROOK.—May 14.—For alterations at the police-station. The County Architect, 86 Week Street, Maidstone.

DARWEN.—May 14.—For the extension and completion of St. Cuthbert's, Darwen. Mr. C. H. Woods, architect, Albert Chambers, Darwen, Lancs.

DEVONPORT.—May 15.—For the work in the reappropriation of "E" Block as nursing sisters' quarters and administration block, Devonport Hospital, in the Southern Command, Plymouth Sub-District. Mr. Harry B. Measures, director of

barrack construction, War Office, 80 Pall Mall, London, S.W., on payment of 10*s*. (not returnable).

DODWORTH.—May 17.—For the erection and completion of three dwelling-houses in Keresforth Road, Dodworth, near Barnsley. Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnsley.

EAST PRESTON.—May 13.—For addition of a room and other work at the infectious ward at the East Preston work-house, near Angmering station, Sussex. Mr. Harold M. Potter, architect, 41 Warwick Street, Worthing.

EGREMONT.—May 14.—For the masonry, joinery, plastering, slating, plumbing and glazier's work required in the erection of a shop and dwelling-house in Main Street. Mr. Norman Kitchen, architect and surveyor, Woodend House, Bigrigg, *via* Carnforth.

FENTON.—May 13.—For the builder's work required in the construction of public underground conveniences in Victoria Place. Mr. S. A. Goodall, surveyor, Town Hall, Fenton, Staffs.

GLASGOW.—May 18.—For the proposed alterations on the kitchen block and the nurses' dormitories, Belvidere hospital. The Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.

GLASGOW.—May 20.—For the supply and erection of riddle, mixer, elevator, &c., at St. Rollox refuse despatch works, Charles Street. Mr. D. M'Coll, superintendent of cleansing, 38 Cochrane Street, Glasgow.

GODALMING.—May 16.—For erection of municipal buildings and alterations and additions to the borough hall. Deposit 2*l*. 2*s*. Mr. J. H. Norris, borough surveyor, Bridge Street, Godalming.

GREAT YARMOUTH.—May 16.—For erection of dressing-rooms, new recreation ground, for the Town Council. Mr. J. W. Cockrill, borough surveyor, Town Hall, Great Yarmouth.

GREAT YARMOUTH.—May 11.—For the completion of St. James's Church. Send names to Messrs. Olley & Haward, architects, Queen Street, Great Yarmouth.

GUIST.—May 20.—For repairing the roof of Miss Packe's school, Guist. Mr. C. A. Hamond, Twyford Hall, East Dereham.

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HIGHFIELD AND BIRTLEY.—May 14.—The Durham County Council invite sole tenders for erection of new schools at Highfield (near Rowlands Gill) and Birtley. Plans, specifications and general conditions of contract can be seen and bills of quantities obtained as follows:—For Highfield school, at the office of Messrs. Liddle & Browne, Prudential Buildings, Mosley Street, Newcastle-on-Tyne; for Birtley school, at the office of Mr. J. W. Rounthwaite, 13 Mosley Street, Newcastle-on-Tyne.

HULL.—May 23.—For alterations and additions to the Williamson Street school. Deposit 2*l.* 2*s.* Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

IRELAND.—May 14.—For erecting an organ chamber and other works at the First Presbyterian church, Bangor. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

IRELAND.—May 17.—For building a parochial house at Raphoe. Mr. Edward J. Toye, architect, 20 Great James Street, Londonderry.

IRELAND.—May 24.—For erecting church near Doagh, for the committee of Donegore Second Presbyterian church. Mr. W. D. R. Taggart, architect, 2 Wellington Place, Belfast.

KNOTTINGLEY.—May 14.—For the erection of Wesleyan Sunday schools. Mr. A. E. Lambert, architect, 22 Park Row, Nottingham.

LONDON.—For the erection of first part of large block of flats. Bills of quantities and forms of tenders on payment of 3*l.* 3*s.*, returnable. Mr. R. Anderson, architect, 39 Victoria Street, Westminster, S.W.

LONDON.—May 13.—For the extension, alteration and entire refitting of existing ladies' underground convenience, Oxford Circus, W. Mr. J. Paget Waddington, borough surveyor, Town Hall, St. Marylebone, W.

LONDON.—May 23.—For the erection of a hall at the Tooting Home, Church Lane, Tooting, for the Guardians of Wandsworth Union. Deposit 2*l.* Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.

LONDONDERRY.—May 18.—For building and completing house and shop at Glebe, Sion Mills. Mr. J. P. M'Grath, architect, Commercial Buildings, Foyle Street, Londonderry.

MANCHESTER.—May 15.—For the erection of ward pavilion at Monsall hospital. Deposit 1*l.* 1*s.* The City Architect, Town Hall.

MANCHESTER.—May 21.—For the erection of receiving wards at the Withington workhouse, for the Guardians of Chorlton Union. Deposit 1*l.* 1*s.* Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

MATLOCK.—June 1.—For the supply and erection of retort-house and coal-store roofs, with retort-bench iron-work; also for supply of material and building retort-bench with four through arches, and two settings of eight retorts each with regenerative furnaces, at the works, Matlock, for the Gas Co. Mr. Thomas Brown, engineer and manager, Gasworks, Matlock.

MIRFIELD.—May 25.—For the joiner and builder's work in connection with repairs to the Mirfield Knowle Provided school. Mr. William Wood, divisional clerk, Batley.

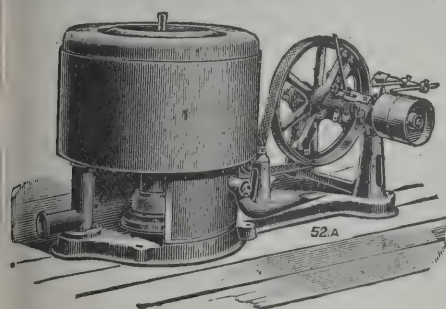
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NEWARK.—May 14.—For the erection of elementary school on Barnby Road. Deposit 5*l.* Mr. H. H. Osborn, clerk, Town Hall, Newark.

PENNYBRIDGE.—May 31.—For the erection of semi-detached villas, Pennybridge, near Greenodd. Messrs. J. W. Grundy & Son, architects and surveyors, Central Buildings, Ulverston.

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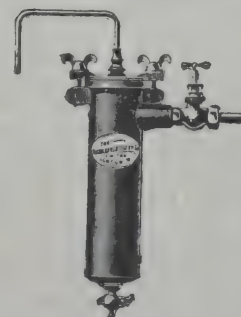
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RUNCORN.—June 11.—For proposed Council school, Balfour Road. Deposit 2*l.* 2*s.* Mr. John Lightburn, clerk to the sub-committee, Education Offices, Town Hall, Runcorn.

SCOTBY.—May 14.—For alterations and additions to The Beeches, Scotby, near Carlisle. Mr. H. H. Hodgkinson, architect, 64 Lowther Street, Carlisle.

SCOTLAND.—May 14.—For the brick, joiner, plumber, plaster and slater works of additions to and alterations on business premises, Townhill. Mr. James T. Scobie, architect.

SCOTLAND.—May 17.—For the joiner, slater, plumber and plasterwork required in connection with the reconstruction of house property in Greenlaw. Mr. Adam Smeaton, Greenlaw.

SCOTLAND.—May 22.—For the erection of a battery-house and relative works at Hamilton, for the Lanark County Council. Deposit 1*l.* Mr. W. L. Douglas, C.E., district engineer, District Offices, Hamilton.

SHEFFIELD.—May 11.—For alterations to Block No. 8 at the Union hospital, Fir Vale. Send names to Mr. Albert Edward Booker, clerk, Union Offices, West Bar, Sheffield.

SOUTHALL.—May 14.—For construction of an underground convenience, for the Southall-Norwood Urban District Council. Mr. Reginald Brown, A.M.I.C.E., &c., engineer and surveyor, Public Offices, Southall, Middlesex.

SOUTH SHIELDS.—May 13.—For the erection of six pairs of cottage homes and superintendent's house at Sunnyside, near Cleadon, and a receiving home near the Union workhouse, West Harton, South Shields. Messrs. Geo. S. Smith & Henry Chapman, architects, 67 King Street, South Shields.

ULVERSTON.—May 18.—Tenders (whole or separate trades) are invited for the erection of a house in Kilner's Park. Messrs. Settle & Brundritt, architects and surveyors, Ulverston and Barrow-in-Furness.

USWORTH AND CRAGHEAD.—May 14.—For alterations at Usworth Central and Craghead Infants' Council schools. The County Education Committee's Architect, Shire Hall, Durham.

WALES.—May 13.—For building a parish hall at Bargoed. Mr. Geo. Kenshole, architect and surveyor, Station Road, Bargoed.

WALES.—May 14.—For the erection of an English Presbyterian chapel at Abergwynfi, near Cymmer. Mr. Arthur Lloyd Thomas, architect, Church Street Chambers, Pontypridd.

WALES.—May 14.—For the erection of a residence, stables, &c., at Llandovery, Carmarthenshire. Deposit 1*l.* 1*s.* Mr. Arthur S. Williams, architect, Llandilo.

WEYMOUTH.—May 14.—For erecting bakery and stabling, 50 Dorchester Road. Mr. S. Jackson, architect and surveyor, Bridge Chambers, Weymouth.

WALES.—May 14.—For the erection of ten or more houses, and also for the construction of a back lane, at Ynysddu, Mon. Mr. W. A. Griffiths, architect, Pontllanfraith, Mon.

WALES.—May 15.—For the erection of a bungalow at Pontymeddyg, Dinas Cross. Mr. Thomas James Glanteg, Dinas Cross, Pembrokeshire.

WALES.—May 15.—For the erection of ten more houses at Dunvant, near Swansea. Messrs. Rowlands, Price & Griffiths, 15 Somerset Place, Swansea.

WALES.—May 16.—For the completion of tower of Bettws-y-Coed Church. Messrs. Austin & Paley, architects, Castle Park, Lancaster. Bills of quantities may be obtained from Messrs. Wright & Son, surveyors, Lancaster.

WALTHAMSTOW.—May 15.—For alterations and additions to engine-house at Ferry Lane, for the Metropolitan Water Board. Deposit 1*l.* The Engineer of the Eastern District, Lee Bridge, Clapton.

WEST HEATH.—May 22.—For the erection of an infectious disease hospital at West Heath, near Congleton. Deposit 1*l.* 1*s.* Messrs. Alfred Price & Son, architects, Elworth, Sandbach.

WOLVERHAMPTON.—May 13.—For extensions to the electric-lighting station at Commercial Road. Deposit 1*l.* 1*s.* Mr. George Green, borough engineer, Town Hall, Wolverhampton.

WORKINGTON.—May 20.—For alterations and additions to buildings in Kelly Street. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

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WOKINGHAM.—May 31.—For the building of a manual instruction and cookery centre at the Westcott Road Council school. Deposit 2*l*. 2*s*. Secretary to the Berkshire Education Committee, The Forbury, Reading.

WORSBOROUGH.—May 13.—For the carpenter and joiner, slater, plasterer, plumber and glazier, and painter's work required in erection of two houses on Mount Vernon Road. Mr. Arthur Whitaker, architect, Worsborough Bridge, Barnsley.

YARDLEY.—May 14.—For the erection of a Council elementary school in Church Road, Yardley, near Birmingham. Deposit 2*l*. 2*s*. Applications may be made on or before April 30 to Mr. Anthony Rouse, quantity surveyor, King's Court, Colmore Row, Birmingham. Mr. Arthur Harrison, architect, 109 Colmore Row, Birmingham.

WHITSUNTIDE ON THE CONTINENT.—Return tickets at reduced fares available for eight days will be issued to Brussels May 15th to 18th and 20th, *via* Harwich and Antwerp. Passengers leaving London in the evening reach Brussels next morning after a comfortable night's rest on board the steamer. For visiting The Hague, Scheveningen (the Dutch Brighton) and Amsterdam for the old world cities of the Zuyder Zee, and the International Exhibition at Mannheim, special facilities are offered *via* the Great Eastern Railway Company's British Royal Mail Harwich-Hook of Holland route. A corridor train with vestibuled carriages, dining and breakfast cars is run on the Hook of Holland service between London and Harwich. From the Hook of Holland through carriages and restaurant cars are run in the North and South German express to Cologne, Bale and Berlin, reaching Cologne at noon, Bale and Berlin in the evening. For the convenience of passengers tickets dated in advance can be obtained at the Liverpool Street station continental inquiry and booking offices. The Danish Royal Mail steamers of the Forenede Line of Copenhagen will leave Harwich for Esbjerg (on the west coast of Denmark) on May 16th and 18th, returning May 21st and 22nd. The General Steam Navigation Company's steamers will leave Harwich on May 15th and 18th for Hamburg, returning May 19th and 22nd.

TENDERS.

ACLE.

For restoration to tower, north porch and south turret, Acle Church, Norfolk. Mr. HERBERT J. GREEN, architect and diocesan surveyor, Norwich and King's Lynn.

Shanks	£563	0	0
Chapman	535	0	0
Utting	488	12	2
Jermey	468	13	9
Riches	453	3	9
Daniels, Acle*	452	16	3

* Accepted conditionally.

ALPHINGTON.

For erecting infants' school for 120 children and alterations in existing school.

Stacey	£2,215	0	0
Ellis & Sons	2,120	0	0
Perkins & Co.	2,099	3	11
Roberts	1,935	16	8
Westcott, Austin & White	1,874	0	0
Cockerell	1,852	10	3
Narracott	1,827	7	1
Triggs	1,773	10	10
Ham & Passmore	1,728	2	0
Babcock	1,726	4	7
Stephens & Son	1,692	0	0
Woodman & Son	1,626	13	6
COLES, Alington (provisionally accepted)	1,372	9	0

BEACONSFIELD.

For the erection of two houses, stables, &c. Messrs. HOOPER & NASH, architects, High Wycombe.

Gibson	£698	0	0
Harris	697	0	0
NASH & SONS, Wycombe (accepted)	682	0	0

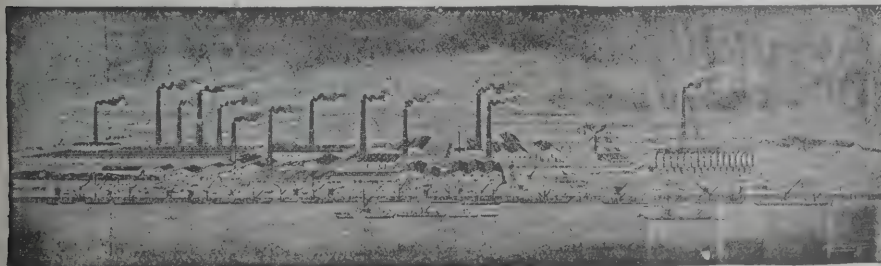
BRIGHTON.

For the construction of five ferro-concrete groynes at the foot of the cliffs at Roedean for the protection of the sewer and road.

HOLLOWAY BROS., LTD. (accepted)	£2,419	0	0
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BERWICK-UPON-TWEED.

For laying concrete path on Pier. Mr. R. DICKINSON, borough surveyor.	
Smart & Son	£437 0 0
Watson	380 14 0
Storar & Son	371 14 2
Rule	363 13 4
Renwick	360 0 0
Turner	358 0 0
SIDNEY, Berwick (accepted)	320 19 0

BULWICK.

For widening bridge and raising approach. Mr. C. S. MORRIS, county surveyor, Northampton.	
Hacksley Bros.	£283 0 0
Hinson & Co.	224 0 0
Patrick	201 0 0
Goodman & Murkett	196 0 0
Holloway	191 17 6
SIDDONS & FREEMAN, Oundle (accepted)	190 0 0

CHELTENHAM.

For the supply of school furniture for the Naunton Park and Gloucester Road Council schools.	
Gloucester Joinery Co. (wainscot oak)	£1,632 0 0
North of England School Furnishing Co. (Riga oak)	1,625 0 0
Gloucester Joinery Co. (American oak)	1,397 0 0
Gloucester Joinery Co. (orham)	1,313 0 0
Lance & Co. (Canadian oak or orham)	1,296 0 0
Ashbee, Sons & Co. (oak)	1,186 0 0
Educational Supply Association (Canadian oak)	1,113 0 0
North of England School Furnishing Co. (orham or American oak)	1,097 0 0
Addison & Co. (American oak)	1,094 0 0
Educational Supply Association (orham)	1,080 0 0
Wake & Dean (oak or orham)	1,063 0 0
Addison & Co. (orham)	1,052 0 0
Hawes & Sons (oak or orham)	1,049 0 0
Arnold & Son (oak or orham)	1,009 0 0
Bennett (Canadian oak)*	967 0 0

* Recommended for acceptance, plus rod. per desk for sunk flush brass sliding inkwell covers.

CAMBORNE.

For repairs and additions to isolation hospital and erection of mortuary.	
Haslett	£297 10 0
LEAN, Camborne (accepted)	290 0 0

DURHAM.

For reconstruction and widening of Lanchester High Bridge.

Accepted tenders.

Robson, Esh Winning, masonwork	£425 0 0
Teasdale Bros., Darlington, steel and ironwork	179 6 6
For widening Lanchester Low Bridge.	
Robson, masonwork	155 0 0
For widening Ferry Hill Bridge.	
Burnett & Sons, Birtley	219 0 0

ELGIN.

For construction of sewage-disposal works at Pans.

Pirie & Sons	£5,522 16 3
Nicholson	4,990 4 4
Septic Tank Co.	4,750 0 0
Mackay & Son	4,724 17 1
Ross	4,636 1 6
White & Co.	4,233 19 3
Sellar & Co.	3,998 0 0
Fraser	3,753 7 8
Falconer	3,607 17 10
NEWLANDS, Elgin (accepted)	3,083 6 6

EPSOM.

For rebuilding parish church.	
Benfield & Loxley, Oxford (accepted)	£6,597 0 0

FALKIRK.

For administrative block and porter's lodge at fever hospital. Mr. D. RONALD, borough engineer.

*Accepted tenders.**Porter's lodge.*

Dalziel, mason	£228 19 4
Gilchrist & Packman, joiner	163 9 0
Brown, plumber	94 3 6
Drummond & Crowe, plaster, roof and tile	83 8 0

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Gardner, mason	£405	7	10
Forge, joiner	349	0	0
Miller, plasterer and slater	223	10	0
Campbell, plumber	167	14	2

GREAT WYRLEY.

For erection of Council school at Landwood.

GOUGH & SON, Wolverhampton (accepted) . £2,650 0 0

HULL.

For additions and alterations to premises of British Marble and Slate Syndicate. Mr. MELVILLE LENHAM, architect, Hull.

Howe & Nicholson	£623	2	6
Thompson & Son	597	3	2
Jackson & Son	544	9	0
Johnson	538	16	0
Southern	527	10	0
Hunt	524	14	0
Quebell & Son	522	16	0
Turner	512	10	0
Simpson & Son	510	0	0
Carr	508	13	0
Harper	502	0	0
Whincop	500	0	0
Hall	497	8	0
Leson	495	5	10
BILTON, Welbeck Street, Hull (accepted)	483	18	6

INVERNESS.

For the erection of hall for United Free High church.

Accepted tenders.

Alexander & Co., mason.

Cameron, carpenter.

Black & Son, plumber.

Fraser, slater.

Johnstone, plasterer.

Fraser, painter and glazier.

Rose Street Foundry Co., Ltd., ironwork.

HUNGERFORD.

For erection of schoolroom and renovation of Primitive Methodist church.

Edwards & Son	£691	11	0
HEDGES BROS., Newbury (accepted)	628	0	0

LONDON.

For the erection of 103 cottages on the second part of Section B of the White Hart Lane estate of the London County Council, Tottenham.

Hawkins & Co.	£36,749	0	0
Stewart	29,392	0	0
Wall, Ltd.	29,058	0	0
Coxhead	27,542	0	0
Rowley Bros.	24,522	0	0
Carter	24,136	0	0
Barns	23,985	0	0
Pulford, Wood Green (recommended)	22,200	0	0

For the adaptation for refreshment and other park purposes of No. 164 Denmark Hill, in Ruskin Park.

Lowe	£679	0	0
Goad	658	0	0
Davis	620	0	0
Line	555	0	0
Christie	547	0	0
Parsons	497	0	0
Newell & Lusty	488	0	0
Hall & Jacobs	480	0	0
Bickerton, Catford, S.E. (recommended)	449	0	0

For new stone coping, &c., zinc gutters and painting works at Hampden House, for Hampden House, Ltd. Mr. EDWIN G. SALTER, architect.

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Marchant & Hirst	144 0 0	171 0 0	72 0 0
Barker & Street	126 0 0	246 0 0	90 0 0
Sharpington.	110 0 0	199 0 0	112 18 0
Cheetham	110 0 0	172 0 0	107 0 0
Wagstaff & Sons	98 10 0	230 0 0	166 10 0
GAVEN BROS.	92 0 0*	169 5 0*	94 15 0
MENCE & Sons	—	—	66 0 0*

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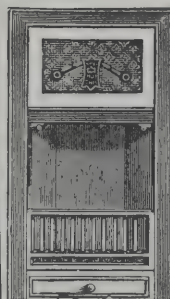
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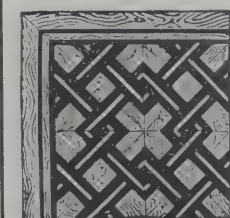
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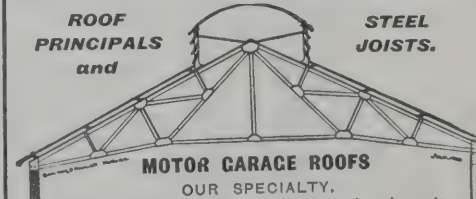
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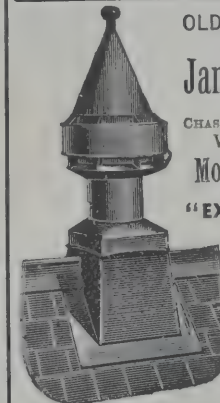
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For alterations and additions to premises, Great Earl Street and Castle Street, Long Acre, for Messrs. Lepard & Smiths, Ltd. Mr. LEWEN SHARP, architect, 3 Duke Street, Adelphi, W.C. Quantities by Mr. ALAN PAULL, F.S.I., 6 Quality Court, Chancery Lane, W.C.

Holloway Bros., Ltd.	£18,250	0	0
Macey & Sons, Ltd.	17,700	0	0
Howard & Co.	17,527	0	0
Perry & Co.	17,353	0	0
Bywaters & Sons, Ltd.	17,268	0	0
Carmichael	17,249	0	0
Trollope & Sons and Colls & Sons, Ltd.	17,104	0	0
Minter	16,991	0	0
Sabey & Son, Ltd.	16,840	0	0
Holland & Hannen	16,628	0	0
PATMAN & FOTHERINGHAM, LTD., Theobald's Road (accepted)	16,449	0	0

MANCHESTER.

For the erection of a residence in Oakfield Road, Didsbury. Messrs. C. K. & T. C. MAYOR, architects, Manchester.

Hill & Heys	£1,992	0	0
Young, Tinker & Young	1,926	0	0
Macfarlane & Son	1,909	0	0
Peace & Norquoy	1,886	0	0
Ramsbottom	1,879	0	0
Thorpe	1,864	0	0
Megarity & Co.	1,823	0	0
BURGESS & GALT, Ardwick (accepted)	1,770	0	0

MERTHYR TYDFIL.

For rebuilding of the Penydarren tavern. Mr. C. M. DAVIES, architect, Merthyr Tydfil.

Jenkins	£1,291	0	0
Williams	1,133	16	11
Warlow	1,079	10	0
Hawkins	978	0	0
Jones & Sons	948	17	6
DAVIES, Dowlais (accepted)	916	0	0

MORLEY.

For the erection of stable, coach-house, &c., in Pawson Street. Messrs. BUTTERY & BIRDS, architects, Morley.

Accepted tenders.

Pearson & Ainsworth, mason and plasterer	£325	10	0
Grayshon, joiner	138	0	0
Firth, plumber	45	0	0
Kellett, slater	29	16	0

NEW MILLS.

For erecting foreman's cottage at Mousley Bottom.

SWINDELLS, New Mills (accepted)	£410	0	0
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RUSHENDEN.

For construction of ferro-concrete reservoir and brick-built engine-house, supply and fixing of air-lift pumping plant and the supply and laying of about 1,450 yards of 6-inch and 13½ yards of 4-inch cast-iron pipes, special valves, castings, &c. Mr. HORATIO SMALL, borough surveyor, Queenborough.

Mains.

Playfair & Toole	£808	9	0
Neal & Co.	681	3	0
Parkman	679	12	0
Millen & Chrisfield	651	4	0
Seager	649	14	0
Kemp Bros.	604	17	0
ANDERSON & JOHNSON, Minster (accepted)	559	3	0

Engine-house.

Neal & Co.	199	3	0
Playfair & Toole	194	7	0
Parkman	189	19	0
Kemp Bros.	188	10	8
Seager	159	18	10
Bancock Bros.	156	3	0
ANDERSON & JOHNSON, Minster (accepted)	155	11	8
Millen & Chrisfield	107	19	2

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RUSHENDEN—continued.

Reservoir.

Kemp Bros.	£462	0	0
Neal & Co.	540	0	0
Anderson & Johnson	460	0	0
Millen & Chrisfield	430	0	0
Parkman	420	0	0
YORKSHIRE HENNEBIQUE Co., Leeds (accepted)	420	0	0

Machines.

Playfair & Toole	662	15	0
Isler & Co.	637	0	0
Le Grand & Sutcliffe	610	0	0
Parkman	610	0	0
Kemp Bros.	514	0	0
Millen & Chrisfield	507	5	0
Anderson & Johnson	500	0	0
Neal & Co.	486	10	0
WORTHINGTON PUMP Co. (accepted)	468	0	0

Machines and reservoir.

Seager	953	0	0
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SOUTHSEA.

For construction of Parade pier and landing stage.

Neal & Co.	£7,112	0	0
Muirhead & Co.	6,600	0	0
Playfair & Toole	5,250	0	0
Fasey & Son	5,010	0	0
BEVIS (accepted)	4,820	0	0
Engineer's estimate	4,832	0	0

STOUR VALLEY.

For alteration and extension of the Tivdale outfall works.

Guest & Sons	£1,051	0	0
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STRATFORD-ON-AVON.

For the erection of a mission chapel at Tiddington. Mr.

A. EDWARD ALLEN, architect, Banbury.

Fincher & Co.	£600	0	0
KENNARD, Stratford-on-Avon (accepted)	496	15	0

WOKING.

For completion of Christ Church.

HARRIS & SON (accepted)	£1,644	0	0
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WALES.

For the erection of forty houses at Ynysddu, Mon.

RAYMOND, Cardiff (accepted)	£6,800	0	0
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For the erection of twenty-eight houses at Hengoed, via Cardiff.

RAYMOND, Cardiff (accepted)	£4,648	0	0
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For the erection of twenty houses at Melincourt, Resolven. Mr. G. A. TREHARNE, engineer and architect.

HERBERT BROS., Resolven (accepted)	£3,700	0	0
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(Received too late for classification.)

CAMBRIDGE.

For masters' common-rooms, art school, armoury and gymnasium, for the Governors of the Leys School, Cambridge. Mr. ROBERT CURWEN, A.R.I.B.A., architect, 112 Hamilton House, Bishopsgate Street Without, London, E.C.

Lawrance & Sons	£3,440	0	0
Bowman & Sons	3,143	0	0
Saint	2,899	0	0
Coulson & Lofts	2,870	0	0
KERRIDGE & SHAW, Cambridge (accepted)	2,777	0	0

HEREFORD.

For the erection of cabinet factory, Hereford, for Messrs. Greenlands, Ltd. Messrs. GROOME & BETTINGTON, architects, Palace Chambers, Hereford.

	Factory.	Foundations, &c., for Iron Buildings,	Total.
Jones	£2,218	£378	£2,597
Walters & Son	2,164	333	2,497
Beavan & Hodges	2,146	338	2,484
Lewis & Co.	2,190	275	2,465
Cooke	2,047	355	2,402
Colborne	2,067	284	2,352
Roberts	1,998	300	2,298
Powell	1,897	327	2,224
Dallow & Son	1,900	272	2,172
Wilke	1,905	240	2,145
BOWERS & Co., Hereford (accepted)	1,847	259	2,106

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MANCHESTER
TRAFFORD PARK

SWINDON.

For alterations at the Carriers' Arms inn, South Marston.
Messrs. DREW & SONS, architects, Swindon.

Looker	£255	10	0
Tydemann Bros.	230	0	0
H. & C. SPACKMAN (accepted)	224	0	0

NEW CATALOGUE.

THE catalogue for 1907 relating to standard steel and reinforced concrete construction, from Messrs. D. G. Somerville & Co., differs from most others, inasmuch as they are prepared to carry out work in several selected systems besides their own. They give not only illustrations of various buildings in which reinforced concrete has been employed and tables relating to girders, stanchions, roofs, &c., but an introduction which is a succinct treatise on the work, and a standard specification which will be found suggestive to architects and engineers. The service and advice of a staff of engineers are at the disposal of clients, who can discover on consultation what arrangement is most eligible under particular conditions. At the works of the firm in Southall a stock of 10,000 reinforced concrete blocks is continually kept in a matured condition, in order that urgent contracts can be immediately carried out.

TRADE NOTES.

THE Yorkshire Fire Appliance Company of Leeds have received instructions to equip over twenty stations of the Great Northern Railway Company with the "Vanguard" hand chemical fire extinguisher, of which they are the sole makers.

THE Infectious Hospital, Falkirk, is being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

ARCHITECTS who have to design shops will recognise the utility of the catalogue of brasswork issued by Parnall & Sons, Ltd., Bristol. The very numerous varieties of brackets,

clips, stands, shelves, rails, suspenders are adapted to suit different classes of business. There are also electroliers and incandescent fittings of superior design.

THE British Fire Prevention Committee have published the report of one of their committees on a floor of reinforced concrete on the Herbst "Armocrete" tubular system. The system consists of a series of hollow concrete blocks of tubular form separated by webs of a section resembling the old cast-iron beam, consisting of Portland cement concrete in which is a wrought-iron corrugated bar. On the top of the blocks and webs concrete is laid and the soffit is rendered with plaster. The load applied was 280 lbs. per square foot. After the test it was found that the permanent deflection was less than $\frac{1}{2}$ inch, and neither fire nor water passed through the floor.

VARIETIES.

THE Southport Town Council recently offered premiums of 15 guineas and 10 guineas for the best two designs sent in for a two-sheet poster to advertise the town. So far only one design has been sent in.

THE Victorian Government contemplate making the port of Melbourne thoroughly up-to-date, and it is proposed to obtain the services of a leading British engineer in framing a scheme for this purpose.

A LOCAL GOVERNMENT BOARD inquiry was held last week into the application of the Manchester Corporation to borrow 102,000*l.* for meters and 54,000*l.* for mains and services, and 144,000*l.* on extensions at the Gaythorn and Bradford Road works.

MR. H. SHAW, of Huddersfield, has been appointed assistant sanitary inspector to the Scarborough Corporation in succession to the late Mr. W. B. Morton. The appointment is worth 100*l.* per annum rising to 120*l.* There were 365 applicants.

THE tramways committee of the Glasgow Corporation recommend that two members of the staff of the department be authorised to visit certain continental towns to get the fullest information on the subject of turbines, as it is proposed to introduce these for the additional power required at Pinkston station.

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ILLUSTRATIONS.

CRATHORNE HALL, YORKSHIRE—GARDEN' FRONT, GENERAL VIEW.

WELLINGTON HOUSE RESIDENTIAL HOTEL, BUCKINGHAM GATE,
S.W.—MAIN ENTRANCE.

ENGINEERS AND SHIPBUILDERS' INSTITUTE, GLASGOW.

THE correspondent at Jerusalem of the *Revue Commerciale du Levant* reports that an Imperial firman has been issued for the construction of a new palace for the Governor and other officials in that city. The cost of the works is estimated at 940,000 piastres (about 8,460*l.*).

ARRANGEMENTS have been made with the contractors for the demolition of Tower Buildings by which the stone required for the building of new vestries at St. Mary's Church, Liscard, will be supplied therefrom instead of from Storeton Quarries as was originally intended. The Tower Buildings stone is the well-known Cefn stone.

H.R.H. THE DUCHESS OF ALBANY laid the memorial-stone of the Infants' Hospital, Westminster, on the 2nd inst. The elevation of the building is of red facings with Portland stone dressings. Messrs. Read & Macdonald are the architects and Messrs. Patman & Fotheringham, Ltd., of Theobald's Road, Holborn, and Park Street, Islington, N., are the builders.

THE London County Council on Tuesday resolved practically to abandon the scheme to supply electrical power to the county of London and large areas in the home counties. By seventy-four votes to thirty-nine the Council passed the following resolution:—"That the London County Council Electric Supply Bill be submitted for second reading in the House of Commons with a view to securing an arrangement under which private enterprise undertakes, subject to the control of the Council, the business of the supply of electrical energy, and on the understanding that such alterations as may be required in the Bill to effect this object and to deal with any other matters of importance which may arise on the Bill will be reported to the Council for its approval as soon as possible."

THE Great Central Railway Company have had two new turbine steamers constructed to meet the increased pas-

senger traffic on the Grimsby-Rotterdam route. As the journey will be performed in about eleven hours, men of business and tourists in the North of England will be on a level as regards accommodation with those in other parts of the country. The furnishing of these floating hotels is on a luxurious scale.

THE board of management of the Manchester Royal Eye Hospital, in Oxford Road, have placed the contract for the superstructure of the extension of the hospital with Messrs. C. H. Normanton & Co. It is estimated that the cost of the work will amount to about 23,000*l.*, of which sum about 11,000*l.* has been subscribed. Fifty additional beds for patients will be provided, making a total of 160 beds.

THE *Tramway and Railway World* states that the first contract for tramway permanent way for Japan, which has been placed in this country, has just been secured by a Sheffield firm. Hitherto orders of this kind for Japan have been placed with American firms, but in the present case, after keen competition, the British firm was successful. The contract provides for the supply and construction of the whole of the special trackwork, lay-outs, cross-overs, &c., required for the tramways to be constructed in Osaka.

THE London County Council last week adopted the following resolution by sixty-nine votes to forty-one:—"That so much of the resolution of February 5, 1907, as relates to the reference to the works committee for execution of the work of constructing the portion of the northern low-level sewer No. 2 between Stepney and Trafalgar Square be rescinded, and that it be referred to the main drainage committee to arrange for the issue of an advertisement inviting tenders for the work."

TO-MORROW (Saturday, May 11) the International Laundry Exhibition, organised by the Society of Engineers and Allied Trades and the Launderers' Association, will open at the Agricultural Hall, and will continue throughout the following week. Official visits are to be paid by the French, German and Dutch laundry associations, all of which are organising special excursions in connection with the event. There will be a large collection of machinery in motion, as well as of actual washing operations, while a competition for finished work will add to the interest of the exhibition.

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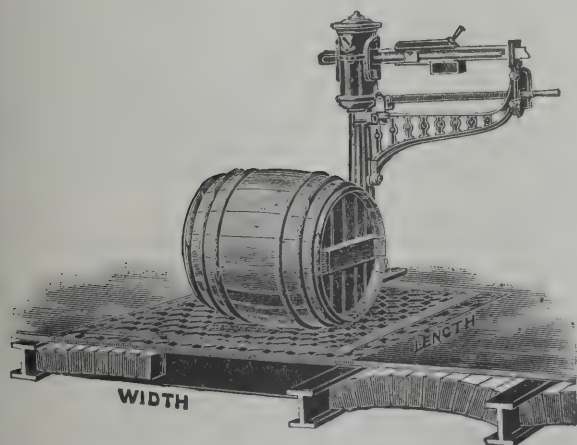
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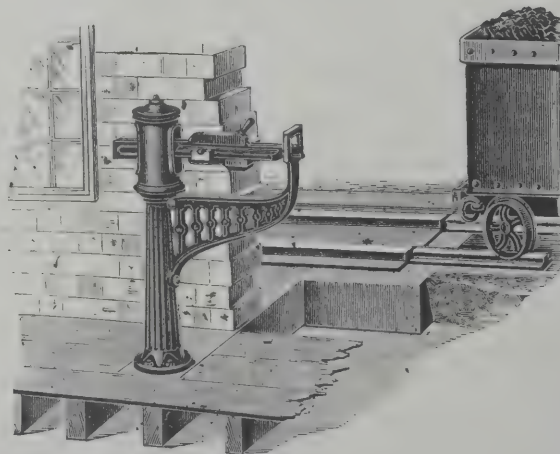
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The Dudley Town Council wish to borrow 6,000*l.* to be expended on paving works over three years. In addition, application is to be made to the Local Government Board for sanction to a loan of 4,021*l.*, of which 2,700*l.* is required to carry out a drainage scheme at Tividale, the balance being to cover the cost of the construction of sewers in various parts of the borough.

The housing committee of the Birmingham City Council have approved of the terms of the lease between the Birmingham City Council and the Ideal Benefit Society respecting the land originally acquired by the Corporation at Bordesley Green as a site for workmen's dwellings. The object of the Society in leasing the land is to erect houses for the working classes and establish a garden colony. The committee are asking permission of the Local Government Board to borrow 4,000*l.* towards making the roads and laying out the park, &c., and the Board will shortly send down an inspector to make an inquiry into the application.

An exhibition of urban cottages and homesteads for small holdings is to be opened on July 1, under the auspices of the National Housing Reform Council, at Letchworth Garden City. Some forty types of cottages are being built in groups and rows on a site within two minutes of the railway station. There will be a restriction of twelve houses to each acre, and with this number it will be possible to allow for common greens and children's playgrounds. It is intended to give opportunity of showing specimens of household furniture and fittings suitable for small houses and cottage homes, and it is proposed to allow a certain number of cottages to be occupied by one furnishing firm each. Diplomas and medals will be offered for the best single complete suites, and for the best specimens of houses furnished complete. In the small holdings section conditions have been established that may prove an economical success, under which the small holder may have the land on terms which he finds most suitable. The exhibition will remain open until September 30.

MR. MARCUS HOPKINS (the estate superintendent to the Swansea Corporation), as the result of a visit to the International Trades and Building Exhibition, has prepared a report in which he and the members of the Swansea housing committee who accompanied him say that in a borough handicapped as Swansea is by a code of by-laws

which regard both palace and cottage from the same point of view, a large number of the contrivances exhibited are debarred from use. Concrete slabs for walling, steel sheeting for partitions, and combination methods for house drainage and cottage dwellings could be manufactured at Swansea at a low price, and if sanctioned by the Corporation for building purposes much would be done in the way of solving the financial difficulty of the housing problem. The existing by-laws almost throttled any attempt to construct a cottage for it to be let at a sum a working-man could afford to pay, and yet produce an annual return sufficient to pay the interest on the capital invested and the sinking fund.

At the Building Trades Exchange, Sheffield, last week, the annual meeting of the Building Trades' Conciliation Board was held, there being present eight members representing the employers and ten representing the operatives. Mr. A. J. Forsdike presided and was unanimously re-elected president for the ensuing year. The meeting took into consideration the limitation of the boundary over which the Conciliation Board should have jurisdiction, and after some discussion it was decided that for the present the Sheffield city boundary should be considered as the area. It was shown that otherwise there would be the danger of overlapping, which might lead to difficulties, but an assurance was given on both sides that in the case of work beyond the city boundary in which any difficulty might arise the best endeavours of both would be exercised in arriving at an amicable settlement in the same way as in cases within the boundary over which the Board had actual control.

At the last meeting of the Presbytery of Dundee a letter was read from the Executive of the United Operative Masons' Association of Scotland complaining that a contractor for the church being built at Invergowrie was employing non-union labour, and did not pay the recognised standard rate of wages as established between the Dundee employers and operatives' associations. On two occasions attempts had been made to get the employer to come to an amicable understanding, but these had failed. The Rev. Dr. Grant said this was a matter in which the Presbytery could not interfere, and in declining to interfere he thought they should be careful to give no expression of opinion. They did not know but that there might be substantial

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grievances, and he therefore thought the clerk should reply that they had nothing to do with the employment of the contractor.

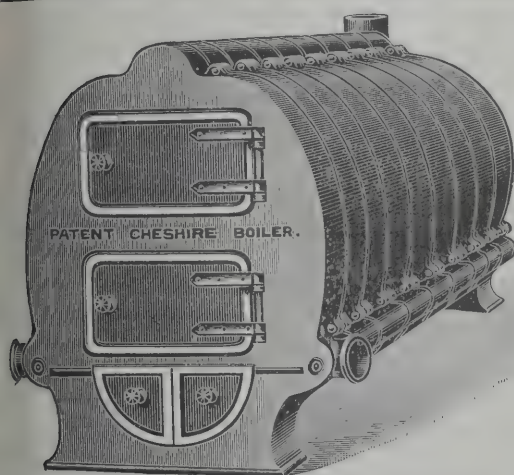
HOLIDAY EXCURSIONS.—To those looking for a restful change from the present sphere of worry during the Whitsun recess the facilities set forth in the A. B. C. programme just published by the Great Central Railway Company will strongly appeal. It contains a mine of useful information suitable for all tastes and classes of travellers. Over 250 seaside and inland health resorts in the Midlands and the North can be reached in quick time by convenient trains, the visit extending over a week, for a sovereign or less. Week-end tickets are obtainable to a large number of places at low fares, and the choice of destination stretches from the Midland counties to the far North of Scotland. A fortnight's holiday may be spent in Ireland, and cheap fares are announced to Dublin (for the International Exhibition) and nearly one hundred other ports and inland places of interest. Other noticeable features of the programme are the frequent day and half-day facilities to the beauty spots of Middlesex, Herts and Bucks, bicycle and pedestrian tour tickets to many places of picturesque and historic interest, extension of the week-end tickets arrangement, &c. Continental trips may be taken to Belgium, Germany and the Rhine. The company's magnificent turbine steamers leave Grimsby every Tuesday, Thursday and Saturday at 6.30 P.M., arriving at Rotterdam early next morning. The ships are fitted with Stone Lloyd's system of watertight compartments, rendering them practically unsinkable. Copies of this comprehensive programme may be obtained free at Marylebone station, company's suburban stations, town offices and agencies, or from publicity department, 216 Marylebone Road, N.W.

ANCIENT LIGHTS IN BELFAST.

JUDGMENT has been delivered in the Irish Court of Appeal by the Lord Chancellor, Lord Justice Fitzgibbon and Lord Justice Holmes in the case of *Black v. Scottish Temperance Assurance Company*. It had been argued on an appeal by the defendants from various orders made by Mr. Justice Barton granting an injunction restraining the

defendants from continuing the existence of what was alleged to be a nuisance or legal obstruction to plaintiff's ancient lights in his woollen clothing factory in James Street, South Belfast. The interference was caused, says the *Irish Times*, by a lofty pile of buildings which the defendants had erected at a cost of about 60,000*l.* at the corner of Bedford Street and Donegall Square, immediately behind the new City Hall in Belfast, and which overshadowed to a large extent the plaintiff's smaller premises situated adjacent thereto. Subsequent to the original decree the defendants had faced the portion of their building from which the light was reflected to the plaintiff's premises with white glazed tiles, but it was contended on behalf of the plaintiff that this did not obviate the nuisance, and a mandatory injunction to remove the buildings was then issued.

The Lord Chancellor said the question mainly discussed on appeal was whether damages should be given by the defendants by way of compensation in lieu of the mandatory injunction awarded by Mr. Justice Barton. The plaintiff some years ago purchased for a sum of about 1,950*l.* premises on the north side of James Street, South Belfast. On the west side of plaintiff's premises there was a covered gateway and buildings belonging to a Mr. Ewing. A space of 15 feet separated these buildings from plaintiff's premises, and Ewing's buildings were only 36 feet in height. The defendants bought the site from Ewing in 1904 for a sum of 30,000*l.*, and they subsequently erected on this site at a cost of over 30,000*l.* the buildings now complained of. They occupied the vacant space of 15 feet, and the wall opposite plaintiff's premises was faced with red brick. At the trial this red brick wall was the main subject of complaint, though there was also evidence as to there being material diminution of light. The defendants went on with their building under the advice of their architect that no injury would be done, but also, no doubt, influenced by the fact that they had covenants in their title from the vendor. Everything appeared to have been done openly and *bona fide*. His Lordship referred to the evidence and to the judgments of Mr. Justice Barton in the matter, who obviously arrived at the conclusion that where the damages would be so considerable as 500*l.* he would not be justified in refusing a mandatory injunction. He (the Lord Chancellor) did



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not think this could be a universal test to apply in considering the application of damages as a remedy instead of an injunction, though the amount of damages would always be an important factor. Where trading could and would be continued, as he thought it could be here, though with some inconvenience or dislocation of the business or expenditure in the alteration of a window or windows, then his Lordship thought the judicial discretion under the statute might, in the absence of special circumstances, be exercised to give full and adequate compensation in money for a pecuniary loss affecting a continuing trading while refusing the mandatory injunction. The tendency had lately been to give damages where that remedy would be adequate and consistent with the leaving of plaintiff in possession of his property. But no certain rule could be laid down for the exercise of the judicial discretion: it must depend upon the special circumstances of each case. The question here was, Could the injury, having regard to its nature, be fairly compensated by damages? He thought it could. The plaintiff was entitled to have those damages assessed by an inquiry, and the Court had neither the power nor the desire to deprive him of that right. The defendants had offered to leave the determination of the damages to the Court, and the sum of 500*l.* had been suggested as a liberal estimate. They could not, however, prevent the plaintiff seeking larger damages through an inquiry, but they could state in granting an inquiry that the defendants had offered this sum, and reserve the costs of the inquiry to be determined by the result. As regarded the costs of appeal, the defendants had served a notice of appeal which asked to have the action dismissed. That notice was wholly unsustainable, and therefore the defendants must pay the whole costs of the appeal.

Lord Justice Fitzgibbon said he entirely concurred with the opinion the Lord Chancellor had pronounced. His Lordship's main reason for thinking that money here would place the plaintiff substantially in as good a position as he was before was founded upon a very careful consideration of all the peculiar circumstances of this case. Literally, the great grievance of the plaintiff was that what was interfered with was the northern light. Considering what money could do, his Lordship thought the light to the examining-room could be increased to an extent greater

than it ever was before by the simple device of placing a steel girder across the wall and substituting glass for the brick partitions between the existing windows. There might also be a rearrangement of the premises in other respects by the judicious expenditure of money that would materially mitigate any inconvenience. An expensive scheme of works of mitigation had been carried out with the sanction of the Court and he did not think it fair that an experiment of that kind should be tried, and then, although there had been a very great mitigation of the damage, to hold that it had not carried it across the border of specific relief. The plaintiff would have an opportunity of considering whether he would accept the 500*l.* and his costs, offered by the defendants. If he went on and took an inquiry he would take it exactly in the same way as if 500*l.* had been lodged in Court. The damage might be a great deal less in the result.

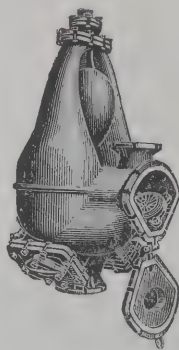
Lord Justice Holmes also concurred. He said that in former times the relief given in such cases was an injunction to remove the cause, but Lord Cairns's Act directed that in some cases an award of damages would be the more appropriate remedy. But where the defendant had been guilty of misconduct or wanton disregard of the plaintiff's rights his Lordship would like to see the old form of remedy adhered to, and a mandatory injunction to pull down granted. Whether damages should be given in lieu of an injunction did not depend upon amount, but whether they would be full and adequate compensation. He would be glad if further litigation in this case were avoided by the plaintiff accepting 500*l.*, but he could not be deprived of an inquiry in which he might recover more, and he might just as likely recover less.

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THE manufacture of terra-cotta for the exterior of buildings grew to the fulfilment of a practical need. The steel structure of tall buildings arose, and with it, says the *Architectural Record*, the demand for a light wall to fill in the separate storeys, and shut in the enclosure from the outer air. The wall of the steel structure became in the eyes of the builder no longer a wall built as a structural mass, but a curtain

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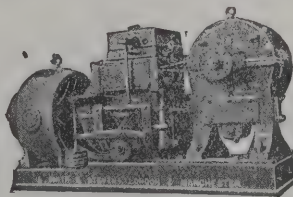
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h, in accordance with the needs of construction, could
ung in the ninth storey or in the first, quite irrespective
he feeling that every wall must be built from the
nd up.

The hollow and the comparatively light terra-cotta
bright in addition to its advantage from this point of view
fity of multiplication in plaster moulds, and therefore
chpiness. It was also unfortunate enough to be made
in clay, and therefore in an infinity of tints. These
desive advantages also brought with them rigid conditions,
at how these were ignored every architect knows.

Because clay shrinks in the fire, and shrinks
irregularly and differently, terra-cotta is not cut stone,
at those who would use it as cut stone bring their
pishment down on their own heads, from which
ne abuse of the material can hardly be said to
pge them. Because burned clays can be made in hundreds
o shapes and tints, it does not follow that it is within
nufacturing possibilities to make it of any shade that
l suit the whim of the arbiter. So the paint-pot and the
tentine barrel became indispensable materials in the
ra-cotta shop, where their presence should never be
spected.

A clay product is one that is tried by fire, and the implied
contract in its use is that it can be tried in the fire again.
I that contract broken when it is put up in a building
ely painted with an oil paint and heavily loaded with
tentine to give it the soft dull tint of the native clays?

For years the difficulties attending the making of floor
ing from clays fixed the attention of the architect con-
stently on the question whether the slightest technical
quirement could possibly have remained unfulfilled.
he tiles were scrutinised not only with the straight-edge,
at they were laid in the floor under skirting lights to make
re that in this piece or that the slightest variation from
e true level did not exist. As it was known that no
vo pieces from the tiler's press had absolutely the
me shrinkage from fire, and as small variations in
e size can only be equalised in the cement joint
etween the tile, the product was measured and criticised,
ad the joints made the object of discussion until the
andard requirement was that the individual pieces should
ot vary from each other 1-32 of an inch in size.

Again the variation of shade in the fire became the
object of anxious solicitude. Over all these requirements
the fundamental one, which was not forgotten by the tile-
maker, namely, that the clay baked must be absolutely
matured and not be capable of scratching with a steel point,
was so completely forgotten (because so constantly met)
that it disappeared from the minds of the users as some-
thing to be thought of.

And now there comes a gentlemanly amateur from
Pennsylvania whose cultivated eyes detect that the hyper-
critical anxiety of the architect has robbed the tile wall and
floor of its individuality by reducing the joint to a hair, and
the colour of the surface to the monotony of paint. Playing
with that fascinating toy the fire, in its effect upon that fasci-
nating material which can be given any form by the hands,
he sees that the most interesting flashings and tints can
be produced by the most fusible clays at very low heats. He
takes these to the architect, who is unwilling to consider
anything thus far in the tile-maker's art but the complete
fulfilment of the rigid fetters into which his demands had
forced it. He is fascinated by the sports of the flame dis-
played by his amateur friend, and over his admiration he
forgets the fundamental requirements of the baked clay
tile, that it must be matured in the fire. He has always
forgotten this, and he forgets to take out his jack-knife and
try it upon the new sport that is recommended to his use.

It is needless to say that a year or two of wear of these
meretricious productions in the floor display that they are
not what they pretend to be. No one suffers but the client,
and he has paid his bills some time ago. Meanwhile it is
an ill wind that blows nobody good. If the architect will
allow a small proportion of the fascinating qualities which
are natural to that flame-burned product the "tile," he need
not sacrifice the meritoriousness of its durability if he will
but accept the meets and bounds of each of the qualities in
a rational degree.

SOCIETY OF ENGINEERS.

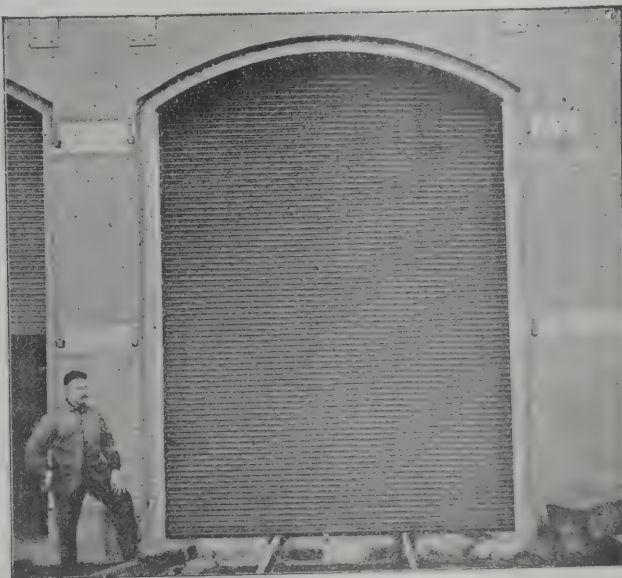
At a meeting of the Society of Engineers held at the Royal
United Service Institution, Whitehall, on Monday evening,
May 6, Mr. J. W. Wilson, vice-president, in the chair, a
paper was read on "Waterworks Constructions in America"

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by Mr. Ernest R. Matthews, borough engineer of Bridlington, of which the following is an abstract:—

The author stated that he had been in communication with several American engineers respecting the design and construction of reservoirs, dams and other waterworks constructions in that country, and that he had received from them much valuable information which formed the basis of his paper.

He first gave a detailed description of the covering-in and improvement of the Natick, U.S.A., reservoir. Those works were designed by Mr. F. L. Fuller, C.E., Boston, U.S.A. Previous to the works being carried out the reservoir was an open one, and was a source of continual expense for cleansing. At the time of the covering-in its dimensions were as follows:—At top 217 feet by 212 feet, at bottom 159.8 feet by 154.3 feet, area covered in 44,730 square feet, capacity before covering (with a maximum depth of water of 17.22 feet) 4,340,000 gallons; with the same high water it is now 4,280,000 gallons. In 1902 it was covered in by groined elliptical arches in concrete at a cost of 9.50 dols. per cubic yard.

There are 169 piers, spaced 15.2 feet apart centre to centre. The elliptical arches have a span of 13 feet 6 inches and a rise of 2 feet 9 inches, the thickness at the crown being 6 inches. The concrete used was 7 to 1, composed of 1 part cement, $2\frac{1}{2}$ parts sand and $4\frac{1}{2}$ parts screened gravel. The floor of the reservoir is covered with 4 inches of concrete. The load on the piers is 18 tons to 19 tons to the square foot at the bottom. The total cost was 5,894/ 9s.

The author then submitted a tabulated statement relating to the construction of groined arches in connection with reservoirs and filters in America, which had been prepared by Mr. Leonard Metcalf, C.E., of Boston, U.S.A.

The author then described a small covered reservoir at Franklin, U.S.A., also designed by Mr. Fuller. The reservoir is circular, 46 feet in diameter, allowing a depth of water of 20 feet and having a capacity of 248,600 gallons. The wall is 3.5 feet thick at the bottom, 2.5 feet at the top and 22 feet high. This reservoir is built in concrete composed of 1 part cement, 2 parts clean sharp sand and $4\frac{1}{2}$ parts screened gravel. The roof is 10 inches thick at the springing and 8 inches thick at the centre, and has a

rise of 4.6 feet. To resist the thrust of the roof a steel band $14\frac{1}{2}$ inches wide and 1 inch thick, was inserted near the top of the concrete wall. The bottom of the reservoir consists of 6 inches of cement concrete. An electrical indicator shows at the pumping station the elevation of the water in the reservoir.

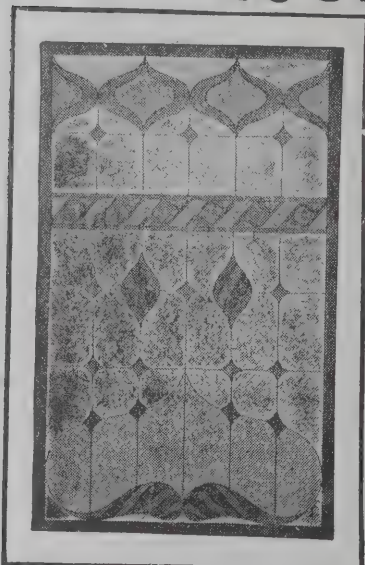
The author then described a covered reservoir at Louisville, U.S.A. This, he said, was a good example of modern American reservoir constructed throughout in reinforced concrete. The roof is of the groined arched type, the arches being approximately 19 feet span and 3.8 feet rise, the thickness of concrete at the crown being 6 inches and above piers 3 feet. The reservoir measures 460 feet by 392 feet and 394 feet, and it has a capacity of 25,000,000 gallons. The piers are 3.4 feet diameter and 21.11 feet high, and are placed 22 feet apart centre to centre. The concrete used was Portland cement concrete, 6 to 1.

The author then described a covered reservoir at Rockford, U.S.A. The reservoir measures 156.56 feet by 66.26 feet; the roof only is of reinforced concrete, the remainder of the reservoir being in ordinary concrete. The roof is a ribbed arch; the ribs increase in depth from crown to haunches, and are 7 feet apart. The reservoir is constructed in 7 to 1 concrete, and the cost was 18,500 dollars.

He then proceeded to describe a low buttress dam at Theresa, U.S.A., which was carried out in reinforced concrete, being a new departure in dam construction. It was designed by Messrs. Ambursan & Sayles, of Watertown, N.Y. It is 120 feet long by 11 feet high, and has a foundation on the solid rock. It consists of a concrete slope supported by concrete buttresses, the former being 6 inches and the latter 12 inches in thickness, the buttresses being placed 6 feet apart centre to centre. The whole is reinforced by $\frac{3}{4}$ -inch Thacher steel rods and expanded metal. The buttresses and toe are of Portland cement concrete 9 to 1, and each buttress is bolted down to the rock by $1\frac{1}{4}$ -inch bolts 3 feet in length.

The author finally described a special high-pressure fire service main which has been laid in the city of Providence, U.S.A., the leading features of which are the design of the joints, the method of securing the pipes where laid on the curve, and the method of securing the branch pipes.

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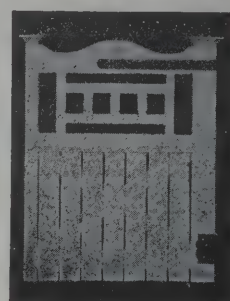
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THE INSTITUTION OF CIVIL ENGINEERS.

the annual general meeting of the Institution of Civil Engineers, held on Tuesday evening, April 30, the result of the ballot for the election of officers was declared as follows:—President, Sir William Matthews, K.C.M.G.; vice-presidents, Mr. W. R. Galbraith, Sir E. Leader Williams, J. C. Inglis and Mr. G. H. Hill; other members of Council, Mr. J. A. F. Aspinall (Liverpool), Mr. J. Benton (India), Mr. B. H. Blyth (Edinburgh), Mr. C. A. Preton, Mr. R. Elliott-Cooper, Col. R. E. B. Crompton, C.B., J. Davis (Sydney, N.S.W.), Dr. G. F. Deacon, Dr. F. Ear, Mr. M. Fitzmaurice, C.M.G., Mr. R. A. Hadfield (Effield), Dr. C. A. Harrison (Newcastle-on-Tyne), Mr. J. Hobson (Montreal, Canada), Mr. W. Hunter, Mr. G. R. Jebb (irmingham), Mr. J. H. Johns (Johannesburg, Transvaal), Wm. Thomas Lewis, Bart. (Aberdare), Sir George T. Resey, Mr. A. G. Lyster (Liverpool), Mr. A. Ross, Mr. H. Ryan (Dublin), Mr. A. Siemens, Mr. J. Strain (Glasgow), Professor W. C. Unwin, Mr. W. B. Worthington (Derby) and Mr. A. F. Yarrow. This Council will take office on the 1st Tuesday in November 1907. The Council have made the following awards for papers read and discussed before the Institution during the past session:—A Telford gold medal to Mr. Dugald Clerk; a Watt gold medal to Mr. James Tyler Milton; a George Stephenson gold medal to Mr. George Andrew Hobson; Telford premiums to Messrs. Charles Frewen Jenkin, William Archer Porter Tait (Edinburgh), Alexander Pelham Trotter and Moses Kellow (enrhyndeudraeth).

NON-INFLAMMABLE WOOD.

The American Consul at Bordeaux has described some experiments witnessed on the public square, the Quinances, where the International Maritime Exposition in commemoration of the hundredth anniversary of Fulton's successful application of steam to navigation is to be held. Warned by the fire at the Milan Exposition, in which valuable paintings, tapestries and other works of art were destroyed, the deputy commissioner-general devoted much of his time to the study and investigation of the different methods of rendering wood, paper, silk, cotton and woollen

stuffs non-inflammable. Of all the formulæ submitted he decided to experiment with the following:—Sulphate of ammonia, 135 grams; borate of soda, 15 grams; boric acid, 5 grams; and water, 1,000 grams. The exhibition consisted of treating pine shavings, wood, paper and cotton fibre with this preparation, and after a thorough drying applying the fire test.

A huge pile of shavings, pine kindlings and wood was set on fire, and in the blaze were thrown shavings and sticks of wood impregnated with this "ignifuge." When the fire had exhausted itself the impregnated shavings and wood were found to be simply blackened and charred; they gave out no flame. Paper and cotton fibre treated with the same solution when exposed to the flames consumed very slowly without a blaze. So successful and conclusive seemed the demonstration that orders were given that all wood and timber used in the construction of the exposition buildings, and all cotton, canvas and linen stuffs, carpets and rugs employed in the furnishing thereof, should be treated with this "ignifuge."

Afterwards there was an application of the liquid to some heavy timbers, which were quickly and effectively treated by the workmen, who directed streams of the preparation from receptacles strapped to their backs. In addition to the precautionary measures adopted, the fire department will have all the exposition buildings under close and constant inspection. The buildings now being constructed are on the river front, so that abundant supplies of water will always be available.

REVIVAL OF THATCHING.

THATCHED roofs are now becoming very prominent, says the *Philadelphia Record*, and it is a question whether the Pennsylvania German ancestors are responsible for instilling in the hearts of their descendants love for the quaint building methods of the Fatherland, or whether it is a mere following of the popular fad for introducing Japanese gardens on extensive estates.

Certain it is that much of the roofing of summer-houses and other garden retreats is decidedly Dutch in design, being characteristic of the picturesque thatching that attracts the attention of the traveller in the vicinity of Rotterdam

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and throughout the country districts of Holland, while other quaint roofs of thatch are distinctly Japanese in design.

For the thatching various materials are employed. For the commonest work straw is used; better kinds of thatch are made of long meadow grass, and there is a tough kind of reed used for this purpose, and also a certain species of rush. The roof requires no special preparation to receive the thatch, save that the rafters and framework shall be close enough together to receive it.

The thatch is formed in suitable masses, combed with the fingers and otherwise arranged so that the straws all point in the same direction. These masses are then secured and bound down to the roof by long poles, which are afterwards removed. While the thatch is bound down in this way it is beaten into place by a wooden mallet. The thatch is then trimmed into shape by a pair of long-handled shears. This is only the barest outline of the process of thatching, and the methods differ slightly according as to whether the Dutch or the Japanese thatches are copied. When a roof is finished it presents a clean, trim and symmetrical appearance, which seems surprising when the nature of the material is considered. The eaves are trimmed off square or slightly rounded and are often very thick, being sometimes 2 feet or more in thickness. This does not indicate, however, that the thatch is of the same thickness throughout. The thatch seen in these various ways is thus seen in sections, and sometimes by way of contrast there will be successive layers of light and dark thatch.

While a good deal of skill and patience are required to thatch a roof evenly and properly, vastly more skill will be required to finish the ridge, which is often very intricate in its structure, especially when Japanese methods are followed. In some types taken from the Japanese plans vertical ridge poles are seen with their ends freely projecting beyond the gable, and wrought in a gentle upward curve, and this style is effective in giving a light and buoyant appearance to what might otherwise appear heavy and commonplace.

A roof is sometimes seen which shows the end of a round ridge-pole projecting through the thatch at the gable peak, and at this point a flat spur of wood springs up from the ridge, to which is attached at right angles a structure made of plank and painted black, which projects 2 feet or

more beyond the gable. This appears to be a survival of an exterior ridge-pole, popular in the early days of Japanese architecture.

Ridges composed of tile are also popular in the no forms of thatch found on American country seats. The construction of this kind of ridge is very simple and effective; semi-cylindrical tiles are used for the crest, and these in turn cap a row of similar tiles placed on either side of the ridge. The tiles are sometimes bedded in a layer of cement or mortar (in Japan a layer of clay or mud or chopped straw is used), which is first piled on to the thatched roof, and when laid in this the tiles are seldom displaced.

In the best types of thatching special attention is given to the proper and symmetrical trimming of the thatch the eaves and at the edges of the gable, and there are very clever ways in which this is managed. Sometimes at the peak of the gable a conelike enlargement of a circular depression is curiously shaped out of the thatch, and a good deal of skill is also shown in bringing the thick edges of the eaves, which are on different levels, together in graceful curves.

In some of the bark-walled summer-houses a novel bark finish is also found in the roof-thatching. The ridge pole which has a much sharper incline than the roof proper, covered with bark, this being bound down by parallel strips; and spanning the ridge at intervals are straw saddles sheathed with bark. These are very narrow at the ridge, but widen at their extremities.

A strikingly decorative feature of some of the thatched roofs of Japan should be more widely copied; in many cases the ridge is flat, and this area is made to support a luxurious growth of iris or the red lily. A most charming feature is often seen in the appearance of a brown, sombre coloured village in Japan, where all the ridges are aflame with the bright-red blossoms of the lily, or where the pure colours of the blue and white iris form floral crests of exceeding beauty. This is a feature that might be introduced with strikingly picturesque effect for finishing the decorative thatched roofs of American gardens.

Another style of roof, sometimes of circular form, has the thatch on the slopes of the roof trimmed in such a way as to present the appearance of a series of thick layers

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ing one upon another like shingles, in some instances 18 inches to 2 feet apart, with thick edges. Again the ar, evenly trimmed layers are very close and regular. d example of this style of roof finish is found on the son estate, at Glenwood Summit; and roofs of the thick, shingle-like thatching are also found in square on some of the decorative garden houses of near-by ury seats.

is a matter of surprise to the uninitiated to discover along these roofs will remain in good condition. Even unskilled thatching, merely for garden decoration it is ad that a roof may be depended upon to last from 15 to ears with very little repairs; and it is said that in the best kind of thatched roofs will endure for fifty . As they get weather-worn they are often patched repaired until they have to be entirely renewed. In and in many of the thatched roofs of France and and the oldest roofs are the most decorative, as they me filled with dust, assume a dark colour and get ad down. Plants, weeds and mosses of various kinds grow upon them, as well as masses of gray lichen, h cover the entire roof slope. And where the effect antiquity is desired in the quaint forms of thatching popular among Pennsylvania landscape gardeners, weather-worn, lichen-covered type might be readily uted.

When properly constructed these thatched roofs shed r very promptly and do not get water-soaked, and efore prove serviceable as well as decorative.

STATUES OF BEVERLEY MINSTER.

VEEN 1897 and 1901 sixty-nine statues were placed in exterior niches of Beverley Minster, mostly in com- oration of the sixtieth year of the reign of the late Queen oria. The trustees of the minster agreed to find and ide the stone, the scaffolding and the cost of fixing, and money expended on the entire work amounted to 1,540l. after all this was done, there still remained 143 niches e filled, and Canon H. E. Nolloth, the vicar, has now ertaken at his own cost, says the *Yorkshire Herald*, to e some thirty statues in the niches of the west front.

Mr. R. Smith, a well-known London sculptor, who carved all the other figures which now adorn the exterior of the edifice, has already made a good start with the work. He has completed statues of the twelve Patriarchs, which are, to be placed in the twelve niches above the west door.

In several instances the canopy heads of the niches have become woefully decayed, and the trustees are now re- storing those over the west front niches. Mr. J. Baker, of Upper Tooting, London, is engaged on the work of restoring these in harmony with the canopy heads, which are still in good repair. Ketton stone is being used for the figures, whilst the canopy heads are being carved from Tadcaster stone.

At the east end below the arch of the window are statues of King Athelstan, who gave a charter to the church in A.D. 937, and of St. John of Beverley, both of them being ancient figures which existed before the present work of restoration began. In the niches in the west face of the north tower stand a large number of figures representing Biblical and historical characters. The following list, with the names of donors, will be of interest:—

Lucius, King of Britain, legendary founder of Beverley Minster, A.D. 157—Mr. John Woodcock, in memoriam of Miss Margaret Woodcock.

Edwin, King of Northumbria—Mrs. Crust.

St. John of Beverley, Bishop of Hexham, 687—Guild of St. John of Beverley.

Eborius, first known Bishop of York, 314—the Arch- bishop.

St. Hilda, teacher of St. John of Beverley—Mrs. H. E. Nolloth.

Brithunus, first Abbot of Beverley, died 733—Historical Society of Beverley, Mass., U.S.A.

Coiffi, the last High Priest of Thor, A.D. 627—Historical Society of Beverley, Mass., U.S.A.

Walter L'Espece, founder and Abbot of Rievaulx—Mr. S. E. Todd.

The Venerable Bede—Mrs. H. Nolloth.

Thomas à Becket, Provost of Beverley—Rev. C. F. Nolloth, in memoriam of Captain H. O. Nolloth, R.N.

Archbishop Melton, 1316, built west front of York and aided in the restoration of Beverley Minster nave—Lord Grimthorpe.

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King John, who gave a charter to this church in 1204.

Ralph de Totinhall, bailiff of Beverley, 1282.

Winwald, second Abbot of Beverley, A.D. 733—the Vicar.

Queen Eleanor, who in 1272 visited Beverley Minster—the women of Beverley.

King Edward I., who thrice visited the shrine of St. John of Beverley in this minster—Mr. J. J. Head.

Queen Margaret, visited Beverley Minster in 1303.

Archbishop Kinsius, 1050, built a high tower to the minster and placed in it two great bells—the Vicar's Men's Bible Class.

Coming now to the west face of the south tower we find the following statues:—

Queen Ethelburga of Kent, who married Edwin—Mr. J. A. Hudson.

King Athelstan, a benefactor of this church—Miss E. Raguenau.

Paulinus, Bishop of York, 627—the Rev. James Palmes.

St. Wilfrid, Archbishop of York, A.D. 665—Mr. and Mrs. Chater-Fawsett.

John de Hotham, Bishop of Ely, 1316—the Lord Hotham.

St. Augustine of Canterbury—A. B. Reckitt.

Siward, Earl of Northumbria—James Mills.

Gilbert de Grimsby, bore the banner of St. John to Scotland, 1299—"An Old Choir Boy."

St. Gregory the Great, impelled by seeing the boy captives from Holderness to desire the conversion of the Angles—Miss M. Woodcock.

John de Wyclif—Miss Maria Woodcock.

King Henry IV., who visited Beverley.

King Edward V., who came to return thanks after Agincourt to this minster—the Vicar.

Queen Catherine, who came with Henry V.

King Edward VI.—Mr. J. E. Elwell.

John Fisher, Bishop of Rochester, educated at the school of this minster, beheaded by Henry VIII.—Mr. W. H. Fisher.

In the final over the west door is a statue of St. John the Evangelist (patron saint) given by Mrs. Thomson Foley.

In the north face of the tower stand figures representing:—

Alghfrid, King of Northumbria, who made St. John of Beverley Bishop of Hexham in 687—Mrs. R. Warton.

King Edward the Confessor, who gave a charter to Beverley—Mrs. W. H. Rigg.

Archbishop Wickwane (donor of Figham)—the Freeman of Beverley.

Archbishop Neville (donor of Westwood)—the Freeman of Beverley.

St. Alured of Beverley, Chancellor of the minster and Abbot of Rievaulx.

St. Cuthbert of Durham—Mr. and Mrs. Newbald.

Edward the Black Prince, who came to Beverley Minster in 1300—Mr. J. Willis Mills.

Henry Percy. This is one of the three ancient figures.

Queen Victoria—the Women of Beverley.

King Edward VII.—the Freemasons of Beverley.

William of Wykeham, Canon of St. Mary's, 1361—the Vicar.

St. Etheldreda, wife of Cyfrid, King of Northumbria.

Edward III., who visited the shrine of St. John—Robert Warton.

Queen Philippa—Miss Warton.

Archbishop Thomas of Bayeaux, founder of the Provostry here—the Vicar.

Herebald, Abbot of Tynemouth, a disciple of St. John of Beverley—Miss Warton.

On an adjacent buttress stands a statue of St. Katharine to whom there was formerly a chapel in the minster. It was presented by Mr. J. T. Cussons. In the centre pinnacle of the north porch we have a herald angel represented, and a figure of St. John the Baptist presented by Miss Maria Woodcock. A statue of Our Lord enthroned presented by Col. Cussons, J.P., stands in the battlement as well as figures representing St. Bartholomew, St. Thomas, St. James the Less, St. Andrew, St. Peter, St. Paul, St. James the Great, St. Philip, St. Matthew, St. Jude and St. Matthias. On the south side of the portal are the patron saints of the four Beverley parishes—St. John the Evangelist, St. Nicholas of Myra, St. Mary the Virgin and St. Martin of Tours.

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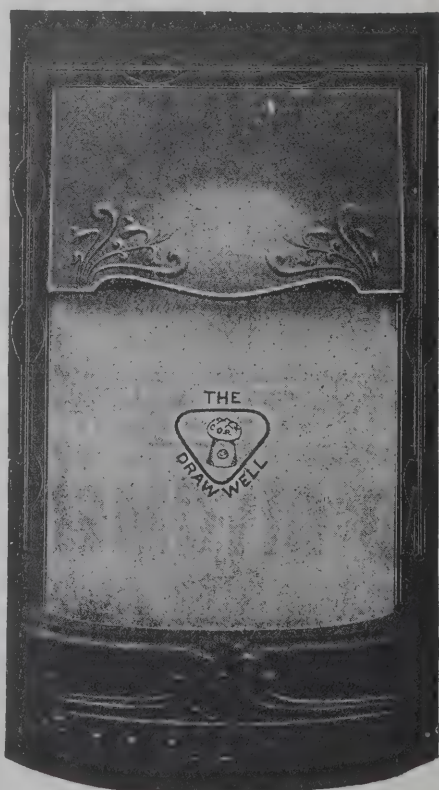
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P. A. GILBERT WOOD,

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

KINGSTOWN, CO. DUBLIN.—July 1.—For designs for buildings for housing the very poor. First prize 100l., second 20l. Particulars on payment of 1s. from Mr. M. A. Manning, town clerk.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ABINGDON.—May 31.—For building manual instruction and cookery centre at the Council school. Deposit 2l. 2s. Send names to the Secretary to the Education Committee, The Forbury, Reading.

ALCESTER.—May 27.—For the erection of stabling, &c., at Astwood Bank. Mr. Bernard Perrins, Central Chambers, Redditch.

BARDOLPH FEN.—May 22.—For the pulling-down of the present buildings and the erection of new chapel, school and other buildings, for the United Methodist Free Church. Rev. W. J. Christopher, Mount Pleasant, Downham Market.

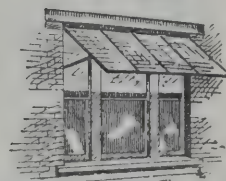
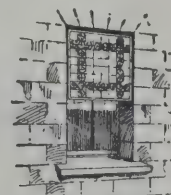
BIDDULPH AND BIDDULPH MOOR.—May 25.—For proposed Council schools to accommodate 708 and 306 children respectively. Deposit 2l. 2s. and 1l. 1s. Mr. Graham Balfour, director of education, County Education Offices, Stafford.

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BRISTOL.—June 14.—For the construction of the following sub-stations, for the electrical committee :—(1) Oldfield Road, Hotwells; (2) Chalks Road, St. George; (3) Cowper Street, St. George; (4) Cloud Hill, St. George. Deposit 2*l.* 2*s.* Mr. H. Faraday Proctor, city electrical engineer, City Electrical Engineer's office, Temple Back, Bristol.

CARLISLE.—May 24.—For the erection of two attendants' houses—viz. one at Stanwix sewage-disposal works, one at Wetheral and Great Corby sewage-disposal works—for the Carlisle Rural District Council. Mr. Joseph Graham, engineer, Bank Street, Carlisle.

CHELTHENHAM.—May 22.—For certain repairs at the work-house. Mr. Thos. Malvern, architect, 21 Winchcombe Street, Cheltenham.

COCKERMOUTH.—May 20.—For the erection of a wash-house at the cemetery. Mr. F. O. C. Nash, A.M.I.C.E., engineer and surveyor, Cockermouth.

CONSETT.—May 21.—For the erection of Council school at Consett, Durham. Mr. W. H. Knowles, architect, 25 Collingwood Street, Newcastle-on-Tyne.

COVENTRY.—May 20.—For the old grammar school renovation and new classrooms. Deposit 1*l.* 1*s.* Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

DARLINGTON.—May 27.—For setting-back the south-east corner of St. Hilda's Church, Park Gate, and rebuilding the boundary wall, &c., for the Corporation. Mr. George Winter, borough surveyor and waterworks engineer, Town Hall.

DARLINGTON.—May 27.—For the erection of a school to accommodate 420 children in Corporation Road. Deposit 2*l.* 2*s.* Mr. George Winter, borough surveyor and waterworks engineer, Town Hall.

FALMOUTH.—May 30.—For the erection of an hotel. Mr. Alfred J. Cornelius, architect, Truro.

FARSLEY.—May 24.—For the rebuilding of the manse, Farsley, near Leeds. Mr. Job Isles, Prospect House, Farsley, near Leeds.

GLASGOW.—May 18.—For the proposed alterations on the kitchen block and the nurses' dormitories, Belvidere hospital. The Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.

GLASGOW.—May 18.—For (1) brick and tilework, (2) wrights' work, (3) slaters' work, and (4) plumbers' work required in connection with proposed erection of children's conveniences at Phoenix recreation ground. The Office of Public Works, 64 Cochrane Street.

GLASGOW.—May 20.—For the supply and erection of riddle, mixer, elevator, &c., at St. Rollox refuse despatch works, Charles Street. Mr. D. M'Coll, superintendent of cleansing, 38 Cochrane Street, Glasgow.

GLASGOW.—May 24.—For the execution of the following works—viz. (1) digger, mason and brick, (2) carpenter and joiner, (3) cast-iron and steel, (4) plumber, (5) slater, and (6) tile—required in connection with the extension of the fruit, &c., market. The Office of Public Works, 64 Cochrane Street.

GREAT KENDALE.—May 20.—For alterations and additions to Great Kendale, near Driffield. Messrs. Tennant & Collins, architects and surveyors, Pontefract and Barnsley.

GUIST.—May 20.—For repairing the roof of Miss Packe's school, Guist. Mr. C. A. Hamond, Twyford Hall, East Dereham.

HAINAULT FOREST.—June 5.—For the adaptation for refreshment and other purposes of certain buildings at Fox Burrows Farm, Hainault Forest, Essex. Deposit 10*s.* Architect's Department, 13 Pall Mall East, S.W.

HALIFAX.—June 3.—For painting and colouring, lime-washing, joiners', plumbers' and cement pointingwork at the various schools, and raising boiler chimney at Queen's Road school. Deposit 1*l.* for each set of quantities. Mr. James Lord, C.E., borough engineer, Town Hall, Halifax.

HARPENDEN.—June 3.—For the erection and completion of a manual instruction and cookery centre and for additions and alterations at Harpenden County Council school, Herts. Deposit 2*l.* 2*s.* The County Surveyor's Office, Hatfield.

HULL.—May 23.—For alterations and additions to the Williamson Street school. Deposit 2*l.* 2*s.* Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

HULL.—May 28.—For alterations and additions to hotel, stock-rooms, motor garage, &c., Paragon Station, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York.

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For Index of Advertisers, see page x.

IRELAND.—May 24.—For erecting church near Doagh, for the committee of Donegore Second Presbyterian church. Mr. W. D. R. Taggart, architect, 2 Wellington Place, Belfast.

KING'S LYNN.—May 25.—For the erection of a pair of cottages, with out-offices complete, on St. Mary's Estate. Mr. Louis F. Eagleton, architect and surveyor, King Street, King's Lynn.

LEEK.—May 28.—For building a laundry, for the Guardians. Mr. John Thomas Brealey, architect, Stockwell Street, Leek, and Piccadilly, Hanley.

LISCARD.—May 22.—For extension of car-shed, Seaview Road, for the tramways committee of the Wallasey Urban District Council. Deposit 2*l*. Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

LONDON.—May 24.—For the erection of an office and workshops at the Imperial Institute. Deposit 1*l*. 1*s*. Mr. J. B. Westcott, H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—May 27.—For works to buildings, &c, at Bull Stairs Wharf, Upper Ground Street, S.E., for the Finsbury Borough Council. Deposit 5*l*. 5*s*. The Borough Surveyor's Office, the Town Hall.

LONDON.—May 23.—For the erection of a hall at the Tooting Home, Church Lane, Tooting, for the Guardians of Wandsworth Union. Deposit 2*l*. Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.

LONDON.—May 29.—For the erection of store buildings at Peckham Rye, for the Metropolitan Asylums Board. Deposit 1*l*. Messrs. T. W. Aldwinckle & Son, architects, 20 Denman Street, London Bridge, S.E.

LONDONDERRY.—May 18.—For building and completing house and shop at Glebe, Sion Mills. Mr. J. P. McGrath, architect, Commercial Buildings, Foyle Street, Londonderry.

MANCHESTER.—May 21.—For the erection of receiving wards at the Withington workhouse, for the Guardians of Chorlton Union. Deposit 1*l*. 1*s*. Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

MANCHESTER.—June 5.—For the additions and alterations at the Bank Meadow Municipal school, Ardwick.

Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

MATLOCK.—June 1.—For the supply and erection of retort-house and coal-store roofs, with retort-bench iron-work; also for supply of material and building retort-bench with four through arches, and two settings of eight retorts each with regenerative furnaces, at the works, Matlock, for the Gas Co. Mr. Thomas Brown, engineer and manager, Gasworks, Matlock.

MIRFIELD.—May 25.—For the joiner and builder's work in connection with repairs to the Mirfield Knowle Provided school. Mr. William Wood, divisional clerk, Batley.

MIRFIELD.—May 22.—For the erection of club-rooms at Upper Hopton, Mirfield. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

NELSON.—May 18.—For the mason, &c., joiner, plumber, plasterer and slater's work required in erection of six middle-class dwellings and appurtenances at Spring Bank, Crabtree. Forward applications to Mr. J. T. Earnshaw, architect and surveyor, 14 Hibson Road, Nelson, Lancs.

PENNYBRIDGE.—May 31.—For the erection of semi-detached villas, Pennybridge, near Greenodd. Messrs. J. W. Grundy & Son, architects and surveyors, Central Buildings, Ulverston.

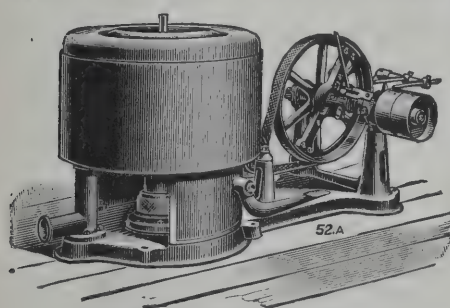
PETERSTON-SUPER-ELY.—May 22.—For the erection of a vestry on Cross-y-parc chapel ground. Mr. J. G. Harold Bird, High Street, Cowbridge.

PORTSMOUTH.—May 22.—For the following works at the infectious diseases hospital, Milton, in the borough of Portsmouth, viz. (1) To construct a fire escape staircase at the rear of the administrative block; (2) to construct two hose cupboards with hydrants and equipment, including six lengths of hose and for chemical extinguishers; and (3) to construct four wash-up sinks in the various ward-kitchens now without them. The Borough Engineer's Office at the Town Hall.

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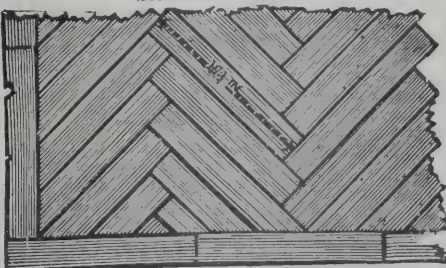
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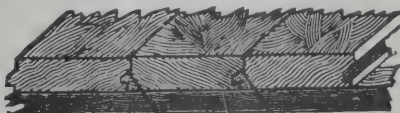
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RADCLIFFE.—May 25.—For the construction of public conveniences in the Coronation Park. The Council's Engineer, Council Offices, Radcliffe.

RUNCORN.—June 11.—For proposed Council school, Balfour Road. Deposit 2*l.* 2*s.* Mr. John Lightburn, clerk to the sub-committee, Education Offices, Town Hall, Runcorn.

SCOTLAND.—May 22.—For the erection of a battery-house and relative works at Hamilton, for the Lanark County Council. Deposit 1*l.* Mr. W. L. Douglas, C.E., district engineer, District Offices, Hamilton.

SEAFORTH.—May 25.—For works of picket fencing and gates to be fixed round Seaforth recreation ground, Lancs. Deposit 10*s.* 6*d.* Mr. F. Spencer Yates, A.M.I.C.E., surveyor, Town Hall, Waterloo.

SEATON.—May 21.—For the erection and completion of a house at Seaton, Cumberland. Mr. Charles W. Eaglesfield, architect and surveyor, Gordon Street, Workington.

SHEFFIELD.—May 30.—For supply of materials and erection of a transformer sub-station in Rockingham Lane. Deposit 1*l.* 1*s.* Mr. S. E. Fedden, general manager and engineer, Corporation Electric Supply Department, Commercial Street, Sheffield.

SILK WILLOUGHBY.—May 31.—For the restoration of Silk Willoughby Church, near Sleaford, Lincs. Mr. C. Hodgson Fowler, F.S.A., architect, The College, Durham.

STROOD.—June 19.—For alterations to the girls and infants' departments of the Strood Church of England school, Kent. Deposit 10*s.* 6*d.* Mr. Apsley Kennette, correspondent, Guildhall, Rochester.

TANTOBIE.—May 20.—For erection and completion of fourteen houses at Tantobie, Durham (walls brick). Mr. G. T. Wilson, architect, 22 Durnam Road, Blackhill.

TARDY GATE.—May 23.—For the erection of branch stores and four houses at Tardy Gate, near Preston. Deposit 2*l.* 2*s.* Mr. Munford, architect, 12 Guildhall Street, Preston.

UFFCULME.—May 23.—For drainage works, alterations and repairs, &c., at the Uffculme Council school, Devon. The Architect's office, 1 Richmond Road, Exeter.

ULVERSTON.—May 18.—Tenders (whole or separate trades) are invited for the erection of a house in Kilner's Park. Messrs. Settle & Brundritt, architects and surveyors, Ulverston and Barrow-in-Furness.

WAKEFIELD.—May 27.—For alterations in the rates offices in the town hall, the providing and fixing of a new window in the south-west external hall thereto, a new oak desk, &c. The City Surveyor's office, Town Hall, Wakefield.

WALES.—May 20.—For taking-down a farmhouse and buildings and the erection of a new farmhouse and set of buildings on the St. Donat's Estate, Llantwit Major, Glam. Mr. M. Ogilvy Spence, Aberpergwm Estate Office, Glynneath, Glam.

WALES.—May 22.—For building minister's house at Penrhiwceiber. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—May 22.—For alterations and additions at the Tredegar Arms, Rhymney. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—May 25.—For erection of a free library at Perrott Street, Treharris, for the Merthyr Tydfil Town Council. Deposit 1*l.* 1*s.* Mr. W. Dowdeswell, architect, Treharris.

WARRINGTON.—May 23.—For the erection of a shelter in Bank Park. The Borough Surveyor, Town Hall.

WEST HEATH.—May 22.—For the erection of an infectious disease hospital at West Heath, near Congleton. Deposit 1*l.* 1*s.* Messrs. Alfred Price & Son, architects, Elworth, Sandbach.

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WOLVERHAMPTON.—May 21.—For certain work at the workhouse, Heath Town, in connection with the excavation of the present foundations of the boiler-house and the laying of a new foundation for four boilers, including the necessary removal of the boilers and their refixing, &c. Mr. Frank Harrison, clerk, Union Offices, Wolverhampton.

WORKINGHAM.—May 31.—For the building of a manual instruction and cookery centre at the Westcott Road Council school. Deposit 2*l.* 2*s.* Secretary to the Berkshire Education Committee, The Forbury, Reading.

ONE of the most interesting events of the year will be the offering by auction by Messrs. Knight, Frank & Rutley, in September, of the well-known Middleton Evans estate at Llandrindod Wells—the premier health spa of Wales—which embraces the greater part of the town and includes the famous Pump House Hotel, with its magnificent rooms, bath-house, pump-room and lovely timbered grounds. The medicinal springs of saline, chalybeate and sulphur which rise on the estate were discovered early in the seventeenth century, but their value and healing powers were not brought so prominently before the medical profession until some twenty years ago. Now the waters have become a household name, and coupled with healthy climate, rural surroundings and charming undulating country there is no wonder that Llandrindod Wells is growing more in favour each year as the leading and most select health spa of Britain. There are the lovely heather-clad downs, excellent golf links 1,000 feet above sea-level, beautiful drives and walks in all directions and good fishing in the river Ithon. Every care has been taken in laying out Llandrindod Wells, and the estate now proposed to be offered will be submitted first as a whole (about 700 acres with the Pump House Hotel), and if not sold, in lots of sufficient size to form unusually attractive building estates with long frontages to main roads. The property will also be sold with possession (except the Pump House Hotel, which is let on lease) and free of tithe and land tax, and an opportunity presents itself of acquiring some really fine sites suitable for the erection of country mansions, hydros, hotels, scholastic institutions, or to form choice building estates, the land being ripe for immediate development.

TENDERS.

BARNET.

For the erection of nurses' home at workhouse. Messrs. WHITE, SON & PILL, architects, Barnet.

Thomas & Edge	£1,613	0	0
Hyde & Co.	1,495	0	0
Willmott & Sons	1,492	0	0
Fitch & Cox	1,422	0	0
Mattock & Parsons	1,379	0	0
Dumpleton	1,298	0	0
Sharpe	1,296	0	0
Harris	1,290	0	0
Ekins & Co.	1,280	0	0
Pearson & Son	1,223	0	0
Stewart	1,220	0	0
Fairhead & Son	1,220	0	0
Butcher	1,210	0	0
Wade	1,196	0	0
Myall & Upson	1,180	0	0
Wallis & Sons	1,150	0	0
Worboys	1,147	0	0
Pasterfield & English	1,143	0	0
F. & G. Foster	996	0	0
Weibking & Co.	975	0	0
Winter & Sons	975	0	0
BEHREND, Cambridge Road, E.C. (accepted)	973	0	0

CAMBRIDGE.

For the extension of the Cavendish Laboratory.

SINDALL, including a provisional sum of 500 <i>l.</i> for heating (accepted)	£7,135	0	0
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CRANBROOK.

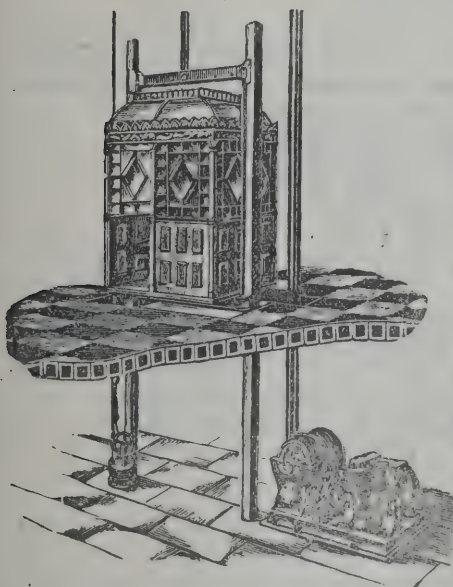
For erecting a chimney-shaft and repairs to buildings at workhouse. Mr. C. PAYNE, surveyor.

Bowles	£650	0	0
Barden & Head	600	0	0
Davis & Leany	599	0	0
Starton	530	0	0
Smith & Son	412	0	0
KENDON, Goudhurst (accepted)	378	0	0

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CRADLEY HEATH.

For the construction of two circular filter-beds and other work in connection with the Tivdale outfall and sewage-disposal works. Messrs. E. B. MARTEN & W. FIDDIAN, engineers, Stourbridge.

Smith	£1,826	6	5
Law	1,539	0	5
Neal, Ltd.	1,496	1	7
Lock, Andrews & Price	1,356	15	11
Thorpe & Southerland	1,272	13	9
Mitchell & Sons	1,216	19	9
Horton	1,203	3	10
Vale & Sons	1,181	4	0
Willetts & Son	1,154	16	6
Holloway	1,120	0	0
Meredith	1,119	16	5
GUEST & SON (accepted)	1,051	9	8

DARTFORD AND PLUMSTEAD.

For providing and fixing of weighbridges at the Board's station at Westerham Hill, Dartford and Plumstead.

Ashworth & Son	£186	0	0
W. & T. Avery	178	0	0
Pooley & Sons	165	0	0
Fairbanks Co.	161	0	0
Pooley & Sons (not to specification)	156	0	0
HODGSON & STEAD (recommended)	159	0	0

DUNDEE.

For erecting branch library at Strathmartine Road.

Accepted tenders.

A. & T. Craig, mason	£4,110	0	0
How & Son, joiner	991	16	2
McRitchie, plasterer	340	1	0
Anderson & Sons, plumber	231	19	0
Russell, iron and steelwork	210	0	0
Laburn & Sons, slater	83	19	8

GLOUCESTER.

For the erection of girls' high school. Mr. W. B. Wood, architect.

CRANE, LTD., Nottingham (accepted)	£13,473	0	0
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HEMEL HEMPSTEAD.

For taking-down and re-erecting two shops and premises, being Nos. 55 and 53 High Street, for Mr. C. J. Austin. Mr. H. CURTIS-CARD, F.S.I., A.S.A., Lewes. HONOUR & SON, Tring (accepted).

HEVINGHAM.

For latrines, drainage, &c., at the school. Quantities by building inspector.

WATTS, Buxton, Norwich (accepted)	£218	0	0
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INSCH.

For the erection of dwelling-house. Mr. T. G. ARCHIBALD, architect, Huntly.

Manson, Inch, mason.

Milne, Forgue, carpenter.

Glennie, Inch, slater.

Douglas, Huntly, plumber.

Ewen & Co., Inverurie, plasterer.

Mitchell, Huntly, painter.

JARROW.

For finishing macadam road in Northbourne Road, excavating and forming cement footpaths and fixing gullies. Mr. J. PETREE, borough surveyor.

Callaghan	£136	8	1
GLEN (accepted)	134	18	4

LANCHESTER.

For the erection of club premises. Mr. T. E. TAYLOR, architect.

Wears	£1,433	10	0
Davison	1,432	0	0
Lodge	1,189	0	0
Thornton	1,100	10	6
WARD, Lanchester (accepted)	1,081	0	0

LITTLE SNORING.

For alterations and additions to school. Messrs. LACEY & UPCHER, architects, Norwich.

FISHER, Hempton (accepted)	£292	0	0
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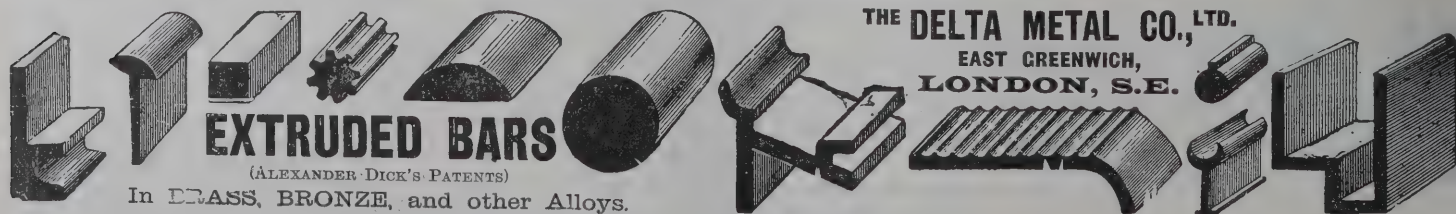
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LONDON.

For supply of motor tenders for the fire brigade.

Price per motor tender (including provision money of £100 in each case) if there were ordered—

	1	2	3	4	5	6
	£	£	£	£	£	£
Morris & Sons	1,190	1,165	1,140	1,115	1,090	1,065
Simonis & Co.	975	960	950	950	950	950
Lloyd & Plaister	958	948	945	945	945	945
Merryweather & Sons	918	910	905	900	895	890

The tender of Merryweather & Co., Ltd., to supply for £1,871 10s. two motor tenders, one of the appliances being fitted with a 40 h.p. engine, and only one set of spare wheels being provided for the two appliances, was recommended.

For supply of not less than 100 and not more than 300 lengths of rubber-lined hose.

Hopkinson & Co.	£9	7	6	a length.
The Wm. Rose Hose Co.	8	7	6	"
McGregor & Co.	8	5	0	"
The Bentham Woven Hose and Belting Works (recommended)	7	17	6	"

For improvement of school on the Cayley Street site, Limehouse, the L.C.C. works committee having intimated that they were not prepared to undertake the work at the amount of the estimate of the architect (Education).

F. & F. J. Wood.	£15,578	0	0
Treasure & Son.	14,073	0	0
McCormick & Sons	13,651	0	0
Perry & Co.	13,578	0	0
Greenwood.	13,498	0	0
Lawrance & Sons	13,442	0	0
Kirk & Randall	13,337	0	0
J. & C. Bowyer	13,177	0	0
Patman & Fotheringham	13,123	0	0
J. & M. Patrick	13,029	0	0
F. & E. Davey	12,427	0	0
Wall	12,210	8	11
Chessum & Sons (withdrawn)	11,270	0	0
Architect's (Education) estimate	13,760	0	0

LONDON—continued.

For providing and fixing electrically-driven ventilating fans at the Central School of Arts and Crafts and London Day Training College, Holborn.

Sturtevant Engineering Co.	£1,383	17	0
Wilson Wolf Engineering Co.	1,313	0	0
Pullen	1,245	0	0
Electrical Co.	1,185	15	0
Penrose & Co.	1,110	0	0
Standard Engineering Co.	1,033	1	6
Electric and Ordnance Accessories Co.	1,019	0	0
Ashwell & Nesbit	938	10	0
Davidson & Co.	841	0	0
Musgrave & Co.	795	0	0
Matthews & Yates	740	0	0
Alldays & Onions Pneumatic Engineering Co., Birmingham (recommended)	693	0	0
Rochdale Electric Co. (incomplete)	—		
Chief engineer's estimate	705	0	0

For wiring and fittings at the new fire-station, Tooting.

Grant & Taylor	£195	0	0
Durell & Co.	186	0	0
Glover & Co.	178	0	0
Barker & Co.	175	0	0
Spagnoletti & Co.	170	0	0
Smeeton & Page	170	0	0
Clark & Co.	166	5	0
FRYER & Co., Paddington (recommended)	140	0	0

For rebuilding the Sea Serpent beerhouse for Messrs.

Mann, Crossman & Paulin, Ltd. Messrs. WARING & NICHOLSON, architects, 38 Parliament Street, S.W.			
Quantities supplied by Messrs. ROBINS, GRAY & Co., 55 and 56 Chancery Lane.			
Brittain	£2,569	0	0
C. & W. Crampton	2,504	16	0
Smith & Son	2,469	0	0
J. & H. Cocks, Ltd.	2,377	0	0
Harris & Wardrop	2,345	0	0
Holliday & Greenwood, Ltd.	2,279	0	0
Courtney & Fairbairn	2,277	0	0
Todd & Newman	2,263	0	0
GLADDING & Co. (accepted)	2,199	0	0

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LONDON—continued.

For repairs and decorations to premises, Albion Road, Stoke Newington, N. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Kingsland	£534	18	0
Sheffield Bros.	485	0	0
Dartnall	435	0	0
Robey	430	0	0
DERBY (accepted)	347	0	0
Chapman & Co.	331	17	6

For the erection of small stable rear of shop premises, Lower Clapton, N.E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

Kingsland	£152	16	0
Sheffield Bros.	147	0	0
ROWLEY BROS. (accepted)	125	0	0

For the erection of pavilion "D" at the infirmary, Homerton. Mr. W. A. FINCH, architect, 76 Finsbury Pavement, E.C.

Brand, Petit & Co.	£22,882	0	0
Webster & Son	22,538	0	0
Thomas & Edge	21,987	0	0
Shurmur & Sons	21,897	0	0
W. Johnson & Sons	21,674	0	0
Kirk & Randall	21,670	0	0
Porter	21,563	0	0
J. P. Johnson & Son	21,477	0	0
Spencer-Santo	21,446	0	0
Pattinson & Son	21,356	0	0
Grover & Son	21,321	0	0
F. & E. Davey	21,237	0	0
Moss & Son	21,100	0	0
Wall	20,936	0	0
Lawrence & Son	20,894	0	0
F. & G. Foster	20,792	0	0
Kerridge & Shaw	20,702	0	0
Patman & Fotheringham	20,600	0	0
Monk	20,350	0	0
Fitch & Cox	19,754	0	0
Moss	19,011	0	0
KILLBY & GAYFORD, Finsbury, E.C. (accepted)	19,960	0	0

LONDON—continued.

For cleaning, painting, &c., at the offices, the Metropolitan Water Board.

Simpson & Son	£250	0	0
Macey & Co.	192	0	0
Hampton & Sons	172	0	0
Campbell, Smith & Co.	145	0	0
Trollope & Sons	140	0	0
Clarke & Mannooch (recommended)	122	0	0

For the erection of a coach-house and stable, 351 Kentish Town Road. Mr. A. C. GREEN, architect, Tottenham, N.

Moore & Son	£370	0	0
Edgar	349	0	0
Easun	330	0	0
Higgs & Son	321	0	0
Smerdon	307	0	0
MATTHEWS (accepted)	305	0	0

For taking-down 825 and 827 High Road, Tottenham, and building shop and house. Mr. A. C. GREEN, architect, Tottenham, N.

Lawrence & Son	£874	0	0
Mattock Bros.	713	0	0
Goodall & Son	705	0	0
Groves & Sons	693	0	0
Porter	633	0	0
MOORE & SON (accepted)	552	0	0

For reconstructing river wall at the Gun Tavern Wharf, Blackwall, London, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

WEBB & Co. (accepted)	£218	17	6
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PORTSLADE.

For the erection of police buildings for East Sussex Council.

COOK & SONS, Crawley (accepted)	£2,984	0	0
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SEVENOAKS.

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WOOD & SONS, Crockenhill (accepted)			
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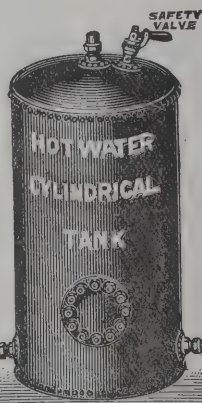
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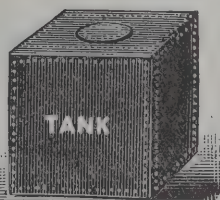
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PETERSFIELD.

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E. & A. Spriggings	£2,374	0	0
Cæsar Bros.	2,327	0	0
Salter	2,282	0	0
Haslemere Builders	2,275	0	0
Kemp	2,251	0	0
Osman	2,224	0	0
Martin, Wells & Co.	2,220	0	0
Smith	2,172	0	0
COOK & SONS (<i>accepted</i>)	1,962	0	0
F. & G. Foster	1,873	0	0
Hayes	1,860	0	0

PORTSMOUTH.

For supply and fixing of experimental boiler of the Babcock & Wilcox or similar approved type.

Carr	£472	10	0
Clark, Chapman & Co.	472	0	0
Williams	400	0	0
Stirling Boiler Co.	339	0	0
Vosper & Co.	335	0	0
BABCOCK & WILCOX, Farringdon Street, E.C.			
(provisionally accepted)	326	0	0
Fraser & Son	250	0	0
Carr (alternative)	200	0	0

ROMFORD.

For road repairs, laying of sewers, &c.

Griffiths & Co.	£4,819	18	11
E. & E. Iles	4,758	5	10
Parry & Co.	4,672	0	0
Jackson	4,175	13	5
Free & Sons	4,162	7	3
Burrill	4,149	9	6
Parsons & Parsons	3,869	6	5
WILSON, BORDER & Co., Romford (<i>accepted</i>)	3,615	9	

STAFFORD.

For pulling-down and re-erecting the Four Crosses. Mr. G.

WORMAL, architect.			
Sandy, Butters & Co.	£2,103	0	0
Skelthorne	2,000	0	0
Espley & Sons	1,950	0	0
Godwin	1,900	0	0
Adams & Pemberton	1,857	0	0
Moss & Sons	1,715	7	9
JERVIS BROS., Stafford (<i>accepted</i>)	1,637	10	

VRONCYSYLLE.

For the erection of two houses and shop at Vroncysyllte, Wales. Mr. E. VAUGHAN-EDMUNDS, architect, Llangollen.

Roberts	£915	17	0
Humphreys	895	0	0
J. I. Jones	840	0	0
Jones & Sons	819	0	0
Jenkins	795	10	0
Davies & Sons	795	0	0
Carden	705	0	0
JONES & JONES, Llangollen (accepted)	700	0	0

WINDSOR.

For making-up roads in the parish of Clewer.

Mowlem & Co.	£685	0	0
Free & Sons	668	16	0
GIBBONS, Maidenhead (<i>accepted</i>)	659	12	6

TRADE NOTES.

THE business of the Law Accident Insurance Society, Ltd., has been taken over by the London and Lancashire Fire Insurance Company. The shares upon which 10s. were paid up have under the arrangement realised 30s.

THE interior of the tower of Casterton Church, near Kirkby Lonsdale, Yorks, is being put in good repair, and the order for a new clock with Cambridge chimes has been given to Messrs. John Smith & Sons, Midland Clock Works, Derby.

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THE new South-Eastern hospital erected to the plans of Messrs. T. W. Aldwinckle & Sons, architects, London, has been ventilated on the "Boyle" natural system, this system having been successfully employed in the old hospital.

MESSRS. W. & T. AVERY, LTD., of Birmingham, have issued a catalogue of their bankers' scales, bullion balances and platform scales and other important appliances. That such delicate measures can be produced by manufacturers of weighing machines for the heaviest loads is remarkable, and suggests the perfect and comprehensive organisation of Messrs. Avery's establishment.

It was decided at a meeting of the clock committee of the South Luffenham Church, near Stamford, last week, to erect a new clock in the tower from the plans of Lord Grimthorpe, and that Messrs. W. Potts & Sons, Ltd., should be entrusted with the work. Messrs. Potts are also making the Lord Cranbrook memorial clock for Low Moor, Bradford, Yorks, and one for Mr. Claude Leatham, J.P., for Castleford Market.

An interesting piece of renovation is being carried out by Messrs. Farnham, Ltd., of Caxton House, Westminster, on a Georgian building in Portland stone and brick at 19 Stratford Place, Oxford Street, under the supervision of Mr. Lewis Solomon, F.R.I.B.A., of 16 Union Court, Old Broad Street, which has been acquired by the German Athenæum Club. An inspection will no doubt be of interest to architects, as it furnishes a conspicuous example of the Farnham methods. Dirt deposits of 150 years have been removed from the stonework, which is now being restored to its original colour, and as the treatment is entirely a dry one and no chemicals have been used, this pleasing effect has been secured without injury to the fabric.

An offer was received from Mr. Glyn Vivian, of Swansea, to erect an art gallery in the town and present also the nucleus of an art collection, on the one condition that the burgesses undertook to maintain it. The Corporation agreed to accept the gift, but a few burgesses demanded a poll to be taken on the question of increasing the library rate by a farthing in the pound. Mr. Vivian has, in consequence, withdrawn his offer.

ELECTRIC NOTES.

MR. T. W. BLOXHAM, who has been assistant engineer to the Belfast electric-lighting station, has been appointed city electrical engineer at a salary of 500*l.* per year, in succession to Mr. V. A. H. M'Cowen, who now has charge of the Salford electrical works.

THE Southport electricity committee have received the resignation of Mr. R. S. Downe, the borough electrical engineer, who has served the Corporation for the past six years. Mr. Downe has been appointed general manager of an industrial concern. Previous to going to Southport Mr. Downe was first assistant in the Liverpool electric supply department. The position at Southport is worth 500*l.* a year, together with the privilege of having two premium pupils.

THE Dundee Town Council, after protracted negotiations with the Harbour Trustees on Friday came to an agreement for a site on the river frontage for the new electrical undertaking. The ground, extending to 160 poles, is taken on perpetual lease, the feu duty being 12*s.* 6*d.* per pole, and this working out at a total of 100*l.* per annum. The trustees wished to charge a duplicand, but the Town Council representatives refused to consent. The erection of the new electrical station will be at once commenced, and it is hoped that it may be sufficiently far advanced to undertake a part of the heavy load of next winter.

THE electricity committee of the Wolverhampton Town Council recommend the raising of 45,000*l.* extra capital to enlarge the generating station works and the laying of new mains in the town. They have already made a contract with Messrs. Bayliss, Jones & Bayliss to supply electricity to their works for motive-power and lighting purposes. To do this will require the expenditure of 16,000*l.* for new engines and boilers. Other consumers are applying for power and light, and the committee consider it advisable to provide for additional works while the required extensions are in hand.

THE borough surveyor of Bournemouth has submitted a scheme to the Town Council for planting next autumn about 116,000 pine trees and 17,000 rhododendrons, at an estimated cost of 1,900*l.*

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VARIETIES.

THE death is announced of Mr. Harrison Hodgson, C.E., of Workington, who carried out many railway and engineering contracts in South Africa and South America.

THE Union of Building Trades of Berlin has decided unanimously to lock out all masons, carpenters and builders' labourers on Whitsun Saturday. Some 100,000 men will be affected.

THE District Council of Trim, co. Meath, intend to apply to the Local Government Board for authority to erect cottages of concrete blocks. An ordinary cottage in the district would cost 185/. But in the Dublin exhibition was one of concrete costing 145/.

THE memorial of Sir Hector MacDonald at Dingwall, Ross-shire, which is the outcome of an appeal initiated by the Clan MacDonald Society in Glasgow, is to be opened by Lord Tullibardine on Thursday next. The memorial takes the form of a tower in the Scottish baronial style of architecture, 100 feet in height and 350 feet above the sea level.

AN international exhibition of arts, crafts and manufactures in Madrid has been organised, and will be held during the coming autumn in the Spanish capital. The classification of the exhibits embraces all branches of manufactures, arts and industries. It is expected that British exhibits will attract considerable attention.

THE Tunstall Urban District Council have received twenty-three tenders for extensions at the sewage works,

the amounts of the tenders ranging from 10,637/ to 7,375/. It was resolved that the three lowest tenders—by T. Goodwin, Tunstall, 7,375/; F. Mitchell & Son, Manchester, 8,053/, and J. Bentley, Bradford, 8,219/—be submitted to the engineers to check details and report.

THE general board of studies of Cambridge University are about to appoint a reader in forestry for a period of five years. The annual stipend is 400/, and the reader is to devote himself to research and the advance of knowledge in his department, and will be expected to advise the forestry committee of the Board of Agriculture studies on the technical subjects.

THE Japanese Government have, it is stated, placed orders with the American Bridge Company for no fewer than 468 steel span bridges required in connection with the Manchurian railway, and also a contract for locomotives with Messrs. Burnham, Williams & Co., of the Baldwin Locomotive Works, Philadelphia. It is stated that the orders were secured in face of European competition and on a promise of prompt execution.

THE Cardiff United District of the National Amalgamated Society of Operative House and Ship Painters and Decorators at a public meeting unanimously carried a resolution strongly protesting against the threatened action of the tramways committee in handing over the absolute control of the tramways department to the electrical engineer as "being utterly undemocratic and a violation of the elective principle."

THE Wolverhampton Town Council have accepted the following tenders in connection with the extensions at the electricity station:—Messrs. Babcock & Wilcox, Ltd., London, amounting to 5,622/., for the supply of boilers, an economiser and feed pumps; Mr. John Thompson, Ettingshall, amounting to 765/., for the supply of a steel chimney and feed-water tank; Messrs. Willans & Robinson, Rugby, amounting to 1,214/., for the supply of alternators and condensing plant; Messrs. H. Gough & Son, Wolverhampton, amounting to 2,900/., for the execution of works at the station.

THE Institute of Sanitary Engineers held a meeting in Birmingham for the purpose of discussing the desirability of forming a Birmingham centre of the Institute of Sanitary Engineers. It was decided to form a Birmingham centre,

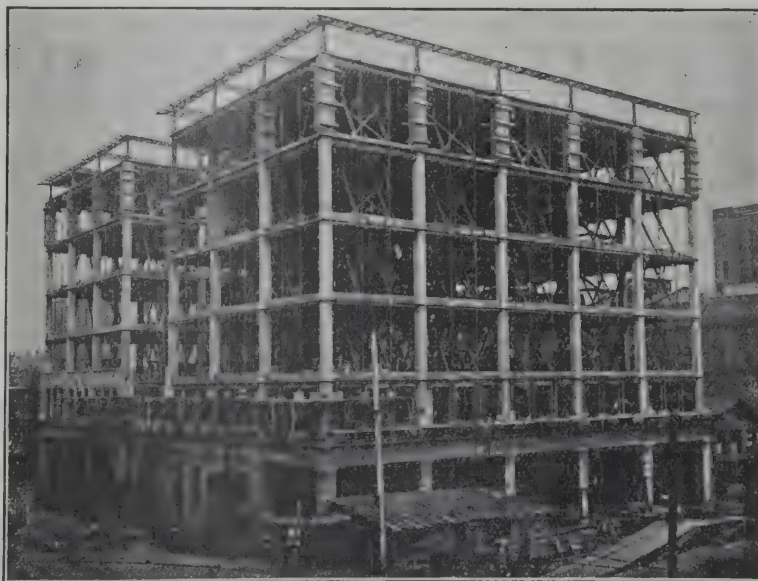
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which it is proposed should include the counties of Warwick, Worcester, Stafford and Shropshire. Dr. R. A. Lyster, medical officer of health for Handsworth, was unanimously elected first president of the centre, and it was decided to appoint a working committee to arrange for an inaugural meeting to be held shortly. Sessional meetings will be held during the winter months, and visits to places of interest to sanitary engineers will be arranged during the summer months. Mr. E. J. Harber, of Acock's Green, was elected local hon. secretary.

On Saturday extensive additions to the waterworks belonging to the Falkirk and Larbert Water Trust were formally inaugurated. The extensions have occupied about six years to complete, and have cost in round figures about 135,000*l.*, making a total capital expenditure on the scheme of 235,000*l.* The engineer was Sir W. R. Copland, Glasgow, and the following were the contractors:—New filters—Messrs. A. Stark & Son, Kilsyth and Glasgow; Drumbowie reservoir (storage 120,000 gallons) and pipe track to Faughlin (six miles of 19-inch pipe), Mr. John Best, Edinburgh; catch-water drain (three miles in length) and new compensation reservoir at Earl's Burn (100,000,000 gallons), Messrs. Marshall, Sweeney & Co., Falkirk. Mr. C. Massie, superintendent to the Water Trust, has had the general supervision of the scheme.

At a meeting of the Malvern Hills Conservators it was stated that the Ecclesiastical Commissioners had no intention of sanctioning the opening of a quarry on the western side of the hills north of the Wyche Cutting. This intimation had been received in reply to a letter from the conservators pointing out that the quarries had already effected a great change in the hills, and that their disfigurement was a serious matter to Malvern. A committee of the Malvern Urban Council having recommended that certain land belonging to that authority should be sold, it was resolved—although the committee's recommendation has been rejected—that the Council should be asked to formally dedicate land surrounding the Camp Hill reservoir and the Welland Hills land to the public, to prevent future proposals to sell.

A COMMITTEE of the House of Lords, after an inquiry lasting several days, have sanctioned a scheme proposed by the Corporation of Birkenhead for obtaining a supply of water from the rivers Alwen and Brenig, which are in the

watershed of the Dee, in Denbighshire. The town at present obtains its supply from wells in the red sandstone of the Wirral peninsula, but this supply is diminishing in quantity, and, owing to the increased depth of the pumping, deteriorating in quality through the infiltration of sea water. The new scheme is to dam up the rivers already named and carry the water by an aqueduct forty-one and a half miles long across the Dee, at Connah's Quay, to Birkenhead. It is proposed, in the first instance, to construct only the Alwen reservoir, from which, after providing compensation water, the promoters will get a supply of seven million gallons a day. This service alone is expected to supply the needs of the borough for thirty-four years. The Bill took power to supply water by agreement within a radius of twenty miles from the pipe-line.

A CONFERENCE of representatives of authorities concerned in the purification of the Thames estuary, convened by the Port Sanitary Authority of the City Corporation, was held at the Guildhall on Tuesday, for the purpose of considering the existing situation, and with a view to taking such action as might be deemed necessary in the interest of the public health. The following resolution was adopted:—That, in the opinion of this conference, the present system of discharging sewage into the Thames estuary and elsewhere is dangerous to the public health, and detrimental to an important food supply; that legislation should be initiated by the Local Government Board at as early a date as possible to efficiently deal with the matter; and that, in the meantime, the Corporation and other authorities possessing statutory powers should continue to urge upon the various bodies concerned the desirability of adopting some system of sewage purification.

SECONDARY SCHOOLS IN SUSSEX.

THE education committee to the County Council for West Sussex, after careful consideration and in response to the urgent requirements of the Board of Education, have decided to ask the County Council to consent to the erection of two secondary schools for girls at Chichester and Worthing. The Board of Education refuse to recognise any longer the existing pupil-teachers' centres at Chichester

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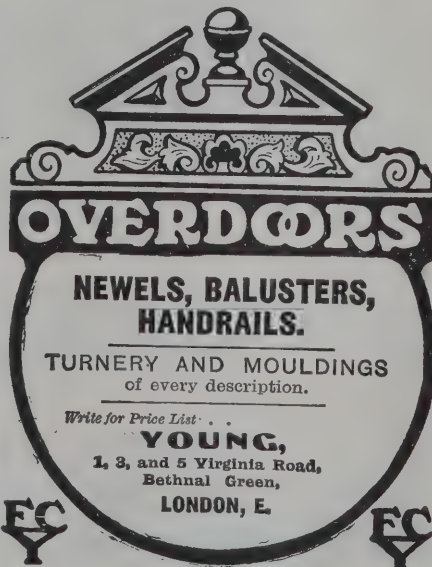
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d Worthing, and have warned the committee that they can only recognise the pupil-teacher centre at Horsham for a short time longer. They therefore require steps to be taken to provide secondary schools for girls which the candidates and pupil teachers should be required to attend. Through the assistance of several members of the County Council the offer of sites has been secured both in Chichester and Worthing. These sites are particularly suitable for the purpose and can be acquired at reasonable cost. The probable cost of each school will be as follows:—

Chichester.—Cost of site (8 acres in Stockbridge Road), 50*l.*; erection of school for 200 girls at 45*l.* per head, 9,000*l.*; laying-out playing fields, asphalt, boundaries, &c., 1,000*l.*; total cost, 11,750*l.* Annual charge to repay principal and interest on 11,750*l.*, if borrowed for thirty years as at present allowed, will be 646*l.*; or if borrowed for sixty years as proposed in Government Education Administration Bill, February 28, 1907, 470*l.* Charge for maintenance:—Estimated total cost for maintenance, 14*l.* per scholar; fees per scholar, 10*l.*; grant from Board of Education per scholar, 2*l.*; therefore the total net cost per scholar for maintenance will be 2*l.*; number of fee-paying pupils in addition to candidates and pupil teachers, 150. Total net cost of maintenance, 150 × 2 = 300*l.*; total estimated annual charge for building and maintenance, if borrowed for thirty years, 946*l.*; or if borrowed for sixty years, 770*l.*

Worthing.—Cost of site (8½ acres in South Farm Road), 888*l.*; erection of school for 200 girls at 45*l.* per head, 9,000*l.*; laying-out playing fields, asphalt, boundaries, &c., 1,000*l.*; total cost, 12,888*l.* Annual charge to repay principal and interest on 12,888*l.*, if borrowed for thirty years as at present allowed, will be 708*l.*; or if borrowed for sixty years as proposed in Government Education Administration Bill, February 28, 1907, 515*l.* Charge for maintenance:—Estimated total cost for maintenance, 14*l.* per scholar; fees per scholar, 10*l.*; grant from Board of Education per scholar, 2*l.*; therefore total net cost per scholar for maintenance, 2*l.*; number of fee-paying pupils in addition to candidates and pupil teachers, 150. Total net cost of maintenance 150 × 2 = 300*l.*; total estimated annual charge for building and maintenance, if borrowed for thirty years, 1,008*l.*; or if borrowed for sixty years, 815*l.*

The Board of Education also require the committee to erect a girls' secondary school at Horsham to take the place of the present pupil-teachers' centre. It is probable that the school will be required to be erected in 1909 or 1910, and the probable cost both for building and maintenance will be almost exactly the same as the Chichester school.

The proposed sites at Chichester and Worthing have been approved by the Board of Education with a view to the present erection of girls' schools thereon and the future erection of boys' schools.

The committee estimate that a boys' school may be required to be erected in four or five years' time on each site at the following cost:—Cost of erection, 9,000*l.*; cost of laying-out playing fields, &c., 1,000*l.*—total, 10,000*l.*; total cost of maintenance, 400*l.*; annual charge for building and maintenance if borrowed for sixty years, 800*l.* The cost of site is included in the first charge for girls' school.

ARCHITECTURAL CRAFTSMEN.

The annual report of the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society states that during the session ten new members have been admitted to the Society, the membership now being 132. This Society has always been fortunate in its presidents, and never more so than in the case of Mr. Herbertson. The manner in which he has performed the high and onerous duties pertaining to the chair must have manifested itself to the members generally, and more particularly to those who had the pleasure of working along with him. Under his able guidance the past session has been one of the most successful in the annals of the Society. Ten ordinary meetings were held during the session, seven papers being read by members of the Society, including President's opening address "Describing of Artificers' Work," address by James Miller, A.R.S.A., "The Byzantine Churches of Constantinople," "Ideal Specification," "Modern Buildings with Steel Construction," "The Philosophy of Art," "Instinctive Art in a City," "Foundations," "Drainage and the Septic Tank," "Building Stones of Scotland." The following visits were made during the session:—The works of

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the Cleghorn Terra-Cotta Company, Cleghorn, and Greenock combination hospital. The meetings of the Society have been held in Room No. 302 of the Technical College Buildings, Montrose Street, for the use of which they are indebted to the Governors of the College and to Professor Gourlay.

PLANNING OF SUBURBS.

A MEETING of the Council of the Association of Municipal Corporations was held last week at the Westminster Palace Hotel. Representatives from Birmingham, Bristol, Bournemouth, Brighton, Harrogate, Leicester, Leeds, Liverpool, Manchester, Nottingham, Plymouth, Newcastle-on-Tyne, Sheffield, Wolverhampton and Woolwich attended. They reported that they had considered the powers that would be required in order to place local authorities in the position to control the planning of their suburbs, and also the kind of legislation that would be required to enable that to be done. The committee, having had before them a memorandum of suggested lines for town planning powers prepared by Councillor Nettlefold, of Birmingham, passed the following resolutions, which they submitted for the approval of the Council:—"That power should be given to local authorities to prescribe and regulate the planning of their areas in regard to the laying out of streets in connection with building schemes or otherwise. That the local authorities should have power to appoint committees to deal with the subject and be enabled to delegate their duties to such committees and to co-opt upon such committees persons who are not members of the local authorities. That local authorities should be empowered to combine for the purpose of carrying out the principles laid down by the first resolution." Steps were taken to ascertain from the various local authorities of the country the amount that had been spent on street improvements and open spaces during the past ten years, and the regulations relating to streets and buildings in the various towns. The replies showed that the total amount spent in street improvements and the provision of open spaces, after the land had gone up to building value, by those towns making a return was 12,147,336*l*. To that must be added at least 6,073,668*l*.

for those towns, including London, from which no return had been received. Of that expenditure of 18,221,004*l*. it was estimated that about three-quarters were due to the undoing of evils that were perpetrated more than thirty years ago. Therefore 13,665,753*l*. might have been saved to the ratepayers of England if local authorities had been able during the last thirty years to exercise foresight in the development of their districts. It was not unreasonable to anticipate that at least that sum would be saved to the ratepayers during the next thirty years if town planning powers were granted by Parliament and wisely administered by local authorities. The committee also submitted a draft scheme for a town planning Bill, which they recommended should be approved, and that the President of the Local Government Board should be requested to introduce into Parliament a Bill enabling local authorities to prevent overcrowding in new districts and put an end to the present haphazard piecemeal development of urban districts, which was disastrous to public health and ruinous to the public purse. The Council approved the report and recommendations, but decided to hold another meeting for the discussion of the details of the draft scheme for a town planning Bill. Then a deputation will be appointed to interview the Prime Minister on the subject.

WORKMEN'S COMPENSATION ACT.

THE Council of the Royal Institute of British Architects have submitted questions regarding the Workmen's Compensation Act on various points in which architects are likely to be affected to Mr. Alfred Henry Ruegg, K.C. Their learned counsel has given the following opinion:—

Opinion.

The following questions have been submitted to me under the Workmen's Compensation Act, 1906:—

"1. Under the Act will the client or building owner be responsible or actionable for accident or damage that may happen to the clerk of works (a) if paid directly by him, (b) if paid by the architect, the latter being in this case virtually the agent for the client?"

I am of opinion that the client or building owner will be

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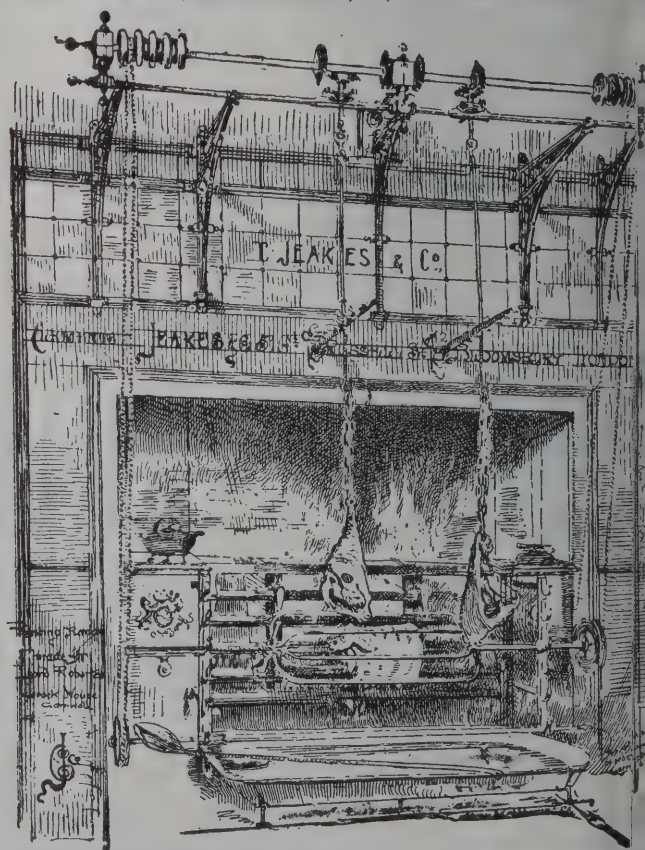
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able or actionable for accident or damage that may to the clerk of the works, whether he be paid directly client or building owner, or by the architect as for the client or building owner. If employed and ectly by the building owner no question can arise. clearly the servant of the building owner.

aid by the architect—as I understand he is generally by the architect and conforms to his orders—care e taken to make it quite clear that the architect is e agent of the building owner.

his end I should advise that a small printed form be drawn up and adopted by the architects of the e to the effect that they engage "A. B." as clerk of ks on the buildings as agent for and on behalf (D," the building owner. The form should also con- clause that "A. B." agrees to serve the building for the consideration set forth, and to obey the and directions given by the architect on behalf of the g owner.

nderstand that in all cases the money comes from the g owner, and is never paid by the architect out of his ssion.

Is the architect liable for damage or accident that ppen to his assistant when employed either in his r superintending works of buildings in progress?"

n of opinion that the architect is liable for damage dent that may happen to his assistant either when yed in his office or when superintending works of gs in progress.

e assistant, whether himself an architect or not, is, I tand, a permanent servant of the architect, employed id by him and under his sole control.

each of the above cases it is necessary that the acci- ould arise out of and in the course of the employ- and that it should not (except where the injury results th or serious and permanent disablement) be attri- e to the serious and wilful misconduct of the injured himself. (Section 1.)

s also necessary (except where the employment can scribed as manual labour) that the remuneration ot exceed 250*l.* a year. (Section 13.)

What is the position occupied by architects under orkmen's Compensation Act, 1906, with respect to

their pupils, articulated to them by indenture in the form used by the Royal Institute of British Architects?"

I am of opinion that a pupil so articulated is a workman within the meaning of the Act, and that the architect to whom he is bound is his employer, and consequently liable as hereafter stated to pay compensation to the pupil or his dependants in case of injury or death arising from accident happening in the course of his employment and arising out of his employment.

The relation of master and servant, or employer and workman, arises out of a contract of service. Apart from the express covenant in the articles of pupillage, a contract of apprenticeship is a contract of service, and of itself establishes the relation of master and servant.

An apprentice receiving no salary is in my opinion not entitled to weekly compensation under the first schedule (1) (b) of the Act, for the compensation is based upon the "earnings," and cannot exceed 50 per cent. of such earnings. In case of death also, when no salary has been paid, I think no compensation becomes payable, for the claim of dependants must be founded upon dependency, either total or partial, on the deceased workman's "earnings" at the time of the death—schedule 1 (1) (a). Where a small salary is paid by the architect, I think the pupil would be entitled to receive as weekly compensation a sum not exceeding 50 per cent. of whatever such salary, when computed into weekly payments, amounts to.

If the injury results in death, and the pupil who is receiving a salary leaves dependants wholly dependent on his earnings at the time of death, the dependants would become entitled to a sum equal to the earnings of the pupil for the three years preceding the death, if he has been so long employed, with a minimum of 150*l.* If the pupil had not been employed for three years, then the sum would be 156 times his average weekly earnings during the period of his actual employment as a wage-earning workman.

In case of death, where the dependants are not wholly dependent, such a sum, not exceeding the above amounts, as an arbitrator might think reasonable.

I must point out that if the pupil is under twenty-one years of age at the date of the injury, and his average earnings are less than 20*s.* a week, he may be awarded 100 per cent., instead of 50 per cent. of such earnings, in case of

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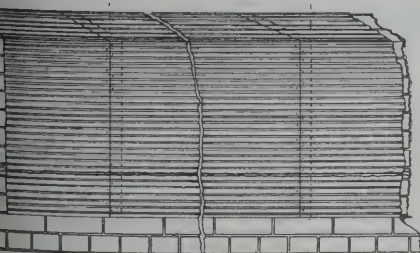
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incapacity, but not in any case exceeding 10s. a week—Schedule 1 (1) (b) (c)—and where, in such a case, the amount of compensation is reviewed after twelve months, the compensation may be increased to 50 per cent. of the weekly earnings which the workman would probably have been earning at the time of the review, if he had not been injured—Schedule 1 (16).

"4. What is the liability (if any) of the building owner towards the architect employed by him?"

I am of opinion that (except in the unusual case of an architect in the permanent employment of a person, or public body, who has contracted to serve such person or public body and to perform his duties under their control, and who receives less than 250*l.* a year), the architect is not a servant or workman of the building owner, and such building owner incurs no liability to him under the Workmen's Compensation Act, 1906. The architect who undertakes to superintend building operations for a commission does not enter the service of the building owner, or contract to serve him. He is in law a contractor, and, so long as he carries out the terms of his contract, is quite independent of any control on the part of any building owner.

NEW COUNTY HALL FOR LONDON.

A REPORT has been prepared by the establishment committee of the lately elected London County Council concerning the proposed county hall. It begins as follows:—

We have given anxious consideration to and have most carefully reviewed the present position of the scheme for the provision of a new county hall, and, for the information of those members of the Council who have not had the opportunity of fully considering this very important subject, we have thought it desirable to present a comprehensive report containing not only a statement of the principal considerations which led the Council to take the necessary steps to acquire the site at Belvedere Road, but also a statement of the present position of the scheme.

The committee narrate the history of the project since 1889. After investigation it was decided to apply to Parliament in 1906 for power to acquire the Belvedere Road site, which was found to be less costly than others.

The site is conveniently near the Houses of Parliament and the Government offices, and although on the south of the river is conspicuous from many of the streets on the opposite side of the river. It is also in a central position with regard to means of communication from all parts of London, being near Waterloo Railway Station, and reached from the City in a few minutes, and a tube railway links Waterloo with Charing Cross, Piccadilly, Oxford Circus, the Baker Street and Great Central termini, and eventually Paddington Station. Westminster Bridge Station on the District and Metropolitan Railways is within a few minutes' walk, and the district is served by numerous routes of omnibuses and by the Council's tramways, which link the site with South London and the City by way of Victoria Embankment. It will be seen that there are numerous means of communication between the neighbourhood of the proposed site and the termini in London of all the great railway lines.

The architect has stated that as the river at this point runs nearly due north, and the site being approximately parallel with the river, three façades might be respectively on the south, east and west aspects, and the maximum sunlight might thus be secured throughout the building. The scheme of development contemplates forming a public embankment next the river, similar to that in front of Thomas's Hospital, which includes a terrace apart from the public embankment, and which would add architectural dignity to the river frontage. To improve the vehicular approach, and also the lighting of the lower floors of the east frontage, the building line would be 50 feet from the buildings on the east side of Belvedere Road.

The committee felt that the opportunities of combining the provision of adequate office accommodation to meet present and future needs of the Council with the carrying out of a great improvement at a moderate cost to the ratepayers was unique, and they were convinced that the Council, if it adopted the proposals, would secure a result worthy of the central municipal authority of London, and one which would be a prominent factor in insuring the efficient and expeditious performance of the ever-increasing duties of the Council.

In accordance with the resolution of the Council, a Bill was made to Parliament in the London County Council Bill.

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Bill in the session of 1906 for authority to acquire any interests in the site which might be purchased by agreement. The second reading of the Bill was agreed to without a division in the House of Commons, and was afterwards unanimously approved by a committee of that body presided over by Mr. Billson. The Bill subsequently came before the House of Lords, where it was read a second time, and was then considered by a committee presided over by the Earl of Camperdown. The Bill duly received the Royal assent on July 20,

The Council has approved the conditions of a competition for designs for the new county hall. The particulars were advertised on February 7, 1907, and designs for the preliminary stage of the competition must be sent in on August 27, 1907. The authors of the designs in the preliminary stage and eight architects, who were specially invited by the Council, will compete in the final stage of the competition. The result of the competition will be submitted to the Council early in 1908.

The conditions provide that the greatest importance is to be attached to simple and convenient planning, and that buildings may, at the discretion of the Council, be erected in successive blocks, but that no special liabilities shall be incurred by the Council for the payment of the cost of the building through this course.

It is understood that the coffer dam will take approximately six months to construct, and that it is anticipated that work can be commenced in June 1908. By January 1910 the site will be rendered less liable to flooding, and the excavating for and constructing the concrete raft foundation wall could proceed. It is anticipated that the work will be completed in approximately twelve months, i.e. January 1910, the superstructure commenced, and the whole building completed in six years, i.e. by 1916.

As the design has been selected, it is hoped that arrangements can be made whereby parts of the building can be completed and occupied, and by this means enable the Council to give up by degrees the existing office accommodation. At the present time it is impossible to fix a definite date by which the building will be ready for occupation, but efforts will be made to have some part of the building ready about Midsummer 1913.

Special precautions will have to be taken near the abutment of Westminster bridge owing to the high level at which the foundations of the abutment are placed, and such arrangements can only be settled after a full investigation has been made of the piling around the abutment.

We have considered the possibility of utilising some part of the Council's surplus lands, but in several instances, apart from the question of size, the high value of the land makes the sites quite prohibitive for the erection of a new county hall. Indeed, there is only one site, viz. the Westminster improvement area, which appeared to us a possible one for the Council's purposes. The cost per acre of this site is 50 per cent. higher than the Belvedere Road site, and having regard to the large amount of money already expended in acquiring the properties in the latter site and the compensation paid for matters for which the Council would obtain nothing if offered in the market, the adoption of an alternative site at this stage would, we are advised, involve a loss of considerable magnitude. In view of these circumstances we cannot advise the Council to adopt any other site.

Having carefully reviewed the present position of the scheme for the provision of a new county hall, and having regard to the stage which has been reached in the acquisition of the site and to the large sum of money which would be lost if the Council did not proceed, and also to the fact that the competition approved by the Council has been in progress for ten weeks, we have come to the conclusion that the best course for the Council to take is to go on with the scheme with all possible despatch, in order that the staff may be housed in the new building at the earliest moment. The sum to which we allude as that which would be lost to the Council represents the amounts paid in compensation for trade disturbance, costs of removal, special machinery, plant and fixtures, &c., the customary allowance for compulsory purchase and the special value to owners. If the course we contemplate be adopted it will tend to reduce to a minimum the dead weight of the interest on the money already expended on capital account, and will enable the Council to give up, as soon as possible, the present scattered offices. In order to proceed on these lines it is necessary at this stage that the trial borings should be made forthwith.

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VACANT LAND, HOLBORN TO STRAND.

THE improvements committee of the London County Council have prepared a report respecting the surplus land on the Holborn to Strand route. The improvement cost about 5,136,200*l.*; the value of the surplus land exceeds 4,000,000*l.* The total frontage was 5,585 feet, and the Council have disposed of only 1,564 feet, leaving for disposal about 4,000 feet, or about 70 per cent. of the whole. The rents amount to 22,800*l.*, while the interest during the current financial year is about 126,580*l.* Next year there will be a further charge to be met as sinking fund of about 25,400*l.*, making a total of 151,980*l.*

The two chief reasons alleged by those who criticise the Council for the delay in disposing of the land are the high prices put upon the land and the severity of the Council's building conditions. Some of the leading firms of surveyors hold that the sites in the Strand and Aldwych are at present too highly priced; other firms maintain that the prices asked are not higher than those which the Council should ultimately obtain. Having regard to the fact that the valuer, with his great experience, strongly advises that the sites are not overvalued, the committee do not recommend the Council to accept lower prices for the land than those which have hitherto been asked.

While it does not appear that in essentials the building conditions differ from or are more onerous than those which are customary on other large estates in London, there seems to be a very general feeling that in their details they are somewhat exacting, that the Council is inclined to insist too strictly on their fulfilment, and that the conditions are inelastic. The committee have accordingly modified, shortened and simplified the conditions to the greatest extent that they have thought it possible to do without prejudicing the interests of the Council. They propose in the arbitration clause to provide, as hitherto, that disputes arising between the Council and its lessee before plans and specifications have been approved shall be decided by the Council's architect; but that disputes arising after such approval shall be decided by an arbitrator to be agreed upon between the parties, or, if they cannot agree, to be nominated by some person to be named in the building

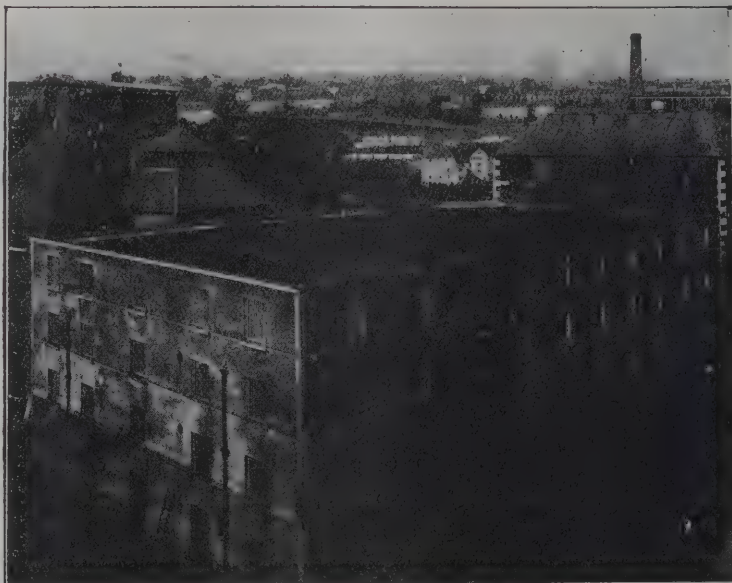
agreement at the time when it is executed. This has the advantage of giving the intending lessee an opportunity of agreeing upon an arbitrator or of suggesting who the arbitrator shall be or who shall nominate the arbitrator. The Council on May 26, 1903, decided that the clause to be inserted in the conditions with regard to land fronting the Strand, Aldwych and Kingsway should provide that the elevation of the buildings on the land should be of marble, granite, Portland or other approved stone or brick, and should be of such design as the Council approved as worthy of the position. The conditions, as amended, provide that a lessee shall erect a building of an elevation and of materials approved by the Council, and the condition mentioned above is therefore no longer needed in a separate form.

It is considered that the difficulties of the case will be adequately met merely by modifications of the building conditions. It must be remembered that the area dealt with is a large one, and that the thoroughfares are not at present the commercial or business connection which they will have when more fully developed. This may have a deterring effect on investors unless counterbalancing inducements are offered them. It is therefore suggested that until a certain number of the sites have been let, the commercial character of the thoroughfares should be established, lessees should be allowed to pay for the first year a peppercorn rent, for the second 25 per cent. of the ultimate rental, for the third 50 per cent. and for the fourth 75 per cent. of the ultimate rental. It would thus be five years before the Council came into the enjoyment of the full rental of the sites, but it would sacrifice nothing of the ultimate value of the land. This course will greatly promote the initiation of building operations, which is a matter of supreme importance to the Council. The Council has already in principle adopted this method. In the proposal for letting to the Victoria Embankment Contract Syndicate agreed to on October 31, 1905, but not proceeded with, the syndicate, two years' peppercorn was allowed, with increasing rent for the next three years, the full rent coming into charge until the sixth year. In the proposal for letting to a syndicate agreed to on March 20, 1906, for the central portion of the site between Aldwych and Strand, one year's peppercorn was allowed with a rent

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the next two years. This letting also was not pro-
 with by the syndicate. It is doubtful whether the best results can be obtained
 in this concession of a graduated rent unless the
 can succeed in interesting and gaining the active
 ation of the leading surveyors in the disposal of its
 On July 24, 1906, the Council conceded the principle
 of commission, but on a scale so far below the one
 in the profession that, as an inducement to
 of standing, it appears to be practically useless.
 ding firms consider that the present scale would not
 them for actively co-operating with the Council, but
 e remuneration should be fixed on a scale more
 approaching, though in the case of the larger sites
 considerably short, of the customary professional
 As these firms have a large number of clients, and
 have opportunities of introducing investors, it is
 that their assistance would be of great value to the
 . The usual commission in respect of property in the
 parts of London is half a year's ground-rent, but in the
 suburban property one year's ground-rent is gener-
 cowed. The Council's present scale varies from one-
 of a year's rent in the case of a letting at 500*l.* a year
 tenth of a year's rent in lettings of from 2,000*l.* to
 a year. The Auctioneers' Institute of the United
 m have suggested that an equitable scale would be
 ws:—On lettings up to 500*l.* a year, half a year's
 on lettings up to 5,000*l.* a year, half a year's rent on
 and one-fourth on the balance; on lettings up to 10,000*l.*
 the last-mentioned scale up to 5,000*l.* and one-eighth
 ar's rent on the balance.
 etting property it is the general experience that it is
 to place the matter in the hands of one firm. The
 ttee think the Council would be wise if it appointed
 m to act as its agents in addition to the valuer,
 of as at present offering the land to the whole of
 fession. This agent would have full particulars of
 operty and would receive commission on the Insti-
 scale on any business which resulted from his intro-
 . The valuer's position would not be altered, and
 ould still represent the Council. The agent would
 ith the valuer, who would, of course, still negotiate
 y with intending lessees who made inquiries through

his office. The agent would share his commission with
 firms who introduced customers, and by a scheme of this
 sort the whole profession would become interested in the
 Council's surplus lands. It is therefore recommended—

(a) That the building conditions set out in the state-
 ment separately submitted by the improvements committee
 on May 14, 1907, relating to the Council's surplus land, be
 approved as a general form.

(b) That, until further order, leases of the land now
 unlet on the area of the Holborn to Strand improvement be
 granted on the basis that the rent for the first year be a
 peppercorn, for the second year one-fourth, for the third
 year one-half and for the fourth year three-fourths of the
 rent to be paid in the fifth and succeeding years.

(c) That the appointment, for one year, of a firm as
 agent, in addition to the Council's valuer, to deal with the
 disposal of the surplus land from the Holborn to Strand
 improvement, be approved; that such agent be paid com-
 mission only in respect of lands let on his introduction, the
 commission being on the scale suggested by the Auctioneers'
 Institute of the United Kingdom, and set out in the fore-
 going report; and that it be referred to the improvements
 committee to submit for the Council's approval the name of
 a firm for the appointment.

(d) That the resolution of May 26, 1903, with regard to
 the elevation and materials of buildings to be erected
 on land fronting the Strand, Aldwych or Kingsway, be
 rescinded.

(e) That the resolution of July 24, 1906, with regard to
 the payment of commission in connection with the letting of
 surplus land from the Holborn to Strand improvement,
 be rescinded.

ELECTRICITY IN ROLLING-MILLS.

AMONG the papers read at the Iron and Steel Institute was
 one by Mr. D. Selby Bigge, of Newcastle-on-Tyne, on the
 application of electricity to reversing rolling-mills of high
 power as carried out at the Hildesgarde Works, near Teschen,
 in Austrian Silesia. The advantages to be derived were as
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1. For rolling-mills in Class I., *i.e.* with blast-furnaces attached. The possibility, now that the electric reversing-mill problem has been solved, of entirely dispensing with all coal-fired boilers and their attendant charges for firemen, conveyance of coal, removal of ashes, repairs and insurance costs, &c., the electric power for operating the complete rolling-mill plant and auxiliaries being primarily derived from the waste gases of the blast-furnaces.

2. For rolling-mills under Class II. with no blast-furnaces attached. The entire removal of boiler plant as above in the case of a cheap outside power supply, or the great reduction in the number of boilers required for working the mills, and the generation of the power in any convenient spot within reasonable distance of the works, with high-tension mains to the rolling-mill balancer converters.

3. Increased output, the rolling-mill motors being made to run at any desired speed direct coupled to the rolls. The speed of rolling being controlled only by considerations such as the rapid handling of the material and the mechanical strength of rolls and housings.

4. Extreme simplicity of the direct-coupled electric reversing-mill, the whole operations of rolling, reversing and speed regulation being controlled by one lever.

5. Decreased cost of upkeep, as owing to the use of electric motors with their continuous rotary action and regular torque, the breakages of coupling boxes, standards, pinions and necks are reduced to a minimum.

6. Absolute control over rolling-mill costs and power absorbed at any stage of all rolling operations by the use of electric recording and automatic instruments, such exact control having been impossible in the case of steam.

7. Gain in space formerly occupied by ranges of boilers, coal bunkers, railway sidings, &c., which in some overcrowded works, or where land is of high value, is an item of considerable importance.

8. The great reduction in power used in connection with reversing rolling-mills, owing to the method of utilising a balancing converter upon the Ilgner principle, the energy absorbed by the converter, which is derived direct from the central generating station or mains, being about one-tenth of the maximum value or torque upon the mill, even when the load fluctuates on the mill between 0 and 10,000 horse-power.

9. In the event of new mills being laid down, the with which the rolling-mill motors can be applied direct to the rolls without the necessity of large and costly foundations, as is the case at present with heavy reciprocal steam rolling-mill engines.

10. The very large reduction, in the majority of cases, the power cost per ton of steel rolled, owing to the foregoing considerations. Less than twenty kilowatt-hours are per ton of blooms rolled, which, in the case of mills with blast-furnaces adjacent, or waste gases available, and producing electricity at 0.25*d.* per unit, works out at under a ton.

In order to make himself familiar with the varying conditions which obtain at different works, Bigge has, during the past few months, visited a number of the principal steelworks in this country as well as on the Continent. In many cases the reduction of working costs, which can be effected are enormous, would in themselves represent a dividend by no means negligible upon the total capital of the firms in question. Steelmakers in this country are to maintain their position when prevailing prices are at a low rate, they cannot afford to let matters of such moment pass unnoticed, and the author would urge upon them the most minute consideration to this most important subject. The first reversing rolling-mill just described has only been in operation about nine months, and already the continental steelwork owners and engineers have lost no time in availing themselves of this new innovation. Two electric reversing rolling-mills of 10,000 horse-power each have been started up at the Resicza Ironworks in Hungary, while another electric reversing mill of 15,000 horse-power is being erected at the Rombacher Ironworks, near Metz, and another is to be installed at the Hüstener works, Hülse. It will therefore be apparent, from the rapidity with which the matter has been taken up on the Continent, what great importance is attached to the subject. Indeed, in the author's opinion, the day of the electric rolling-mill has come, and it has come to stay. The preliminary electric rolling-mill equipments to which he has alluded are but the first stepping-stones to a complete revolution in the method of rolling iron and steel.

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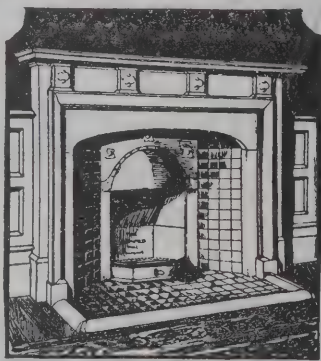
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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL

ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

ALSTON.—May 31.—The Cumberland education committee invite architects to submit sketch plans, with outline specification and estimate, for a dual secondary school at Alston, Cumberland, for about fifty boys and girls. The plans, which must be in accordance with the regulations of the Board of Education, will be received not later than May 31 inst. by Mr. C. Courtenay Hodgson, secretary, the Courts, Carlisle.

HESWALL.—The Hoyle and West Kirby administrative sub-committee for education invite competitive designs for a new elementary school to be erected at Heswall, to provide accommodation for 300 children. Conditions and instructions may be obtained upon written application to Mr. John H. Grundy, clerk to the administrative sub-committee, District Council Offices, Hoylelake.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800l. All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

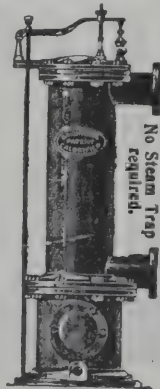
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CONTRACTS OPEN.

ABINGDON.—May 31.—For building manual instruction and cookery centre at the Council school. Deposit 2*l.* 2*s.* Send names to the Secretary to the Education Committee, The Forbury, Reading.

ALCESTER.—May 27.—For the erection of stabling, &c., at Astwood Bank. Mr. Bernard Perrins, Central Chambers, Redditch.

BIDDULPH AND BIDDULPH MOOR.—May 25.—For proposed Council schools to accommodate 708 and 306 children respectively. Deposit 2*l.* 2*s.* and 1*l.* 1*s.* Mr. Graham Bal-four, director of education, County Education Offices, Stafford.

BOLTON.—May 28.—For the erection of two pavilions at the Townleys hospital and a residence for the medical officer. Deposit 5*l.* 5*s.* Mr. S. Coope, architect, 24 Mawdsley Street, Bolton.

BRADFORD.—June 5.—For the erection of Muff Field Wesleyan Reform Sunday schools, Bowling Old Lane. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

BRISTOL.—June 14.—For the construction of the following sub-stations, for the electrical committee:—(1) Oldfield Road, Hotwells; (2) Chalks Road, St. George; (3) Cowper Street, St. George; (4) Cloud Hill, St. George. Deposit 2*l.* 2*s.* Mr. H. Faraday Proctor, city electrical engineer, City Electrical Engineer's office, Temple Back, Bristol.

CALVERLEY.—For the erection of a detached house, gardener's cottage, &c., Clara Drive, Calverley, Yorks. Mr. H. W. Long, architect and surveyor, Greengates, Bradford.

CANTERBURY.—May 25.—For the restoration of Holy Cross Church. Deposit 5*l.* Messrs. Jennings & Gray, architects, 4 St. Margaret's Street, Canterbury.

CARDIFF.—June 4.—For the provision of a refreshment-room at Cardiff station, for the Great Western Railway Company. The Engineer at Newport station.

CLATTERBRIDGE.—May 28.—For new latrines, lavatories, painting, &c., at the Clatterbridge workhouse, for the Guardians of Wirral Union. Messrs. John H. Davies & Sons, architects, 14 Newgate Street, Chester.

COLNE.—June 3.—For the construction of a filter and meter house at the Laneshaw reservoir, about four miles from the Colne station of the Lancashire and Yorkshire Railway. Deposit 2*l.* 2*s.* Messrs. G. H. Hill & Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3 Victoria Street, Westminster.

CROSBY.—June 14.—For the erection of an elementary school at Crosby, near Scunthorpe, Lincs, for the Lindsey County Council education committee. Deposit 2*l.* 2*s.* Bills of quantities and form of tender may be had on application before May 28 to Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

DARLINGTON.—May 27.—For setting-back the south-east corner of St. Hilda's Church, Park Gate, and rebuilding the boundary wall, &c., for the Corporation. Mr. George Winter, borough surveyor and waterworks engineer, Town Hall.

DARLINGTON.—May 27.—For the erection of a school to accommodate 420 children in Corporation Road. Deposit 2*l.* 2*s.* Mr. George Winter, borough surveyor and waterworks engineer, Town Hall.

DEWSBURY.—May 31.—For the erection of six kitchens to houses in South Street, Savile Town. Messrs. Kirk & Sons, architects, Dewsbury.

DURHAM.—May 27.—For enlargement of the Gilesgate Council infants' school. Mr. H. T. Gradon, architect, 22 Market Place, Durham.

ENFIELD.—June 18.—For the erection of a block of schools at Eastfield Road, Enfield Highway. Deposit 3*l.* 3*s.* Applications for bills of quantities should be sent before May 31 to the architect, Mr. G. E. T. Laurence, 22 Buckingham Street, Adelphi, W.C.

FELTHAM.—June 11.—For alterations to nine classrooms at the Feltham industrial school, Middlesex, consisting of the insertion of new windows and air flues, and decorative work consequent thereon. The Architect's Department, 15 Pall Mall East, S.W.

FALMOUTH.—May 30.—For the erection of an hotel. Mr. Alfred J. Cornelius, architect, Truro.

FLAMBRO' HEAD.—June 3.—For the erection of a fog-signal house, alterations to the existing dwelling, &c., on Flambro' Head, Yorks. Deposit 1*l.* The Corporation of Trinity House, London, E.C.

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FOSDYKE BRIDGE.—May 28.—For the erection of a warehouse. Messrs. Calthrop & Leopold Harvey, clerks to the River Welland Trustees, Fosdyke Bridge, Lincs.

GREAT YARMOUTH.—June 3.—For the erection of sale market at fish wharf. Mr. J. Wm. Cockrill, borough surveyor, Town Hall, Great Yarmouth.

HAINAULT FOREST.—June 5.—For the adaptation for refreshment and other purposes of certain buildings at Fox Burrows Farm, Hainault Forest, Essex. Deposit 10s. Architect's Department, 13 Pall Mall East, S.W.

HALIFAX.—June 3.—For painting and colouring, lime-washing, joiners', plumbers' and cement pointingwork at the various schools, and raising boiler chimney at Queen's Road school. Deposit 1*l.* for each set of quantities. Mr. James Lord, C.E., borough engineer, Town Hall, Halifax.

HARPENDEN.—June 3.—For the erection and completion of a manual instruction and cookery centre and for additions and alterations at Harpenden County Council school, Herts. Deposit 2*l.* 2s. The County Surveyor's Office, Hatfield.

HARTLEPOOL.—May 31.—For the construction of a lifeboat house and slipways for the Royal National Lifeboat Institution at Middleton, in the borough of Hartlepool and county of Durham. Deposit 1*l.* 1s. Mr. W. T. Douglass, 15 Victoria Street, Westminster, S.W.

HAYES AND STREATHAM.—May 31.—For the following contracts:—(No. 1) for the erection of six dwelling-houses at Hayes, Middlesex; (2) for the erection of four sale shops and dwelling-houses at Hayes, Middlesex; (3) for the erection of six villas at Streatham. Send names, accompanied by remittance of 1*l.* 1s. for each contract to be tendered for, to Messrs. Trevor & Taaffe, surveyors, 22 Norfolk Row, Sheffield, and 70 Finsbury Pavement, E.C.

HULL.—May 28.—For alterations and additions to hotel, stock-rooms, motor garage, &c., Paragon Station, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York.

IRELAND.—May 28.—For the carrying-out of certain building works, sanitary plumbing and hot-water supply at St. Patrick's Diocesan College, Thurles. Messrs. Doolin, Butler & Donnelly, architects, Dawson Chambers, Dublin.

KING'S LYNN.—May 25.—For the erection of a pair of cottages, with out-offices complete, on St. Mary's Estate. Mr. Louis F. Eagleton, architect and surveyor, King Street, King's Lynn.

LEEK.—May 28.—For building a laundry, for the Guardians. Mr. John Thomas Brealey, architect, Stockwell Street, Leek, and Piccadilly, Hanley.

LONDON.—May 27.—For works to buildings, &c., at Bull Stairs Wharf, Upper Ground Street, S.E., for the Finsbury Borough Council. Deposit 5*l.* 5s. The Borough Surveyor's Office, the Town Hall.

LONDON.—May 27.—For painting and sundry other works at their asylums in Cleveland Street, W., and in Colindale Avenue, Hendon, N.W., for the managers of the Central London sick asylum district. Deposit 3*l.* 3s. Mr. William Lockwood, architect, 12 Sherwood Street, Piccadilly Circus, W.

LONDON.—May 28.—For preparing and painting the whole of the ironwork on the outside of the four blocks of the workhouse in Endell Street and the offices in Broad Street, and cleaning out and repairing all the gutters and stack pipes, also for repointing the chimney-stacks of certain blocks of the workhouse, for the Guardians of St. Giles-in-the-Fields and St. George, Bloomsbury. The Guardians' Offices, 57 Broad Street, Bloomsbury, W.C.

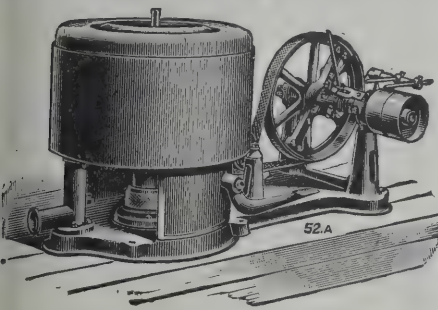
LONDON.—May 29.—For the erection of store buildings at Peckham Rye, for the Metropolitan Asylums Board. Deposit 1*l.* Messrs. T. W. Aldwinckle & Son, architects, 20 Denman Street, London Bridge, S.E.

LONDON.—May 31.—For the erection of clerk of works' offices at South Kensington. Deposit 1*l.* 1s. Mr. J. B. Westcott, at H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—June 4.—For the construction of an engine-shed and other works at Banbury, for the Great Western Railway Company. The New Works Engineer at Paddington station, London.

LONDON.—June 4.—For structural and other alterations to the kitchen, dining-hall and other parts of the workhouse, Waterloo Road, Victoria Park, N.E. Deposit 5*l.* Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

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LONDON.—June 11.—For the erection of an extension to the Council electricity works, High Street, Mortlake, S.W. Deposit 1*l.* 1*s.* Mr. G. B. Tomes, A.M.I.C.E., The Council House, Mortlake, S.W.

LYDFORD.—June 4.—For the construction of a chapel and school at Lydford, Devon. Rev. L. H. Court, 49 Bannawell Street, Tavistock.

MANCHESTER.—June 5.—For the additions and alterations at the Bank Meadow Municipal school, Ardwick. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

MATLOCK.—June 1.—For the supply and erection of retort-house and coal-store roofs, with retort-bench ironwork; also for supply of material and building retort-bench with four through arches, and two settings of eight retorts each with regenerative furnaces, at the works, Matlock, for the Gas Co. Mr. Thomas Brown, engineer and manager, Gasworks, Matlock.

MIRFIELD.—May 25.—For the joiner and builder's work in connection with repairs to the Mirfield Knowle Provided school. Mr. William Wood, divisional clerk, Batley.

PENNYBRIDGE.—May 31.—For the erection of semi-detached villas, Pennybridge, near Greenodd. Messrs. J. W. Grundy & Son, architects and surveyors, Central Buildings, Ulverston.

PORTSMOUTH.—May 27.—For the construction of a saw pit, provision of tool racks and timber and iron racks, cupboards and other fittings, at the conversion shop at Reginald Road school, Eastney. Mr. G. E. Smith, architect, 145 Victoria Road N., Southsea.

PARNALL ASH.—May 25.—For the whole or any portion of the works required for one pair of cottage homes. Messrs. Roger Oldham & Thos. J. Hill, architects, 55 Cross Street, Manchester.

RADCLIFFE.—May 25.—For the construction of public conveniences in the Coronation Park. The Council's Engineer, Council Offices, Radcliffe.

RUNCORN.—June 11.—For proposed Council school, Balfour Road. Deposit 2*l.* 2*s.* Mr. John Lightburn, clerk to the sub-committee, Education Offices, Town Hall, Runcorn.

ST. AUSTELL.—June 3.—For alterations and additions to cloak-room, to be carried out during the summer holidays, at the St. Austell Central Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

ST. MERRYIN.—May 25.—For the erection of a six-roomed dwelling-house. Mr. Freethy Rabey, Towan, St. Merryin, Cornwall.

SCOTLAND.—May 28.—For the mason, carpenter, plumber, slater, plasterer and painter's work of new post office buildings to be erected at Hopeman. Mr. John Wittet, architect, Elgin.

SCOTLAND.—May 29.—For the concrete and carpenter's work of a new store to be erected on the Lossiemouth Harbour Company's grounds. Mr. John Wittet, architect, Elgin.

SCOTLAND.—May 31.—For the mason and brickwork, carpenter and joiner, glazier, slater, plasterer, plumber, smith and painterwork, for the erection of new school (one storey) at Denbeath, Methil, to accommodate about 1,000 pupils. Deposit 1*l.* 1*s.* Mr. G. C. Campbell, architect, East Wemyss.

SCOTLAND.—June 3.—For the mason, carpenter, slater, plaster, plumber, painter, glazier and ironworks of post office to be erected in Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Fraserburgh.

SEAFORTH.—May 25.—For works of picket fencing and gates to be fixed round Seaforth recreation ground, Lanes Deposit 10*s.* 6*d.* Mr. F. Spencer Yates, A.M.I.C.E. surveyor, Town Hall, Waterloo.

SHEFFIELD.—May 25.—For the erection of a public elementary school at Whitby Road, Darnall. Send names to the architects, Messrs. Potter & Sandford, 16 St. James's Row, Sheffield.

SHEFFIELD.—May 30.—For supply of materials and erection of a transformer sub-station in Rockingham Lane. Deposit 1*l.* 1*s.* Mr. S. E. Fedden, general manager and engineer, Corporation Electric Supply Department, Commercial Street, Sheffield.

SILK WILLOUGHBY.—May 31.—For the restoration of Silk Willoughby Church, near Sleaford, Lincs. Mr. C. Hodgson Fowler, F.S.A., architect, The College, Durham.

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SLAIDBURN.—May 25.—For taking-down and rebuilding Langcliffe Cross Bridge, near Slaidburn. Mr. Thomas Eastman, clerk, 21 Church Street, Clitheroe.

STRET福德.—June 4.—For the extension of a public elementary school at Henshaw Street. Deposit 2*l.* 2*s.* Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

STROOD.—June 19.—For alterations to the girls and infants' departments of the Strood Church of England school, Kent. Deposit 10*s.* 6*d.* Mr. Apsley Kennette, correspondent, Guildhall, Rochester.

THORGANBY.—May 31.—For reseating and other works to Thorganby Church, near Grimsby. Mr. C. Hodgson Fowler, F.S.A., architect, The College, Durham.

WAKEFIELD.—May 27.—For alterations in the rates offices in the town hall, the providing and fixing of a new window in the south-west external hall thereto, a new oak desk, &c. The City Surveyor's office, Town Hall, Wakefield.

WALES.—May 25.—For erection of a free library at Perrott Street, Treharris, for the Merthyr Tydfil Town Council. Deposit 1*l.* 1*s.* Mr. W. Dowdeswell, architect, Treharris.

WALES.—May 28.—For erection of twenty-four or more dwelling-houses at Bedlinog. Messrs. Jones & Howard, architects and surveyors, Station Road, Nelson, Glam.

WALES.—May 27.—For erection of a school at Briton Ferry, for the Glamorgan County Council. The Glamorgan County Offices, Westgate Street, Cardiff.

WALES.—May 29.—For the erection of a police station at Cwm, Mon. Deposit 1*l.* 1*s.* Mr. William Tanner, F.S.I., county surveyor, Newport.

WALES.—May 31.—For the erection of an addition to the infirmary at the workhouse, Merthyr Tydfil. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

WALES.—May 31.—For the erection of a lock-up at Hakin and a petty sessions room at Milford Haven, Pembroke-shire. Mr. Arthur H. Thomas, assistant county surveyor, St. Thomas Green, Haverfordwest.

WALTHAM HOLY CROSS.—May 31.—For taking-down and rebuilding the bridge over the Cobbin Brook in the parish of Waltham Holy Cross, Essex. Mr. Percy J. Sheldon, chief surveyor, Chelmsford.

WILMCOTE.—June 4.—For the erection of station buildings at Wilmcote, Warwickshire. The Engineer to the Great Western Railway, Paddington Station, London.

WOKINGHAM.—May 31.—For the building of a manual instruction and cookery centre at the Westcott Road Council school. Deposit 2*l.* 2*s.* Secretary to the Berkshire Education Committee, The Forbury, Reading.

SHERIFF GUY has issued judgment in an important question under the Workmen's Compensation Act. A labourer, John Burns, of Leith, was mixing a quantity of lime for use in two villas in course of erection in Edinburgh when two boys not connected with the employment, and who were in the public street, threw stones, which landed in the lime. The lime was splashed up into Burns's eyes, as the result of which he has permanently lost the sight of one eye. Burns claimed compensation under the Act, which was resisted by his employers on the ground that the accident did not arise out of his employment. Sheriff Guy has now given judgment in favour of pursuer, holding that the accident arose out of, and in the course of, Burns's employment, awarded him compensation under the statute, and found him entitled to expenses.

THE trustees of Shoreham Harbour have instructed Mr. A. T. Walmisley, M.I.C.E., the engineer, to engage the services of an experienced contractor to execute such protective works as would prove serviceable pending their consideration of a tidal harbour. The width proposed for such tidal passage at the site of the lock is 130 feet, and if carried out as proposed in the engineer's report of May 6, will permit of a temporary tidal passage 50 feet wide being reserved on the south side during the construction of a new lock 45 feet wide on the north side. To form the side walls, sluices and gate sills a temporary dam will be built in the centre of the 130-foot way, enclosed by return ends on the east and west sides, which dam would be cleared away at completion and the space serving as the temporary south channel filled in.

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BISHOP STORTFORD.

For alterations and additions at technical school. Mr. URBAN A. SMITH, county surveyor, Hatfield.		
Cook & Son	£764	0 0
Patman & Fotheringham, Ltd.	763	0 0
Lawrence & Son	692	0 0
Vail & Shore	671	10 7
Glasscock & Son, Bishop Stortford (accepted)	659	0 0
Edwards & Medway	643	1 2

BODMIN.

For erecting a private residence, &c., in Priory Avenue.
Mr. W. J. JENKINS, architect, Bodmin.

Derrent	£2,391	4 0
Trehane	1,700	0 0
Bennett	1,685	0 0
Shelley & Sons	1,523	0 0
Ham	1,460	0 0
Brown & Son	1,435	0 0

BRISTOL.

For the erection of mortuary, &c., at the Stapleton work-house.

Clibbens	£470	0 0
Force	348	0 0
Love	330	0 0
Downs & Son	325	0 0
Browning	325	0 0
Marsh & Stone	320	10 0
Williams & Sons	319	0 0
Walters & Son	317	10 0
Brain	300	0 0
Harvey	299	5 0
Clarke & Sons	290	0 0
Hendey	286	0 0
LOVELL, Bristol (accepted)	264	0 0

BRIDGNORTH.

For supply of machinery and fittings for the laundry of the workhouse. Mr. ERNEST TREVOR, surveyor, Bridgnorth.

Goddard & Co.	£225	0 0
Chrimes	225	0 0
Cherry Tree Machine Co.	162	13 6
Summerscales & Sons	155	0 0
Hill & Herbert	135	0 0
BRADFORD & Co., Salford (accepted)	126	10 0

DARTFORD.

For the erection of industrial workshops at Darenth asylum.
Mr. W. T. HATCH, engineer-in-chief. Quantities by Messrs. J. WOLDRAM & SON.

Ellingham & Sons	£4,167	11 7
Dennison	3,999	0 0
Thomas & Edge	3,836	0 0
Friday & Ling	3,833	18 10
Gunning & Sons	3,719	3 6
Gibson & Co.	3,684	0 0
Lonsdale	3,675	0 0
Knight	3,641	0 0
Wiles & Sons	3,614	10 10
Pasterfield & English	3,597	0 0
Moss	3,496	0 0
Abbot & Charlton	3,425	4 5
F. & G. Foster	3,364	0 0
Line	3,292	0 0
Blay	3,292	0 0
Negus	3,242	8 10

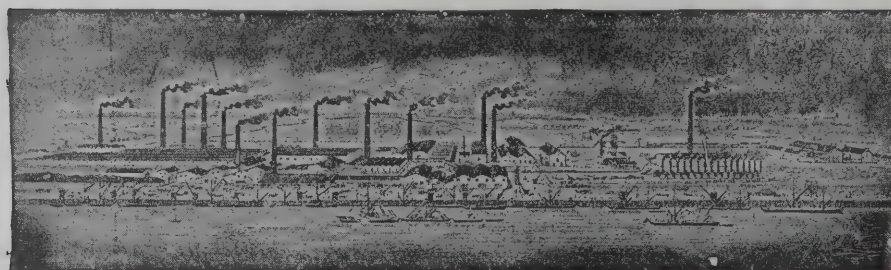
HYDE & Co., Norwood Junction, S.E. (accepted)

For cleaning and painting works at Darenth asylum. Mr. W. T. HATCH, engineer-in-chief.

Wontner & Co., Ltd.	£3,175	0 0
Simms & Sons	2,900	0 0
Negus	2,417	5 1
Proctor & Son	2,257	0 0
Fenn	2,224	10 0
Ellingham & Sons	2,057	18 1
McCarthy	1,833	0 0
Hussey	1,737	0 0
KAZAK (accepted)	1,685	4 0

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COULSDON.

For the erection of Council school. Messrs. A. W. JARVIS & F. A. RICHARDS, architects, 36 Victoria Street, London, S.W.			
Cummins & Son	£8,050	0	0
Mitchell Bros.	7,653	0	0
J. & M. Patrick	7,400	0	0
Hawkins & Co.	7,213	11	5
Kemp	7,189	0	0
Wells & Co.	7,100	0	0
Waller	7,074	0	0
Smith & Sons	6,857	0	0
STEWART & SONS (accepted)	6,642	0	0

EASTBOURNE.

For the erection of elementary school, cookery school, &c., in East Street. Mr. F. G. COOKE, architect, Eastbourne.
Quantities by Messrs. MITCHELL & FORD.

Feast & Jones	£6,040	0	0
Bowles	5,980	0	0
Hookhan	5,597	0	0
Miller & Selmes	5,448	0	0
Jarman, Daws & Co.	5,359	0	0
King & Son	5,277	10	0
Cook & Sons	5,240	0	0
White	5,231	0	0
Cornwell & Sons	5,100	0	0
Brown & Sons	5,039	0	0
Dennis & Co.	4,900	0	0
Martin (recommended)	4,861	0	0

EAST PRESTON.

For the erection of a room at the workhouse, near Angmering, Sussex. Mr. H. M. POTTER, architect, Worthing.

Child & Son	£181	18	0
Baker, jun.	162	10	0
Clark	148	10	0
Farmer & Son	145	13	0
BENNETT, West Tarring (accepted)	110	0	0

HARROGATE.

For street works in Heywood Road, Teesdale Road. Mr. F. BAGSHAW, borough engineer.

Annakin	£502	2	11
Dickinson	111	0	0

HARPLEY.

For the erection of schools, &c. Mr. L. F. EAGLETON, architect, King's Lynn.

Powell	£1,104	0	0
Bone	1,075	19	0
Tuthill	1,045	0	0
Spaulding & Hampden	998	0	0
Parren & Son	980	0	0
Foreman	944	0	0
Smith	937	17	6
Southgate	933	15	0
Whitby	857	0	0
Medwell	840	0	0
Shanks	834	0	0
Read & Wildbur	831	0	0
Dye & Allen	831	0	0
Heath	795	5	0
Barnes & Co.	798	10	0
Warne	793	10	0
RICHES, Dersingham (accepted)	777	10	0

HEREFORD.

For the erection of new offices for Messrs. Evans & Co., Widemarsh. Messrs. GROOME & BETTINGTON, architects and surveyors.

Lewis & Co.	£298	0	0
Cooke	278	0	0
Wilks	275	0	0
BEAVAN & HODGES, Hereford (accepted)	264	0	0

For re-erecting the Red Lion inn, Eign Street. Mr. E. P. DROMGOLE, architect, Stroud.

Freeman & Jones	£2,787	0	0
Orchard & Peer	2,700	0	0
Beaven & Hodges	2,674	0	0
Walters & Son	2,664	0	0
Lewis & Co.	2,625	0	0
Drew	2,599	0	0
Baxter & Sons	2,518	0	0
Powell	2,473	0	0
Wilks	2,450	0	0
Beavis	2,438	0	0
Bowers & Co.	2,412	0	0
FORD & SON, Stroud (accepted)	2,360	10	0

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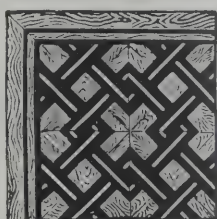
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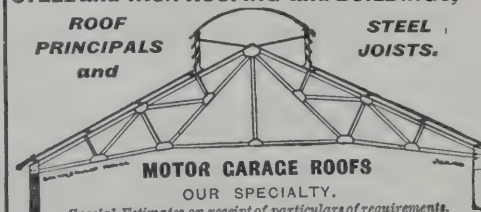
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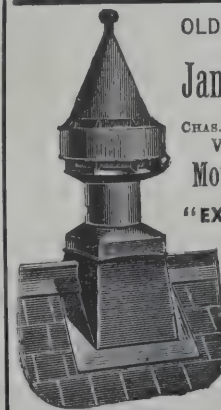
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HEREFORD—continued.

For the erection of factory at Hereford, for Messrs. Greenlands, Ltd. Messrs. GROOME & BETTINGTON, architects and surveyors.

Humphreys, Ltd.	£970	0	0
Bellow & Sons	925	0	0
Harrison & Co.	880	0	0
Harbrow	868	0	0
Blakeley & Co.	822	2	6
Rowell & Co.	752	0	0
Hill & Smith	736	0	0
Alexander & Duncan	725	0	0
Redpath, Brown & Co.	715	0	0
BANBURY (accepted)	705	10	0
Baldwins, Ltd. (ironwork only)	574	7	6
Ginger Lee & Co. (stable only)	135	0	0

LONDON.

For the erection of police section-house at Lea Bridge Road. Mr. J. DIXON BUTLER, architect. Quantities by Messrs. THURGOOD, SON & CHIDGEY.

Minter	£4,483	0	0
Willmott & Sons	3,931	0	0
Harris & Wardrop	3,900	0	0
Eyre	3,896	0	0
Lascelles & Co.	3,840	0	0
Holloway Bros.	3,832	0	0
Grover & Son	3,783	0	0
Higgs	3,756	0	0
Newby Bros.	3,745	0	0
Mowlem & Co.	3,726	0	0
Lathey Bros.	3,719	0	0
Godson & Son	3,482	0	0
Chessum & Son	3,367	0	0

For cleaning and painting at the North-Eastern Fever hospital. Mr. W. T. HATCH, engineer-in-chief.

Penn	£1,156	14	6
Proctor & Son	820	0	0
Negus	777	0	0
Fenn	698	0	0
Townsend	670	0	0
Hardy	590	0	0
SABEY & SON, Ltd., Islington (accepted)	520	0	0

LONDON—continued.

For the erection of new warehouses, Bethnal Green, E., for Messrs. Allen & Hanbury, Ltd. Mr. P. K. ALLEN, architect, Tunbridge Wells. Mr. S. CECIL ADDISON, surveyor, 29 Baronsfield Road, St. Margaret's-on-Thames.

	Contract No. 1.	Contract No. 2.	Total.
McCormick & Sons	£5,854	£3,486	£9,340
Treasure & Son	5,762	3,362	9,124
Dove Brothers, Ltd.	5,842	3,246	9,088
Lawrance & Sons	5,562	3,284	8,846
F. & F. J. Wood	5,524	3,302	8,826
Jarvis & Sons	5,540	3,200	8,740
Perry & Co.	5,641	2,990	8,631
Chessum & Sons	5,589	3,024	8,613
Greenwood, Ltd.	5,276	2,847	8,123
GROVER & SON (accepted)	5,258	2,814	8,072

For the erection of parish hall, St. Andrew's, Earlsfield, S.W. Mr. E. HALFORD, architect. Quantities by Mr. J. A. THOMPSON.

Trollope & Sons and Colls & Sons	£3,767	0	0
Holland & Hannen	3,492	0	0
Munday & Sons	3,396	0	0
Carmichael	3,380	0	0
Nightingale	3,347	0	0
Prestige & Co.	3,297	0	0
Lorden & Son	3,278	0	0
Ansell	3,200	0	0
Garrett & Son	3,200	0	0
Patrick	3,179	0	0
Holloway Bros.	3,170	0	0
JOHNSON & Co. (accepted)	3,098	0	0

MENAI BRIDGE.

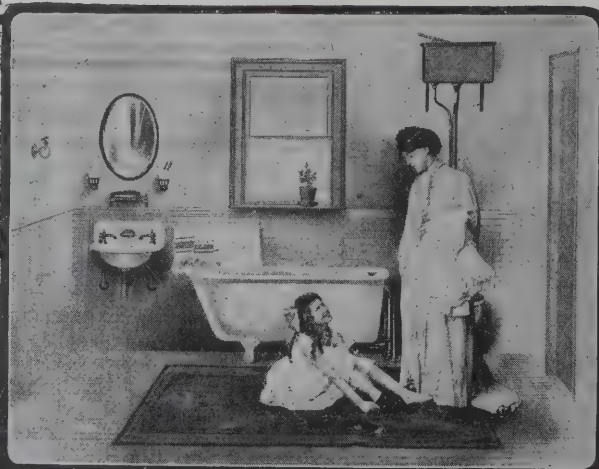
For the erection of three cottages, Beach Road. Mr. R. G. THOMAS, architect.

EVANS, Menai Bridge (accepted) . . . £940 0 0

For the erection of entrance lodge and gateway, &c. Mr. R. G. THOMAS, architect.

Owen	£538	0	0
Evans	486	0	0
Humphreys	431	5	0
PARRY, Menai Bridge (accepted)	415	0	0

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MALLOW (Co. CORK).

For intake works and service reservoir, &c. Messrs.
W. H. HILL & SONS, engineers, Cork.

Keller	£15,330	0	0
Murphy	6,700	0	0
Duggan	6,655	0	0
Hayes	6,560	0	0
Walch	6,521	0	0
Collon	6,402	0	0
O'Mohoney	6,293	0	0
Martin	6,255	0	0
Dillon	6,090	0	0
Llewellyn	5,971	0	0
Blake	5,827	0	0
Grainger	5,010	10	3
Fitzpatrick	5,587	18	9
Bird	5,551	8	4

NEW MILLS.

For the erection of retort-house at gasworks.

SCATTERGOOD & SONS (<i>accepted</i>)	£643	1	2
For the erection of foreman's cottage at gasworks.			
SELLARS (<i>accepted</i>)	£351	14	6

NORFOLK.

For the proposed enlargement and improvement of the
Foulsham school. Messrs. MORGAN & BUCKINGHAM,
architects, 1 Upper King Street, Norwich.

Evans	£381	0	0
Hannant	317	0	0
BLYTH, Foulsham (<i>accepted</i>)	288	10	0
Podd & Fisher	275	0	0

PEWSEY.

For alterations at Council schools.

Waight	£427	10	0
Chivers & Sons	408	0	0
Howse	385	9	0
Whatley & Co., Pewsey (<i>recommended</i>)	375	0	0

ST. ALBANS.

For the erection of school at Fleetville. Mr. URBAN A.

SMITH, architect.			
Goodchild & Jeffery	£6,673	0	0
Stephens, Bastow & Co.	6,569	5	8
McCormick & Sons	5,890	10	0
Lawrence & Son	5,844	0	0
Miskin & Son	5,668	0	0
Hacksley Brothers	5,667	0	0
F. & G. Foster	5,587	0	0
Brown & Son	5,492	0	0
Cook & Son	5,410	0	0
McKay	5,358	0	0
Henson & Son	5,350	13	9
VAIL & SHORE, St. Albans (<i>accepted</i>)	5,311	18	10
Edwards & Medway	4,964	0	0

SOUTHAMPTON.

For the erection of inland revenue office, for the Commissioners of H.M. Works and Public Buildings.

Portland stone.

Nichol	£7,096	0	0
Britten	7,076	0	0
Bagshaw & Sons	6,970	0	0
Stephens, Bastow & Co.	6,894	0	0
Wakeham & Sons	6,774	0	0
Cawte	6,649	10	0
Walters & Son	6,590	0	0
Light & Son	6,577	0	0
Dyer & Sons	6,572	0	0
Stevens & Co.	6,570	0	0
Willcock & Cc.	6,467	0	0
Osman	6,401	0	0
Jones	6,319	0	0
Cooke	6,298	0	0
Jenkins & Sons	6,180	0	0
Golding & Ansell	6,135	0	0
Salter	5,929	0	0

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Stevens & Co.	6,220	0	0
Cawte	6,173	10	0
Light & Son	6,149	0	0
Dyer & Sons	6,119	0	0
Jones	6,047	0	0
Willcock & Co.	5,937	0	0
Osman	5,925	0	0
Cooke	5,857	0	0
Jenkins & Sons	5,765	0	0
Golding & Ansell	5,713	0	0
SALTER (accepted)	5,673	0	0

WILLINGTON QUAY.

For various street works. Mr. J. FLEMING DAVIDSON, surveyor.

Wallace	£2,597	17	4
Coxon & Sons	2,576	3	3
Hollings	2,458	9	5
Musgrove	2,446	4	9
McLaven	2,435	16	0
Reevell	2,401	12	6
McKinnon	2,367	4	8
Edgar	2,205	17	7
SIMPSON, Newcastle (accepted)	2,187	14	6

TRADE NOTE.

WE are informed that Mr. James Cornes has by agreement severed his connection with Ellkay & Cornes, Ltd. The company will continue to carry on business as heretofore, and (when sanctioned by the Board of Trade) under the style of Ellkay & Co., Ltd., at 59 Holborn Viaduct, London, E.C. The "Model Cottager" range and fire boiler combination will henceforth only be supplied by Mr. Cornes, who will carry on business as Cornes & Houghton, at Norton House, Leek, and Metron Chambers, 244 High Holborn, London, W.C.

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VARIETIES.

A GLASS roof, at a cost of 600*l.* or thereabouts, is to be erected over the engineering yard of Hartley University College, Southampton.

A LARGE number of plans for new houses, &c., were submitted for approval at the last meeting of the Hexham Rural District Council, and the chairman (Mr. Scott) said that it seemed there was quite a revival in the building trade in their district.

THE London County Council have given sanction to the erection of a building at the roof level of Messrs. Waring & Gillow's new premises, Nos. 164-180 Oxford Street, W., to a greater height than that prescribed by the London Building Act, 1894.

THE Croydon Borough Council are fixing washers to leaky taps free of charge. A recent inspection of 2,144 houses revealed the need of new washers in 252 taps, and these were supplied and fixed at once by the Council inspectors, who carry with them all that is required for this work.

A MEETING of the London County Council will be held in the County Hall, Spring Gardens, on June 11, for the purpose of considering and deciding whether the Council shall promote in the next session of Parliament legislation dealing with the prevention of nuisance from smoke in London, and also of considering and deciding out of what fund the cost of promoting such legislation shall be paid.

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PINNOX PATENT HEARTH FIRES

THE Manchester Board of Guardians have adopted a report of the Crumpsall committee, who submitted plans showing certain extensions proposed to be made to the workhouse buildings for the purpose of increasing the accommodation for inmates at the Crumpsall workhouse, and recommended that they be approved and forwarded to the Local Government Board for their approval, and that the Board be requested to sanction the expenditure of a sum not exceeding 21,000*l.* in carrying out the works. The plans provided for the further accommodation of 410 people.

THE plans of a proposed secondary school for girls at Lancaster have been passed. In order to enable the Lancaster Corporation to obtain the sanction of the Local Government Board to borrow 16,114*l.* for the purchase of land and the erection of the school, the County Council will undertake to guarantee any deficiency in the amount raised by the local penny rate to meet the annual charge for interest on the debt and repayment. The school will accommodate 264 girls. The county architect has also prepared plans for the erection of a new school at Trawden at a cost of 9,298*l.*

MR. J. S. JEANS, the secretary to the British Iron Trade Association, in his annual statistical report to the members, says:—The course of business in the iron trade during the year 1906 has been from many points of view remarkable, and in some respects quite phenomenal. The output of iron and steel in most countries, including Great Britain, reached figures that had not been touched in any previous year. The exports of iron and steel, like the output of those metals, attained an exceptional, if not record, volume. The iron trade of the United Kingdom has exhibited a recuperative force, an elasticity and an adaptability which were hardly deemed possible a few years ago. Our total production of iron and steel in 1906 was probably of the value of fully 160 millions sterling. The exports of iron and iron products as set out in the Board of Trade returns have been of the value of over 90.8 millions sterling. Our corresponding imports of iron and iron products have been over 20.3 millions sterling. The increased value of imports and exports under both heads, and including imported ores, was not less than 20.6 millions sterling.

THE water committee of the Birmingham City Council report that the process of clearing up and the disposal of plant in the Elan valley have proceeded steadily during the winter. The remainder of the plant, railway material, wooden buildings, &c., was disposed of at a sale by auction on May 8, 9 and 10. Arrangements are proceeding for the erection of the permanent buildings required in connection with the administration of the works. The chief of these is the new school to replace the school at Nantgwillt, in pursuance of section 55, subsection 4, of the Birmingham Corporation Water Act, 1892. By arrangement with the local authorities the school is to be built in the Elan village, on the Brecon side of the river, instead of on the Radnorshire side, where the old school was situate. The other buildings to be erected at once are a superintendent's house and offices, post office and shop, ten cottages for workpeople and workshops. The committee have instructed Mr. H. T. Buckland, the architect to the Birmingham education committee, to act as architect for the new school and other buildings.

BUILDING IN SYDNEY.

THE report of Mr. W. L. Vernon, the Government architect, for the year ending June 30, 1906, states that the expenditure for the year in his department amounted to 292,901*l.* os. 7*d.*, while in the preceding year the amount was 194,021*l.* 18*s.* 3*d.*

The most notable works in progress during the year are as follows:—

New Central Railway Station.—A number of contracts—particularly those entered into in the previous year and partially executed—were brought practically to a completion, although at the end of the year the station was not quite ready for opening. A considerable amount of day-labour work was carried out in connection with works partly executed at a previous date, and in connection also with a large number of special fittings required by the Railway Commissioners to enable them to occupy the buildings on a fixed date, and at the same time to bring over the whole of their working business.

Belmore Park has been laid out during the year with lawns, shrubberies and pathways, leaving the still further

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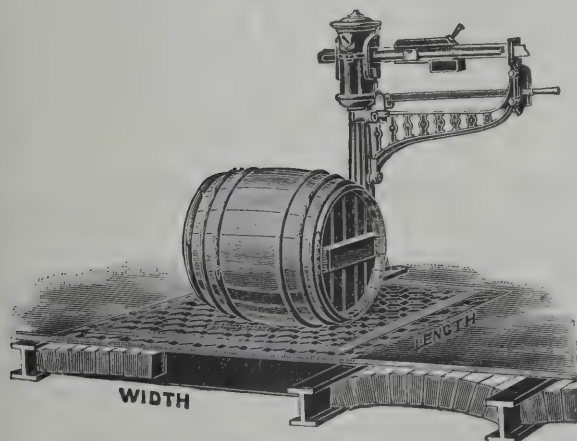
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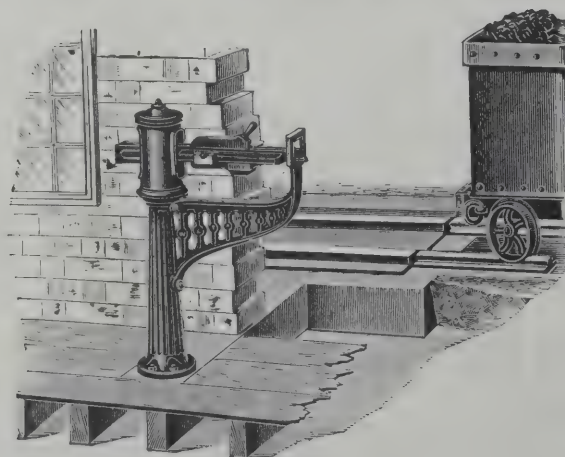
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embellishment to be dealt with by the City Council—arrangements being made for its rededication as soon as possible.

Royal Prince Alfred Hospital.—The Pathological School (a building presenting the most modern appliances for pathological studies) was brought to a practical completion during the year—a contract having been entered into for its erection.

Penitentiary and Female Prison, Long Bay.—These extensive works were advanced one definite stage during the year, and the two additional wings have been built under contract. The buildings now erected for female prisoners are sufficiently complete to enable the Department of Justice to consider their occupation in a temporary way, and the possible introduction of a modified system of prison labour in connection with the general outdoor work—of which the scheme gives considerable opportunity.

University "Fisher" Library.—The stonework for this building—of Perpendicular Gothic character—progressed somewhat slowly during the first portion of the year, but latterly more money was granted for the purpose and considerable activity took place. It was also pointed out that this costly building requires roofing in as expeditiously as possible, in order to prevent damage. As the heads and tracery of the large reading-room window are now fixed in position, some idea can be formed of the permanent appearance the building will give.

State Library—"Mitchell" Wing.—The Government came to a determination during the year to provide the long-deferred building for the housing of the literary treasures given to the State, conditionally, by Mr. Mitchell. It was decided that the "Mitchell" library should form part of a larger scheme for the housing of the general State library, and the branch was instructed to prepare designs and plans for a suitable building to be erected in Macquarie Street, with a northern front overlooking the Palace gardens, but so placed as to chiefly occupy lands not in the enjoyment of the public. The scheme was placed before the Parliamentary standing committee on Public Works, and although some opposition was shown to the selection of the site, the scheme was accepted and recommended for adoption by Parliament. Subsequently the necessary Act was passed and instructions were issued to prepare plans and

enter into a contract for the "Mitchell" portion. This has been done, including fittings, at a cost of 25,000*l.*

Royal Naval Victualling Stores, Darling Island.—An important contract was entered into for the erection of these stores on a recently constructed wharf at Darling Island. It was understood that the Imperial naval authorities desired to centre in Sydney the war victualling stores for the three naval stations of Australia, China and India; and by mutual agreement between the Imperial and State Governments, the latter undertook to erect the necessary buildings. Designs were prepared, giving a floor space of upwards of 80,000 super feet, and a contract entered into for their erection. Although the site is a suitable one, it was found that at least one-half of it had been reclaimed from the harbour, and the remaining half was of solid rock. Great care, therefore, had to be taken with regard to the foundations, and eventually, with extensive piling on the reclaimed area, this was obtained. The buildings were practically completed within the year, although certain fittings and appliances remained over for execution during the next year.

University Buildings, Martin Place.—During the year the Premier instituted the Department of Intelligence, with the view of advertising the State and its resources in every possible direction. The establishment of this department led eventually to the sale to the Senate of the University of the remaining valuable unbuilt frontage in Martin Place. An agreement was entered into by which the Senate undertook to spend 50,000*l.* in the erection of suitable buildings, the Government becoming tenant of one-half of the building. It was accordingly designed in the office, with special reference to its general surroundings, and contains (on the Government side) two sub-basements and ten upper floors. Upon entering into a contract with a well-known firm of contractors, the supervision of the works generally was handed over to a private firm of architects, who represented the Senate in the previous negotiations, the control of the final voucher still remaining by arrangement with the Government architect. It is anticipated that this building will be ready for occupation in the short period of eighteen months, notwithstanding the fact that it is erected over the old "Tank Stream," necessitating very deep and extensive foundationwork.

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Hawkesbury Agricultural College, Richmond.—The continued success of this college, and the increasing applications for admission by suitable students, have compelled the Government to take steps to greatly enlarge the buildings, and during the year considerable additions were made, and plans prepared for a practical rebuilding and duplication of the students' quarters.

Plans were also prepared to form a type for country colleges at Bathurst and Glen Innes, but no building operations have yet taken place. At Wagga Wagga, however, considerable additions are already being made.

The branch was busy during the year with not only repairing a number of the town and country school buildings, but also the erection of new and enlargement of old buildings on the newly determined principles. The chief work consisted of the erection of a substantial two-storeyed building at Wickham, and others of considerable magnitude were those at Annandale, Warrawee and Enmore. Reports were furnished dealing with the future girls' high school in the centre of the city; but it is understood that nothing at present has been determined with regard to its removal to a more advantageous neighbourhood.

During the year the Department of Home Affairs of the Commonwealth Government elected to take over all Federal works eastward of a line drawn through Sydney from north to south, including most, if not all, the metropolitan fortifications and military buildings. It was clearly understood that this arrangement was made not from any failure on the part of the State Works Department to render efficient service, but because the Department of Home Affairs, having practically established a Commonwealth Works Department in Sydney, desired to find professional work for its officers. Consequent upon this it was pointed out that the professional percentage charge of the State Works Department—covering all works, great and small—was to some extent affected thereby, but no determination was arrived at to increase the rate to the State at present.

Special activity was experienced during the year in the reconstruction of rifle ranges and the erection of country drill-halls for the Commonwealth Government.

The branch had continuous work in connection with advising the specially-appointed committee in dealing with theatres and places of public entertainment. As in the

previous year, this work has been of an extensive character and, in addition, assistance has been rendered to the committee in connection with the drafting of a new Act, which it is hoped will shortly be passed by Parliament, to give greater and more defined powers with regard to this subject.

In connection with the settlement of the capital site question by the Federal Parliament, elaborate and illustrated reports were prepared by myself and officers in connection with possible sites at Canberra and Mahkoolma—the latter especially—in connection with the State scheme of retarding the waters of the Murrumbidgee and Couradigbee rivers in the natural chasm at Barren Jack, near Yass. These reports, which were the result of continuous personal investigation on the site, were forwarded for the consideration of the Federal Government in Melbourne.

CONTRACTORS' RISKS IN IRELAND.

JUDGMENT was given last week in the King's Bench Division, Dublin, in the case of Homan & Rogers *v.* Hill, which had been argued last sittings. It was an application on behalf of the defendant for an order setting aside the judgment obtained by the plaintiffs for the sum of 279*l.*, and entering it for him. The action was brought by Messrs. Homan & Rogers, engineers and contractors, to recover 428*l.* 7*s.* 9*d.* alleged to be due by the defendant, Mr. Samuel Hill, builder and contractor, of Cork, for work and labour done, and for goods sold and delivered in connection with the erection of the Ballinasloe lunatic asylum. The defendant had lodged 80*l.* in Court as sufficient to satisfy the demand. The action was tried before Mr. Justice Wright, without a jury, on February 2 last, when judgment was given for the plaintiffs for the amount mentioned. The plaintiffs, it appeared, were sub-contractors, and the items in respect of which they claimed payment were described as extras.

Mr. Justice Gibson, delivering the unanimous judgment of the Court, said he thought the defendant never assented to any such contract as was alleged between the parties and never authorised the work for which he was sued, and there

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was no evidence that the defendant derived any benefit from the execution of the work. He was of opinion that sub-contractors acted imprudently in doing extras without written instructions, but once the work was done they were entitled to be paid for it. The order which the Court would make was that judgment would be entered for the plaintiffs for 166*l.* with costs, and judgment for the defendant for 110*l.* 7*s.* with costs. The Lord Chief Justice, who concurred, and who was engaged elsewhere, held a very strong opinion of the absolute rectitude and propriety of the defendant's conduct throughout, and the Court did not express any reflection unfriendly to the plaintiffs.

Mr. Justice Kenny, who delivered a separate judgment, also concurred.

Mr. Justice Gibson suggested that the parties should now turn back to back.

Counsel on behalf of the plaintiffs said they declined to do this, and the case must now be tried out.

DRAINAGE OF EASTBOURNE.

A SESSIONAL meeting of the Sanitary Institute was held at Eastbourne on Saturday. The chairman of the Institute Council, Mr. H. D. Searles-Wood, architect, presided.

Mr. A. Ernest Prescott, borough engineer, read a paper on "The main drainage of Eastbourne." He said the provision of good drainage and pure water were two of the most important duties devolving upon local authorities, but more especially did this apply to seaside and other visiting resorts who catered for the health and pleasure of numerous visitors. The good name and reputation of a visiting resort was chiefly in its sanitation, and this desideratum once achieved it must at all costs be retained, and that by the introduction of modern sanitary science. The larger portion of the main drainage of Eastbourne was of comparatively recent date. Before the year 1881 the town was drained by gravitation, but, owing to its rapid development, it was found necessary to supplement the then drainage by extending the main sewers in various parts of the town. Owing to a large area lying at a low level and being subject to flooding, a scheme of pumping was resorted to, and the town was divided into low and high

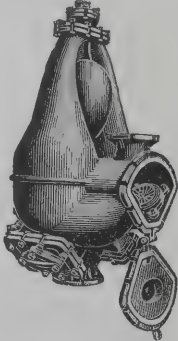
areas. In 1894 the provision for the main drainage of the town was again found to be inadequate, and the late Mr. Henry Law designed a scheme for extending it, for the prevention of flooding, and for making provision for the future growth and development of the borough. The town was now divided into separate areas, viz. a high-level area, with an approximate acreage of 772 acres, and a low-level area of 543 acres. Mr. Prescott concluded with a reference to the late Mr. G. A. Wallis, who designed the first portion of the main drainage, and the late Mr. Law, who was responsible for the extension in 1894, which latter work cost 81,000*l.* His experience gave him some knowledge of the loose and water-logged condition of the ground which had to be dealt with during the construction of the work, and it was sufficient testimony to the engineering skill and ability which his predecessor, Mr. R. M. Gloyne—who supervised the work—brought to bear in the execution of the scheme when he stated that it had done its work efficiently and well, and had thus far stood the test of time.

OLD BUILDING MATERIALS.

In the rebuilding of San Francisco methods of economical levelling and construction have been practised to a greater degree probably than at any other time and place. A typical instance, says the *Engineering Record*, is the work done on the Crocker Building, standing at the corner of Post and Market Streets. This structure, which is ten storeys in height, with a frontage of about 200 feet, escaped any serious damage from the earthquake, but was gutted by fire. The frame of the building being intact, nothing more was necessary than a reconstruction of its interior, and the contractors hit upon the profitable plan of utilising for concrete mixture all bricks, tiling, stonework and flooring which had to be removed. Suitable apparatus was therefore installed, and as fast as the work of tearing down made this material available it went directly to a Gates breaker fed from bins supplied by chutes from various sections of the building. After being crushed to the desired fineness the product of the breaker passed to a mixer, and as the concrete issued from the latter it was taken by a system of elevators and conveyers to all parts of the building where needed. The significant feature of this process lies in the fact that from

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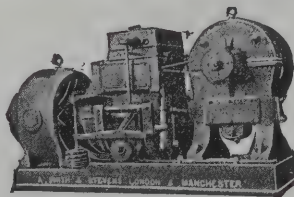
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An installation similar to this, but of relatively greater importance because on a larger scale was made by Allis-Chalmers Company at Chicago, when the old Cook County Court-house was dismantled. This temporary crushing plant, purchased by the contractors in charge of the work, A. McMahon & Co., of Chicago, consisted of two breakers, an elevator and a revolving screen, all driven by electric motors. There was a breaker for doing the first crushing and one for handling rejections. The two were set together on the same level and discharged into an elevator measuring 9 feet between centres, which conveyed the material to a dust-jacketed iron frame screen having $1\frac{1}{2}$ -inch perforations. The stone was reduced to $1\frac{1}{4}$ -inch size for concrete, and the dust sold for use with it in place of sand. The over-size material was discharged on a belt conveyer, which carried it back to where it was fed into the smaller breaker. The plant was located in the centre of the building, where it was easy of access for handling the stone as fast as the building was torn down. The crushed product was discharged into bins placed directly under the screen, from which it could be readily loaded into waggons. The contractors found this plant a profitable one, as they were able to sell the crushed rock right in the centre of Chicago; in fact, towards the close they did not remove any of the material from the premises, but disposed of it to the firm putting up new structure.

JAPANESE EXHIBITIONS.

THE Japanese patent-office exhibition building at Dosanbashi, Kojimachi, Tokio, was opened on February 1, 1907. The building is new and covers about 6,120 square feet. The exhibits, numbering over 2,200, are for the most part articles invented or designed by the Japanese, and are protected either by Japanese patent or registration. Among them are clothing, boxes and receptacles, dyed and woven goods, buttons, rings, fans, stationery, toys, agricultural tools and implements, furniture and chemical apparatus, and among the patented articles are found fire extinguishers, engines, pumps, agricultural tools and looms. The exhibi-

tion is a permanent one, and will be open daily. In connection with the international exhibition to be held in Japan in the year 1912, the following revenue is, according to the American Consul-General at Yokohama, reported and estimated:—From the municipality of Tokio, 300,000*l.*; from the national treasury, 500,000*l.*; and revenue from the exhibition, 200,000*l.* The area of the exhibition ground is estimated at about 10,800,000 square feet. The principal buildings to be erected by the Government are two scientific buildings, two industrial buildings, two machinery and electric buildings, transportation buildings, marine product building, zoological, fine arts, agricultural, mining, forestry, foodstuffs, aquarium and horticultural buildings. In addition to the foregoing, three concert halls for the use of the public and a post and telegraph office will be built. Both foreign and domestic exhibits are to be classified, and will be placed in the sections devoted to them. The exhibitors will be allowed to erect buildings for their exhibits within the exhibition ground at their own expense. The site of the exhibition has not yet been selected, but the Finance Department and the Tokio municipal authorities are reported to have agreed to hold the exhibition within or in the vicinity of Tokio, and the Tokio Municipal Council recently voted a contribution of 300,000*l.* The exhibition will be formally opened on April 1, 1912, and is to continue for seven months. At the instigation of the Chambers of Commerce of several of the larger cities of Japan, aided by the civil authorities of Dalny, a commercial exhibition was opened in that city on February 1 last. One building composed of eight rooms is being used for the exhibition. The Japanese Commercial Museum at Mukden has proved to be such a success that it is contemplated keeping it open much longer than was originally intended. The Government and people of Japan are thoroughly imbued with the importance of exhibitions for the display of their products. There is in the city of Tokio a permanent industrial museum under the Department of Commerce, and almost every city of prominence has some form of a commercial museum of a permanent nature. Recently a train was fitted up for the purposes of a travelling exhibition. This was especially encouraged by the Press, and was supported by a number of the leading commercial interests. It travelled over the various lines and was well

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visited. It is a part of the policy of the Government to assist their merchants by exhibitions of their products, especially throughout China, and wherever a Japanese Consulate is established, there are a number of young commercial students attached to the Consulate, engaged in studying commercial affairs, as well as in developing and assisting in marketing the products of Japan. By this method a great number and variety of Japanese manufactured articles are being distributed and sold in various parts of the Chinese Empire. The Government considers it a part of its functions and duties to encourage Japanese commerce in every conceivable form, and the exhibition spirit seems to be one of the leading methods of rendering aid to Japanese trade. In nearly all these commercial museums and exhibitions the Government's position is that of merely aiding and assisting the manufacturer. A few months ago the Government sent to Manchuria, free of expense, a large body of business men and commercial students. These men were given every opportunity of making a special study of the markets for Japanese products, as well as of examining the possibilities of developing and placing on the markets in Japan the products of Manchuria, and it is largely by such methods as these, and their various museums and exhibitions, that the Japanese are extending their trade throughout the East.

APPLIED ART IN BIRMINGHAM.

In the course of a report to the museum and school of art committee of Birmingham, Mr. H. Wilson offers suggestions which are likely to arouse much interest in educational circles. He dismisses criticism of the result of the past year's studies in a brief but appreciative paragraph. In this he expresses the opinion that the practical application of new motives in enamelwork to the decoration of boxes has been most successful. The damascene work shows very great improvement, and the same must be said of the hammerwork, the repoussé and the engraving. Perhaps the most remarkable advance of the present year has been made in the class for die-sinking. The drawing from plants, living animals, and from the life, all mark new stages of development and are full of promise for the

future, and, he adds, "I foresee a very successful year for the whole school."

The first suggestion Mr. Wilson has to make is that the school should be turned into a day training school for the production of practical workmen in all branches of the jewellery trade. "After a long and careful study of the admirable and varied work of the school during the past year," he says, "one thought prevails. It is this. If such work can be done in evening classes, has not the time come for increasing the utility of the school by adding to the facilities for study open to the students, and by enlarging the range of teaching at their disposal?" This question Mr. Wilson answers in the affirmative, and the suggestion we have indicated is his reply to the further question, "How is it to be done?" It is obvious, he points out, that no student can do his best if he comes to the school after a long day in the workshop. The student approaches his evening task more or less tired, and he has to force himself, or be persuaded, to work, with the inevitable result that his productions look tired and spiritless. Furthermore, there is the danger present in all schools, but most of all in evening schools, of overtaxing tired minds and bodies, and prematurely exhausting the student, and unfitting him for work in after life. Mr. Wilson thinks a beginning might well be made by arranging classes for scholarship students, and also classes for very elementary students selected from the most promising boys and girls in the ordinary elementary schools. This would provide the nucleus of a graded school of real education by the practice of craftsmanship from its simplest to its highest forms. It might even be possible to permit exceptionally endowed boys or girls from the elementary schools to work as half-time students at Vittoria Street, thus getting nearer to that combination of mutual and mental training which is the ideal of every educationist and of every far-seeing employer.

The examiner's second suggestion for the development of the school concerns the staff. He recalls the fact that last year he urged the employment of craftsmen drawn from the countries in which the traditions of handiwork are still alive. "The reasons which led to that suggestion," he adds, "have not ceased to exist; they have acquired strength and insistence in the interval." Mr. Wilson proceeds to deplore the daily encroachment of mechanical

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deals of design and workmanship in modern work. On all sides is felt the need for men who not only know their trades, but are enthusiasts in the exercise of them, whose highest happiness is found in the full exercise of their powers. As things are, this need can only be met by the trade schools, such as that of Vittoria Street."

He proceeds:—"If we are to progress towards a healthy and noble national life, we must see that the growing minds of our future craftsmen be provided with the best technical knowledge at our command. It ought, therefore, to be possible to give our students access to the technical resources of the coppersmiths of Italy, Damascus and Cairo, those of the brassworkers of Benares and Chota Nagpur, the damasceners of Cairo, Persia and Cashmere, the goldsmiths of Mysore and Madras, the enamellers of Jeypore and Japan. I do not mean to suggest that we should immediately set to work to copy the productions of any or all of these workers—there has been too much inept imitation in the past—but I do mean that a few master workmen from Syria, India, Persia, or Japan should be brought over, given a bench or floor space in the school, and there encouraged to go on with their inherited crafts, and so doing, to teach that craft in the most perfect of all ways, the daily demonstration of practice. The students would, of course, have the advantage of individual instruction in the handling of material, the use of tools and all those minutiae of the crafts which cannot be acquired from books, nor alas! from our own workmen. The technique, for instance, of incrustation with the precious metals, practised by the Japanese, is unknown in the West. Yet how vast are the possibilities of beautiful work in that craft alone. There is, indeed, hardly a living craft in the East which might not be transplanted with infinite profit to ourselves, our workmen and our art.

"The more this idea of engrafting on our moribund practice the living crafts of living nations is reflected on, the more desirable it will appear from every point of view, and I am convinced (1) that it is the most practical solution of the well-nigh perennial difficulties of craft teaching; (2) that it would provide the nearest approach to the old apprenticeship system with none of its disadvantages; (3) that the presence of foreign craftsmen in the schools would invest work with that romance so dear

and so necessary to the mind of youth; and (4) that we should get some glimpses of that noble ideal of work for work's sake, that worship of workmanship, without which the miracles of ancient Etrusca and Greece, or of modern India and Japan could never have been produced. . . . If this were begun in Birmingham, it would soon become general in England, and by slow degrees the ennobling influences of fine craftsmanship, the refining effects of sincere work would permeate every section of society from the lowest to the highest. The western world, realising once again that the highest beauty is ever within call of sincerity and simplicity, that the highest enjoyment is not to be found in the pursuit of pleasure or riches, but in the realisation of the inner self through work, would gradually attain to that frugality of life and innocence of manners which have characterised the most artistic, *i.e.* the most healthy nations of ancient and modern times.

LESSONS OF THE SAN FRANCISCO DISASTER.*

THE modern city is the creation of commercial needs, and its location is fixed by commercial conditions. The duty of the structural engineer is to so plan all parts of the structure that it shall resist (1) with certainty all definite calls upon it; (2) with no serious injury all probable calls upon it; (3) and without destruction all those occasional visitations that human power can resist. Grouped under the first heading are the live-load, dead-load and the ordinary wind-load requirements, &c.; under the second heading would be grouped such occasional attacks as those of fire, gales and moderate earthquakes in earthquake regions; under the third head occur such disasters as hurricanes and tornadoes, general conflagrations and severe earthquakes, such as at times appall humanity in disasters that are made possible by reason of inadequate design or construction (or both), permitted in order to save a small percentage of expense, but thereby hazarding the integrity of all, with the gambler's chance of some gain or great loss.

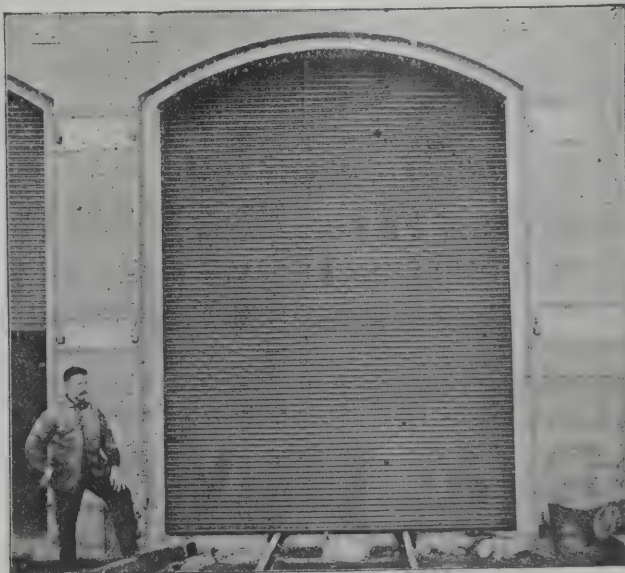
* A paper by J. L. Van Ornum, read before the Engineers' Club of St. Louis and published in the Journal of the Association of Engineering Societies.

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Successful resistance to earthquakes, even when severe, is possible; but as this concerns most cities only remotely, it will be passed over with the statement that unified foundations structurally carried to solid material, with a thorough sway-bracing of the frame, will preserve the integrity of a steel building in any probable earthquake; even in masonry walls, bands of metal reduce to small proportions the damage to them from seismic disturbances. It is mainly with the fire lessons that we are concerned, because they are of universal interest and application. It is true that, often when discussing these lessons, we hear the remark that the Baltimore and other fires teach the same facts; but if we analyse more deeply, we must conclude that the San Francisco lessons are unique in giving us generally the effects of fire only, while nearly all others have left the added destructive action of water and steam upon the highly-heated fire-resisting materials.

The main study, then, will be that of different engineering materials with regard to their earthquake-resisting and fire-resisting properties. In view of the general conditions found to exist in San Francisco, as developed by his careful inspection of the city, the writer would impress with all the earnestness at his command the absolute necessity that good construction must follow a good design, or the result is a failure. Faulty design may be partly or wholly redeemed by excellent construction, but a thoroughly good design may easily be utterly ruined by defective construction. These facts are not at all new, but they are so evidently often obscured or ignored that it would be well if they might be impressed with all the vividness of a new thing. The engineer should always see to it that his design is constructed of adequately good materials and executed with the necessary skill and character of workmanship.

Passing the discussion of foundations (not because they are less important than any, but because the superstructure is most exposed to the destructive agencies under discussion), it may be said that wood resists earthquake vibrations well, if the frame and roof are properly tied and braced; the almost universal practice is to ignore such bracing, and then the result is a collapse. In fire, wood, of course, "adds fuel to the flames." Masonry walls of all kinds resist the earthquake usually without destruction if well built, generally with considerable damage; the effectiveness of

resistance is enormously increased with but little expense by improving the weak part of the wall—the mortar—by putting into the mortar a large proportion of Portland cement;* and a further effectiveness of resistance may be secured by metal ties and bands. Against fire, even without the rupturing and exploding action of water from the fire streams striking the highly-heated materials, stone of practically all varieties spalled and disintegrated badly and in varying degrees, enough to require its replacing for the sake of appearance even when it was not structurally incapacitated.

In buildings in which steel enters as an essential structural element, more attention must be given to lateral bracing and to connections to make the structure safely resistant to earthquake vibrations. A more definite lateral stability must be furnished, with less reliance upon the indefinite internal rigidity of the finished structure.

In fire the particularly vulnerable point of buildings of the first class remains the inadequate protection usually made against the introduction of fire from the outside, through windows, doors and inadequately designed roofs which quickly burned away. The protecting effect of metal shutters and metal covering of window trim was great, increasingly so as its character was better, and often so decisively effective as to permit the saving of the building at critical times, as the Kohl building. Even without such protection the decided advantage of wire-glass was shown in a number of cases, as that of the Western Electric Company's building. Although the heat shatters the glass, the wire holds the pieces in place in most instances, so that the flame cannot enter; and although it has the defect of diathermancy, even a weak defence inside may overcome the danger arising from the transmitted heat. It has become evident that, in general conflagrations, fireproof buildings are the innocent victims of outside attack rather than the cause. The conclusion is then inevitable that a very great need in improving conditions is adequate protection of exterior openings.

* The Appraisers' Building, which survived without a crack, was built with brick laid in cement mortar, and is said to have had a monolithic concrete foundation 6 feet thick capping the foundation piles.

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Passing without comment some of the lessons driven home by resulting failures, such as the necessity of adequate and correct connections, thoroughly good rivetting, good bond between facing and backing, properly constructed partitions, &c., the general fact is noted that terra-cotta offers much less effective resistance to fire than does reinforced concrete. I can tarry on this lesson only long enough to state that this reference is, of course, only to good materials, well fabricated; and in this connection it should also be stated that critical examinations have indicated grave danger of the gradual scattering corrosion of metal embedded in cinder concrete.

There probably is no more important or instructive lesson to be drawn from this disaster than the imperative necessity of adequate protection of essential metal, whether the metal be a steel frame or steel reinforcement of concrete construction; and a considerable advance has been made in determining with much greater definiteness the details of such requirements. San Francisco's revised building laws, as approved on July 5, 1906, permit of the use of brick, metal-lath and plaster, terra-cotta and concrete. Brick of proper quality furnishes good protection if the minimum covering of the most exposed metal is at least 4 inches and the mortar is of Portland cement. Metal-lath and plaster may, with care, be made efficient, but the wisdom of its permissive use seems to the writer to be doubtful, because the requirements for efficient resistance are so easily slighted; the fact remains that a noticeable proportion of failures in San Francisco were due to a sham application of this kind of protection.

When terra-cotta is used the minimum protection should be at least 2 inches for beams and girders and 4 inches for columns, with especial attention given to proper mortar and to metal ties. It must also be remembered that, where the heat is great, the outer web of terra-cotta blocks shears off and fails, due to the excessive differential expansion of this outside web even when water from fire-streams does not add its rupturing effects by cooling suddenly the highly-heated surfaces; this usually means the preservation of the integrity of the steel frame, but does necessitate an entire reconstruction and replacement of the ruptured terra-cotta.

Concrete or reinforced concrete of good quality both protected the structural metal and usually avoided the

necessity of reconstruction (because the injury to it was superficial, not radical), except when the thickness of this protection was insufficient. In cases where the embedded, protected steel reached within an inch or so of the surface, the fire conditions often ruptured off the thin protecting layer of concrete, leaving the steel exposed. This is especially liable to occur on the under side of floor-beams and girders, where the embedded rods are so near the surface that the highly-heated covering differentially expands considerably as compared with the concrete above the steel, leaving an easily ruptured section in the plane of the reinforcement, where the bars are so numerous as to greatly reduce the area between them of the concrete connecting this outer protecting layer with the mass of concrete above the reinforcing steel.

It is believed that 3 or 4 inches of covering for the metal is as necessary for reinforced concrete construction as for column coverings of brick or terra-cotta in order to give columns adequate fire protection. Tending to confirm this opinion is the fact that as a general proposition, in a temperature of 1,200 to 1,500 degs. Fahr., heat will penetrate concrete to a depth of 2 inches, enough to raise its temperature to 500 degs. Fahr. in less than an hour, while it takes perhaps three hours for this temperature to penetrate 4 inches; this is significant because noticeable loss in strength occurs at about this temperature, which increases rapidly for higher temperatures. For evident reasons the regulation of the item just mentioned must be covered by the building laws of cities in order that it may be made effective, as in the case of so many general requirements necessary for the public safety and welfare.

Hitherto it has been considered that a point of especial vulnerability is the lower flanges of beams and girders. While this fact essentially remains true, it seems that, relatively, more attention must be given to the adequate protection of columns, inasmuch as the failure of one of the lower columns involves not only the loss of it, but also the letting down or destruction of everything above it. The most prevailing cause of destruction and loss in the San Francisco fire, caused by a single class of weakness developing, was due to the partial or complete failure of basement or lower-storey columns exposed to the fire by the destruction of their fireproofing.

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I would add, in closing, one reference that concerns engineering in its commercial and business relations. The adequate protection of essential members from fire will add a small per cent. to the cost of a building over its cost if partially protected. This amounts to a few thousand dollars, which looks large to the firm paying for the structure; consequently, as a rule, the firm will take the risk of destruction for the sake of saving this extra initial expense. Were the small additional expense of thorough fireproofing assumed, it would not only decrease the hazard to the owner, but would make the structure a safer risk to insurance companies. Unfortunately, fire-insurance companies will not make public such statistics as they have, giving relative losses on different types of buildings. Yet it is believed that their relative losses on buildings of the first class are much less, proportionally, than is indicated by the somewhat lower insurance rate now prevailing for such buildings. In other words, the reduced hazard secured by thorough fireproofing and fire-protection ought to secure to the owner an insurance rate so noticeably lower that this saving would go far toward compensating him for the extra expense in securing this increased safety. This reduction in rates might well be made still greater when fireproofed buildings are compactly grouped, thus mutually protecting one another. Engineers, architects, insurance men and men of business would probably find that united consideration of this subject would lead to a mutually beneficial adjustment of these interests on the lines indicated.

CEMENT IN CANADA.

THE total quantity of Portland cement manufactured in Canada in 1906 was 2,152,562 barrels, as compared with 1,541,568 barrels in 1905, an increase of 610,994 barrels, or 39.6 per cent. The total sales of Portland cement were 2,119,764 barrels, as compared with 1,346,548 barrels in 1905, an increase of 775,216 barrels, or 57.4 per cent.

Fifteen companies were operating plants during 1906, with a total daily capacity of about 10,500 barrels, namely, one in Nova Scotia, two in Quebec, eleven in Ontario and one in British Columbia. At least four plants were under

construction during the year, of which the total initial daily capacity will be about 4,700 barrels.

Detailed statistics of production in 1905 and 1906 are as follows:—

	1905. Barrels.	1906. Barrels.
Portland cement sold	1,346,548	2,119,764
Portland cement manufactured	1,541,568	2,152,562
Stock on hand January 1	111,446	269,558
Stock on hand December 31	306,466	302,356

Value of cement sold \$1,913,740 \$3,164,807

Some companies do not take stock at the end of the calendar year, consequently their estimates of stock on hand do not always agree from year to year.

The average price per barrel at the works in 1906 was 1.49 dol., as compared with 1.42 dol. in 1905.

The imports of Portland cement into Canada in 1906 were:—

Six months ending June	945,187	\$319,021
Six months ending December	1,485,573	459,685

The year 1906 2,430,760 \$778,706

This is equivalent to 694,505 barrels of 360 lbs. each, at an average price per barrel of 1.12 dol. The duty is 12½ cents per 100 lbs.

The imports in 1905 were equivalent to 917,558 barrels, valued at 1,138,548 dol., or an average price per barrel of 1.24 dol.

There is very little cement exported from Canada. The consumption is therefore practically represented by the Canadian sales, together with the imports.

The following is an estimate of the consumption of Portland cement in Canada for the past six years:—

Year.	Barrels. Canadian.	Barrels. Imported.	Barrels. Total.
1901	317,066	555,900	872,966
1902	594,594	544,954	1,139,548
1903	627,741	773,678	1,401,419
1904	910,358	784,630	1,694,988
1905	1,346,548	917,558	2,264,106
1906	2,119,764	694,503	2,814,267

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THE

Architect and Contract Reporter.

FRIDAY, MAY 31, 1907.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800l. All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ACCRINGTON.—June 4.—For the erection of brushworks, near Penny House. Apply by letter to Mr. Henry Ross, architect, Cannon Row, Accrington.

BAGULEY.—June 5.—For taking-down Pickie bridge, Shay Lane, Baguley, Bucklow, and rebuilding a new bridge, for the Bucklow Rural District Council. Sub-Offices, Mossburn Buildings, Stamford New Road, Altrincham.

BLACKMINSTER.—June 10.—For the rebuilding in brickwork of Blackminster bridge, near Evesham, and the Littleton and Badsey Railway station (G. W. R.). Deposit 1l. 1s. Mr. J. H. Garrett, surveyor of county bridges, Shire Hall, Worcester.

BRADFORD.—June 5.—For the erection of Muff Field Wesleyan Reform Sunday schools, Bowling Old Lane. Messrs. Walker & Collinson, architects, Cheapside Chambers, Bradford.

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BROMPTON.—June 4.—For the excavator, bricklayer and mason, carpenter and joiner, plumber and glazier, iron-founder, slater and painterwork required in extension of weaving sheds and alterations to existing buildings at the spinning mills, Brompton, near Northallerton. Forward names to Messrs. Thomas Winn & Sons, architects and surveyors, 84 Albion Street, Leeds.

BURNLEY.—June 3.—For the following works (preferably in one contract) required in the erection of the palace and hippodrome in St. James's Street:—Excavator, mason and bricklayer, carpenter and joiner, plumber and glazier, slater and plasterer, concreter. Application (accompanied by a deposit of 1*l.* 1*s.*) must be made to Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

CARDIFF.—June 4.—For the provision of a refreshment-room at Cardiff station, for the Great Western Railway Company. The Engineer at Newport station.

CARLISLE.—June 3.—For the builder, carpenter and joiner, plumber, plasterer, slater and painter and glazier-work required in extensions at the Carlisle Steam Laundry, Warwick Road. Send names to Mr. Matthew Johnstone, architect and engineer, 22 Lowther Street, Carlisle.

CHELMSFORD.—June 11.—For the erection of a post office at Chelmsford. Deposit 1*l.* 1*s.* The Commissioners of H.M. Works and Public Buildings, H.M. Office of Works, Storey's Gate, S.W.

CHERITON FITZPAINE.—June 14.—For the erection of farm buildings at Stockton Farm, Cheriton Fitzpaine, Devon. Messrs. Cook & Birmingham, land agents, Tiverton.

CHRISTOW.—June 5.—For the erection of a teacher's house and for other work at the Christow Council school, Devon. The Architect's Office, 1 Richmond Road, Exeter.

CODFORD.—June 5.—For building a pair of cottages. Deposit 1*l.* 1*s.* Messrs. Long & Glass, architects, 53 Market Place, Warminster, and 9 The Bridge, Frome.

COLNE.—June 3.—For the construction of a filter and meter house at the Laneshaw reservoir, about four miles from the Colne station of the Lancashire and Yorkshire Railway. Deposit 2*l.* 2*s.* Messrs. G. H. Hill & Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3 Victoria Street, Westminster.

CROSBY.—June 14.—For the erection of an elementary school at Crosby, near Scunthorpe, Lincs, for the Lindsey County Council education committee. Deposit 2*l.* 2*s.* Bill of quantities and form of tender may be had on application before May 28 to Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

DRIFHLINGTON.—June 3.—For the whole or any of the several trades—namely, bricklayer and mason, carpenter and joiner, plumber, plasterer, slater and painter's work—required in the alterations to the Valley inn, Cockersdale, Drighlington, Yorks; also to the George hotel, Holmfirth, near Huddersfield. Forward names to Messrs. Thomas Winn & Son, architects, 84 Albion Street, Leeds.

ENFIELD.—June 18.—For the erection of a block of schools at Eastfield Road, Enfield Highway. Deposit 3*l.* 3*s.* Applications for bills of quantities should be sent before May 31 to the architect, Mr. G. E. T. Laurence, 22 Buckingham Street, Adelphi, W.C.

EXETER.—June 3.—For alterations and additions to Hoopern farmhouse, Pennsylvania. Messrs. Ellis, Son & Bowden, surveyors and architects, Bedford Chambers, Exeter.

FELTHAM.—June 11.—For alterations to nine classrooms at the Feltham industrial school, Middlesex, consisting of the insertion of new windows and air flues, and decorative work consequent thereon. The Architect's Department, 15 Pall Mall East, S.W.

FLAMBRO' HEAD.—June 3.—For the erection of a fog-signal house, alterations to the existing dwelling, &c., on Flambro' Head, Yorks. Deposit 1*l.* The Corporation of Trinity House, London, E.C.

GLASGOW.—June 7.—For the following works in connection with C block (nurses' home), D block (power-house, and E block (laundry) at the Glasgow Royal Infirmary:—(1) Digger, mason, brick and steel; (2) carpenter, joiner and

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HAINAULT FOREST.—June 5.—For the adaptation for re-shipment and other purposes of certain buildings at Fox urrows Farm, Hainault Forest, Essex. Deposit 10*s.* Architect's Department, 13 Pall Mall East, S.W.

HALIFAX.—June 3.—For painting and colouring, lime-washing, joiners', plumbers' and cement pointingwork at the various schools, and raising boiler chimney at Queen's road school. Deposit 1*l.* for each set of quantities. Mr. James Lord, C.E., borough engineer, Town Hall, Halifax.

HARPENDEN.—June 3.—For the erection and completion of a manual instruction and cookery centre and for additions and alterations at Harpenden County Council school, Herts. Deposit 2*l.* 2*s.* The County Surveyor's Office, Hatfield.

HARRINGTON.—June 5.—For alterations and additions to property at Harrington, Cumberland. Mr. Charles W. Aglesfield, architect and surveyor, Gordon Street, Workington.

HATHERSAGE.—June 4.—For erection of Wesleyan church and schools. Apply to Messrs. Smith & Ensor, architects, Hartshead, Sheffield.

HILL END.—June 25.—For the erection of additional works at the Herefordshire County lunatic asylum at Hill end, near St. Albans. Deposit 2*l.* Mr. George T. Hine, 35 Parliament Street, Westminster.

ILFORD.—June 25.—For the erection of a public library and hall, &c., at the junction of Kingswood Road and High road, Seven Kings. Deposit 5*l.* 5*s.* Mr. Herbert Shaw, engineer and surveyor to the Council, Town Hall, Ilford, Essex.

ISLEWORTH.—June 11.—For the carrying-out of certain work at Grosvenor House and Dundee House, Mill Plat. Mr. William Stephens, clerk, Union Offices, Isleworth, W.

KEIGHLEY.—June 4.—For the erection of a laundry off West Lane. Messrs. John Haggas & Sons, architects, North street, Keighley.

LONDON.—June 3.—For taking-down the existing walls and fences on the north side of Angel Road and re-erecting and extending same; also for the erection of a public sanitary convenience (excluding sanitary fittings and plumbingwork), and an electric-light sub-station to be erected adjacent thereto, for the North Metropolitan Electric Power Supply Company, and situate at the western end of Angel Road, adjoining Fore Street, Edmonton, N., for the Edmonton Urban District Council. Mr. G. Eedes Eachus, engineer, Town Hall, Lower Edmonton.

LONDON.—June 4.—For the construction of an engine-shed and other works at Banbury, for the Great Western Railway Company. The New Works Engineer at Paddington station, London.

LONDON.—June 4.—For structural and other alterations to the kitchen, dining-hall and other parts of the workhouse, Waterloo Road, Victoria Park, N.E. Deposit 5*l.* Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—June 4.—For repairing, cleaning and painting a portion of the roof and offices, &c., of Paddington station, W., for the Great Western Railway Company. The Engineer, Paddington Station.

LONDON.—June 11.—For the supply and erection of an above-ground convenience at Church End, Willesden, N.W. Deposit 10*l.* Mr. O. Claude Robson, Public Offices, Dyne Road, Kilburn, N.W.

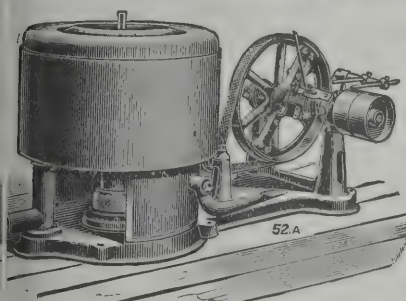
LONDON.—June 11.—For the erection of an extension to the Council electricity works, High Street, Mortlake, S.W. Deposit 1*l.* 1*s.* Mr. G. B. Tones, A.M.I.C.E., The Council House, Mortlake, S.W.

LONDON.—June 19.—For alterations at their workhouse and infirmary in Harrow Road, W., for the Paddington Board of Guardians. Deposit 5*l.* 5*s.* Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

LOWESTOFT.—June 5.—For the erection of Sunday schools in Crown Street. Deposit 1*l.* Mr. R. Scott Cockrill, architect, Crossley House, London Road, Lowestoft.

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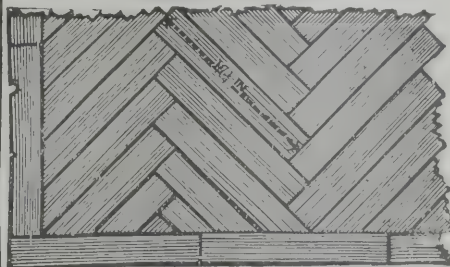


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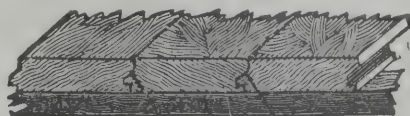
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MATLOCK.—June 1.—For the supply and erection of retort-house and coal-store roofs, with retort-bench iron-work; also for supply of material and building retort-bench with four through arches, and two settings of eight retorts each with regenerative furnaces, at the works, Matlock, for the Gas Co. Mr. Thomas Brown, engineer and manager, Gasworks, Matlock.

NARBOROUGH.—June 12.—For the erection and completion of an isolation hospital at the new asylum at Narborough, near Leicester. Deposit 2*l.* 2*s.* Messrs. Everard Son & Pick, architects, 6 Millstone Lane, Leicester.

NORTH SHIELDS.—June 3.—For proposed R.C. school. Deposit 2*l.* 2*s.* Messrs. Henry Gibson & P. J. Steinlet, architects.

PADSTOW.—June 6.—For building three dwelling-houses. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

RUNCORN.—June 11.—For proposed Council school, Balfour Road. Deposit 2*l.* 2*s.* Mr. John Lightburn, clerk to the sub-committee, Education Offices, Town Hall, Runcorn.

ST. AUSTELL.—June 3.—For alterations and additions to cloak-room, to be carried out during the summer holidays, at the St. Austell Central Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

ST. CLEMENT.—June 3.—For the erection of a residence at St. Clement, near Truro. Mr. Leonard Winn, architect and surveyor, 27 Boscawen Street, Truro.

ST. ERVAN.—July 5.—For the erection of a Wesleyan chapel at St. Ervan Village, St. Issey, R.S.O., near Padstow, Cornwall. Mr. W. T. Martyn Mear, architect and surveyor, Rock, Wadebridge.

ST. HELENS.—June 19.—For the erection of schools in College Street, St. Helens, Lancs. Deposit 1*l.* 1*s.* Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

ST. MEWAN.—June 3.—For erecting cloak-room during the summer holidays at the St. Mewan Council school,

Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

SCOTLAND.—June 3.—For the mason, carpenter, slater, plaster, plumber, painter, glazier and ironworks of post office to be erected in Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Fraserburgh.

SCOTLAND.—June 7.—For alterations and improvements, including sanitary work, at the Kirkpatrick-Fleming combination poorhouse, Ecclefechan. Send names to Messrs. Oliver & Dodgshun, architects, Carlisle, stating trades.

SCOTLAND.—June 12.—For the mason, carpenter, slater, plumber, plasterer, painter and glazier's work of dwelling-houses to be erected in King Edward Street, Fraserburgh. Mr. W. S. F. Wilson, architect, Broad Street, Fraserburgh.

SILSDEN.—June 1.—For erecting premises on a site at Keighley Road, Silsden, Yorks. Send names to Architect, Co-operative Wholesale Society, 1 Balloon Street, Manchester.

SOUTHEND-ON-SEA.—June 6.—For the erection of additional wards at the Rochford workhouse. Deposit 1*l.* 1*s.* Messrs. Greenhaigh & Brockbank, architects, Southend. Tenders to be delivered by June 17 to Frederick Gregson, clerk to the Guardians, Southend-on-Sea.

STAINLAND.—June 8.—For the erection of a fireproof mill at Dog Lane mills, Stainland, Yorks. Messrs. Chas. F. Horsfall & Son, architects, Lord Street Chambers, Halifax.

STOW-ON-THE-WOLD.—June 11.—For the erection of lavatories, &c., and the redrainage of the workhouse buildings. Messrs. Chatters & Smithson, architects, Regent Street, Cheltenham.

STRETTFORD.—June 4.—For the extension of a public elementary school at Henshaw Street. Deposit 2*l.* 2*s.* Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

STROOD.—June 19.—For alterations to the girls and infants' departments of the Strood Church of England school, Kent. Deposit 10*s.* 6*d.* Mr. Apsley Kennette, correspondent, Guildhall, Rochester.

WALES.—June 4.—For the erection of a cottage at Brynwgwynon level crossing, near Pencoed, South Wales. The Great Western Co.'s engineer, Newport Station.

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WALES.—June 8.—For the erection of a general accident and surgical hospital at Wyndham Street, Barry. Deposit 2s. Mr. J. C. Pardoe, surveyor, 160 Holton Road, Barry.

WALES.—June 10.—For the erection of county court offices at Pentre, Rhondda Valley. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—June 10.—For the erection of 54 dwellings on the Capel Estate, Tonyrefail. Mr. Rhys S. Griffiths, architect, Tonypandy, Rhondda.

WALES.—June 13.—For taking-down and rebuilding the Cross Keys hotel at Dunraven Street, Tonapandy. Deposit 1s. 2s. Mr. James T. Jenkins, architect and surveyor, North, Rhondda.

WARRINGTON.—June 6.—For the erection of a greenhouse in Bank Park, and also for supply and fixing of a tank with a capacity of 1,000 gallons at the baths, Legh Street. Borough Surveyor, Town Hall.

WEST HAM.—June 17.—For the cleansing, repair and painting of schools to be executed during the summer vacation. Deposit 1s. Send names by June 8 to Mr. William Jacques, A.R.I.B.A., architect to the education committee, Fen Court, Fenchurch Street, E.C.

WHITBY.—June 6.—For the erection of cloak-rooms for boys and girls' departments at St. John's schools. Mr. Edward H. Smales, architect, 5 Flowergate, Whitby.

WHITEHAVEN.—June 17.—For the erection and completion of a mixed secondary school. Deposit 2s. 2s. Messrs. Grayson & Ould, architects, 31 James Street, Liverpool.

WHITEHAVEN.—June 5.—For alterations to premises in Lowther Street. Mr. A. Huddart, architect, 9 Lowther Street, Whitehaven.

WILMCOTE.—June 4.—For the erection of station buildings at Wilmcote, Warwickshire. The Engineer to the Great Western Railway, Paddington Station, London.

WORKINGTON.—June 3.—For joiner, plasterer, painter and plumber's work in connection with the completion of buildings in William Street. Mr. P. McC. Eden, architect and surveyor, 58 Pow Street, Workington.

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ABINGDON.

For the erection of wing at Culham Diocesan Training college. Mr. J. G. T. WEST, architect, Abingdon.

Smallbone	£1,465	0	0
Brasher	1,420	0	0
Thatcher	1,319	0	0
Organ Bros.	1,280	0	0
Kingerlee & Sons	1,267	0	0
BUCKLE, Abingdon (accepted)	1,245	0	0

For the erection of shop and premises in Stert Street. Mr. J. G. T. WEST, architect, Abingdon.

Barratt	£1,206	0	0
Thatcher	1,197	0	0
Organ Bros.	1,095	0	0
Wooldridge	1,086	0	0
Kingerlee & Sons	1,084	0	0
Cox	1,077	0	0
Ricketts	1,030	0	0
Buckle	954	0	0
Randall	950	0	0
WHEELER, Abingdon (accepted)	900	0	0

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For extensions of the infirmary to form out-patients' department. Mr. EDWIN SEWARD, architect, Cardiff.

Shepton & Son	£10,130	0	0
Couzins & Son	9,650	0	0
Bond	9,600	0	0
Hallett	9,500	0	0
Williams	9,500	0	0
King & Son	9,226	0	0
Gough Bros.	9,150	0	0
Beames	9,030	0	0
Davis & Son	8,990	0	0
Knox & Wells	8,989	0	0
Evans Bros.	8,895	0	0
Small	8,850	0	0
Davies	8,772	0	0
Allan & Son	8,770	0	0
THOMAS & SON, Cardiff (accepted)	8,483	0	0

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Baughen Bros.	2,242	10	0
F. & G. Foster	2,181	0	0
Baughen	2,164	0	0
Williams	2,079	0	0
Worboys	1,977	0	0
Pearson & Son	1,969	12	0
Fitch & Cox	1,937	0	0
SHARPE, Barnet (accepted)	1,875	0	0

CHARD.

For the erection of ten cottages, Perry Street. Messrs.

SYMES & MADGE, architects, Chard.

Munford	£2,921	6	6
Perkins	2,571	0	0
Hallet	2,534	18	6
Relleen & Griffiths	2,299	0	0
Spiller & Son	2,280	0	0
Bazley & Smith	2,250	0	0
Bishop & Son	2,215	14	6
Harris & Woolcott	2,211	18	0
Bryer, jun.	2,170	0	0
PARSONS BROS. & DUNSTER, Chard (accepted)	2,111	0	0

CONGLETON.

For the erection of an infectious diseases hospital at West Heath. Messrs. ALFRED PRICE & SON, architects, Elworth, Sandbach.

Pickstock & Royle	£8,196	0	0
Stringer	7,960	0	0
Jackson	7,667	16	0
Matthews	7,498	0	0
W. Worrall	7,250	0	0
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T. & E. Cooke	6,976	0	0
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DEVONPORT.

For the erection of ward block at the infectious diseases hospital. Mr. J. F. BURNS, borough surveyor. Quantities by Mr. S. W. HAUGHTON, Plymouth.

Hoskin	£1,704	2	2
Pethick Bros.	1,697	10	0
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Knox & Sons, plumber	246	0	0
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Coombes	693	12	0
Parsons Bros. & Dunster	637	10	0
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POOLE, Ilminster (accepted)	537	0	0

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Lane	£5,850	0	0
Loasby & Salmon	5,050	0	0
Parmenter	4,815	0	0
F. & G. Foster	4,566	0	0
Page & Son	4,548	0	0
Webster & Son	4,425	0	0
Lonsdale	4,394	0	0
Lowe	4,383	0	0
Moss & Co.	4,365	0	0
Podger & Sons	4,350	0	0
Tong	4,325	0	0
Leng	4,324	0	0
Andrews	4,300	0	0
Pollock	4,250	0	0
Blay	4,217	0	0
Knight	4,200	0	0
Crossley & Son	4,170	0	0
Everitt	4,145	0	0
Gunning & Sons	4,135	0	0
Davison	4,122	0	0
Seager	4,104	0	0
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Hyde & Co.	4,063	0	0
Wallis & Sons, Ltd.	4,038	0	0
Cook & Sons	3,965	0	0
SKINNER, Chatham (accepted)	3,822	0	0

HULL.

For alterations and additions to the Williamson Street school. Mr. JOSEPH H. HIRST, city architect.

Jackson & Sons	£4,469	7	0
Arnott	4,345	13	0
Hull General Builders	4,312	2	3
Panton	4,300	0	0
Houlton & Sons	4,240	0	0
Singleton	4,170	0	0
GOATES, Hull (accepted)	4,125	0	0

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Strode & Co.	197	0	0
Pullan	195	0	0
Gifkins & Co.	179	5	0
Weston & Sons	179	0	0
Tilley Bros.	165	0	0
Golding	159	18	0
Miskin & Rice	159	0	0
Soloveitchik	140	0	0
Ashmore & Co.	120	0	0
Fryer & Co. (recommended)	119	0	0

For foundations and builders' work in connection with installation of generating plant, for the Hackney Borough Council. Mr. H. MAIR, borough surveyor.

Pedrette	£2,380	0	0
Silk & Son	2,333	0	0
F. & T. Thorne	2,150	0	0
Barrett & Power	2,100	12	3
Neil & Co.	2,098	10	0
Shurmer & Sons	2,097	0	0
Ewart	2,025	10	8
Hood	1,997	0	0
Weibking & Co.	1,989	14	2
Coles	1,920	0	0
J. & C. Bowyer, Upper Norwood, S.E. (recommended)	1,796	0	0
Abbott & Charlton	1,641	6	4
Abbott, Heinrich & Co.	1,629	13	11

For additions to U. M. F. church, Field Road, Forest Gate, E Messrs. GEO. BAINES & SON, architects, 5 Clement's Inn Strand, W.C.

Wordley	£1,465	8	10
Carter	1,438	0	0
North	1,386	0	0
Hosking	1,329	0	0
Sands & Burley	1,250	0	0
BATTLEY, SONS & HOLNESS (accepted)	1,192	0	0

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LONDON—continued.

For works at Victoria chapel (U. M. F. church), Westminster,
S.W. Messrs. G. BAINES & SON, architects, Clement's
Inn.

Decoration and repairs.

Clarke	£429	10	0
Battley, Son & Holness	383	0	0
Sands & Burley	339	10	0
ROBERTS (accepted)	323	10	0

Heating.

WONTNER SMITH, GRAY & Co. (accepted)	98	15	0
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For the erection of dwellings in Brantome Place, for St.
Pancras Borough Council. Messrs. JOSEPH & SMITHEM,
architects, 83 Queen Street, Cheapside, E.C.

Appleby & Sons	£20,653	0	0
Waring White Co.	20,456	0	0
Johnson & Son	20,365	0	0
Foster & Dicksee	20,200	0	0
Parnell & Sons	19,927	0	0
Watson	19,900	0	0
Smith & Sons	19,777	0	0
Harris & Wardrop	19,563	0	0
Thompson Bros.	19,400	0	0
Todd & Newman	19,271	0	0
Moss & Co.	19,197	8	0
Coxhead	19,022	0	0
Patman & Fotheringham	19,000	0	0
F. & T. Thorne	18,987	0	0
McCormick & Sons	18,957	0	0
F. & G. Foster	18,912	0	0
Perry & Co.	18,842	0	0
Godson & Son	18,797	0	0
Johnson & Co.	18,760	0	0
F. & H. F. Higgs	18,542	0	0
Wallis & Sons	18,540	0	0
Nightingale	18,496	0	0
Lawrence & Son	18,484	0	0
Pattinson & Sons	18,443	0	0
Wall & Co.	18,313	0	0
Spencer, Santo & Co.	18,284	0	0
F. & E. Davey	18,222	0	0

LONDON—continued.

Killby & Gayford, Ltd.	£17,927	0	0
Bailey & Fry	17,838	0	0
Moss & Sons	17,580	0	0
Clayton	17,570	0	0
Holloway, Deptford, S.E. (recommended)	17,479	0	0
Coles	17,466	17	6
Guttridge	16,990	0	0

Artificial stonework.

The Empire Stone Co., Ltd.	1,868	18	3
Bickley (recommended)	1,776	16	0
Tatham & Co.	1,690	0	0
Lascelles & Co.	1,689	0	0

Ironwork.

Macfarlane	967	0	0
King	679	8	0
The Falkirk Iron Co.	659	10	11
Yates, Haywood & Co.	656	11	0
Hawkins & Baxter (recommended)	545	0	0

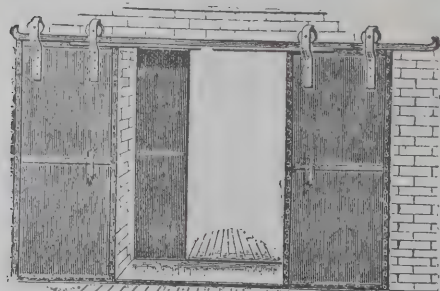
For alterations and improvements at 37 Beech Street, Bar-
bican. Messrs. JOSEPH & SMITHEM, architects.

Mason & Co.	£1,415	0	0
Sabey	1,229	0	0
Harrison & Spooner	1,134	0	0
Senecal & Co.	1,090	0	0
LASCELLES & Co. (accepted)	1,027	0	0

For the erection of hall at the Tooting Home.

Jewell	£3,116	0	0
Page & Co.	3,050	0	0
Hallett	3,049	0	0
Martin, Wells & Co.	2,995	0	0
Higgs & Hill	2,984	0	0
Myall & Upson	2,980	0	0
Patman & Fotheringham	2,973	0	0
Drake	2,967	0	0
Minter	2,963	0	0
Chadwell Heath Joinery Co.	2,950	0	0
Smith & Son	2,945	0	0
Lawrence & Son	2,944	0	0
Lawrance & Sons	2,040	0	0
Holloway	2,860	0	0

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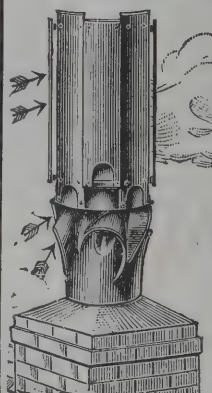
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LONDON—continued.

Higgs	£2,859	0	0
Nightingale	2,859	0	0
Hollingsworth	2,849	0	0
Courtney & Fairbairn	2,847	0	0
Cropley Bros.	2,847	0	0
Tucker	2,828	0	0
Eaton	2,828	0	0
Streather	2,804	0	0
Lamplough	2,781	0	0
Leather	2,772	0	0
Foster	2,762	0	0
Johnson & Co.	2,760	0	0
Wallis & Sons	2,734	0	0
Moss & Co.	2,725	0	0
Cook & Sons	2,712	0	0
Garrett & Son	2,696	0	0
Barker & Co.	2,687	0	0
Spencer-Santo	2,685	0	0
Pasterfield & English	2,599	0	0
Wall	2,590	0	0
Hyde & Co.	2,570	0	0
FITCH & Cox, Enfield (accepted)	2,514	0	0

For alterations and erecting new billiard saloon at the Freemasons' Tavern, Victoria Dock Road, Custom House, E., for Miss M. C. Osborne. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E. Quantities by Mr. W. T. W. CASTELL, 31 Great St. Helens, E.C.

Harris & Wardrop	£1,637	0	0
Symes	1,595	0	0
Steadman & Co.	1,565	0	0
Sheffield Bros.	1,464	0	0
Maddison	1,458	0	0

For rebuilding 85 Hatton Garden. Messrs. JOSEPH & SMITHEM, architects.

Patman & Fotheringham	£2,600	0	0
Senecal & Co.	2,565	0	0
Hudson Bros.	2,549	0	0
Shepherd	2,487	0	0
SMITH (accepted)	2,433	0	0

MANCHESTER.

For foundation of sorting-offices, Newton Street.

Peters & Sons	£1,956	0	0
Morton	1,488	0	0
Marr & Son	1,390	0	0
Storrs, Sons & Co.	1,329	0	0
Neill & Sons	1,168	0	0
Brown & Sons	1,167	0	0
NUTTALL & Co. (accepted)	1,054	1	7

NEW BARNET.

For the erection of New Barnet telephone exchange, for H.M. Office of Works.

Jarman, Daws & Co.	£3,887	0	0
Spencer, Santo & Co.	3,757	0	0
Galbraith Bros.	3,750	0	0
F. & A. Willmott	3,607	0	0
Christie	3,597	0	0
Butcher	3,588	0	0
F. & H. F. Higgs	3,540	0	0
Parker & Son	3,507	0	0
Irwin	3,365	0	0
Patman & Fotheringham, Ltd.	3,273	0	0
Hyde & Co.	3,155	0	0
Behrend	3,136	0	0
F. & G. Foster	3,042	0	0
Edwards & Medway	2,989	0	0

PORTHCAWL.

For the erection of a new Council school at Porthcawl, for the Glamorgan education committee. Mr. D. PUGH-JONES, county architect (East division), Cardiff.

SHAIL, Llandaff (accepted) £3,158 10 8

THORNBURY.

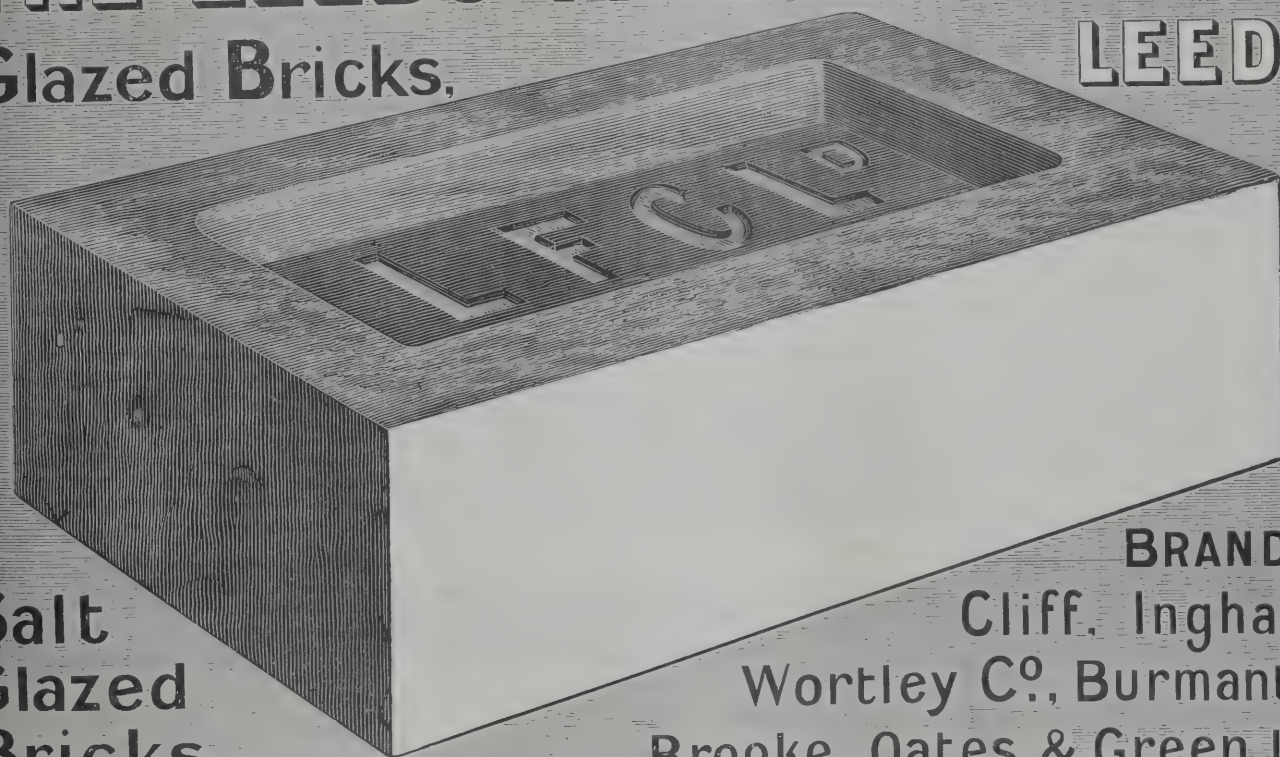
For the erection of works for Shackletons Tube Co. Mr. E. H. PARKINSON, architect, Bradford.

Accepted tenders.

Normington & Proctor, excavator, mason and bricklayer	£469	0	0
Taylor, carpenter and joiner	369	0	0
Collinson & Lord, plumber and glazier	146	1	7
Nelson, slater	60	0	0
Bolton & Son, plasterer	22	0	0
Farrer, painter	6	18	0

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WAKEFIELD.

For the erection of 189 six-roomed dwelling-houses at Hemsworth collieries. Messrs. GARSIDE & PENNINGTON, architects, Pontefract and Castleford.

Mellor	£41,692	0	0
Bramham & Sons	41,669	0	0
Hanley	41,595	0	0
Denholme & Co.	41,404	0	0
Pullan	41,296	0	0
Walker & Roe	40,866	0	0
Thorpe & Beddard	40,000	0	0
Gallagher Bros.	39,527	0	0
Bagnall Bros.	39,406	0	0
F. H. & I. W. Moore	39,205	0	0
Charters	36,888	15	0
Meanley	36,249	9	0
RHODES, Skinner Lane, Leeds (accepted)	36,024	0	0

WARWICK.

For the erection and completion of two houses in Cape Road, Warwick. Mr. C. M. C. ARMSTRONG, architect, Warwick.

J. Cashmore	£1,600	0	0
J. H. Cashmore	1,519	18	11
Moss & Co.	1,490	0	0
Smith & Sons	1,440	0	0
Bowen	1,397	0	0
Sheasty & Hobbiss	1,368	17	8
Kelly & Son	1,311	17	0
BAILEY, Leamington (provisionally accepted)	1,276	0	0

WOLVERHAMPTON.

For extension of electric-lighting station. Mr. GEORGE GREEN, borough engineer.

Smith	£4,069	10	0
T. & G. Perry	3,285	15	0
Jones	2,987	0	0
T. & S. Ham	2,980	0	0
Willcock & Co.	2,965	0	0
Cave & Son	2,933	0	0
GOUGH & SON (accepted)	2,900	0	0

WEYMOUTH.

For the erection of bakery and stabling, Dorchester Road. Mr. S. JACKSON, architect, Weymouth.

Selby	£472	0	0
Jetsy & Baker	465	0	0
Colborne	425	11	8
Long	420	0	0
WILLS, Weymouth (accepted)	385	0	0

UPMINSTER, Essex, is a quaint old-world village situated about 15 miles from the City of London, with a first-rate train service by the London, Tilbury and Southend Railway. Messrs. W. P. Griggs & Co., Ltd., builders, of Ilford, are laying out a large estate in this beautiful locality, and as fast as they can erect the houses they are being sold. No doubt the two principal reasons for this success will be the fact that each house has a frontage of from 40 feet to 80 feet and a depth of 250 feet to 300 feet. The cost of a freehold house is from about 600*l.* to 1,050*l.*, and this ideal spot is situated within 35 minutes of the Metropolis. An excellent description of Upminster appeared in the *Building Trade* of Wednesday, May 22.

THE Court of Common Council have given instructions for the taking of returns as to the pedestrian and vehicular traffic over the site of the proposed station at Lothbury, also as to the use of the subways in front of the Mansion House, at a cost of 75*l.*, in connection with the Corporation's opposition to the Great Northern Railway and City Railway Bill in Parliament.

THE *Daily Telegraph* is officially informed that the contract for the new Admiralty buildings at Spring Gardens has been let, and that building operations will be commenced immediately the preliminaries of signing the contract have been settled. The total cost of the new buildings will be 130,000*l.* The contract for its construction was let in two parts—that for the foundations at a cost of under 30,000*l.*, and that for the superstructure in Portland stone at between 95,000*l.* and 100,000*l.* Messrs. Mowlem & Son, the Westminster contractors, obtained the contract for the foundations, and it is understood that the same firm will now complete the superstructure.

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Section Books & Stock Lists on Application

ILLUSTRATIONS.

CATHEDRAL SERIES.—CARLISLE: VIEW FROM SOUTH TRANSEPT, SHOWING NORMAN ARCH.

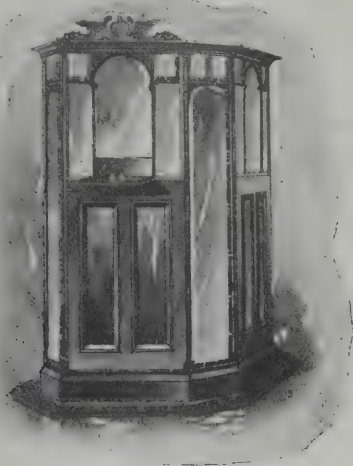
NEW THEATRE, CARDIFF.—EXTERIOR—AUDITORIUM.

WOOLWICH HIPPODROME.

COTTAGES, ROBERTSBIDGE, SUSSEX.

TRADE NOTES.

MESSRS. PARNALL & SONS, LTD., shop-fitters, of London and Bristol, send us a very chaste design of a cash office, of which they are making a specialty. The design can be



varied to harmonise with the interior fittings of the shop, and is suitable for drapers, chemists, and any other retail trades.

WE are informed that Mr. W. A. Osborne, who has represented Mr. Joseph F. Ebner for the past twenty-three years, has resigned, and is commencing business on his own account.

THE Heston schools, Hounslow, have been ventilated on the "Boyle" natural system, under the direction of Mr. Lancelot Lang, architect, Hounslow.

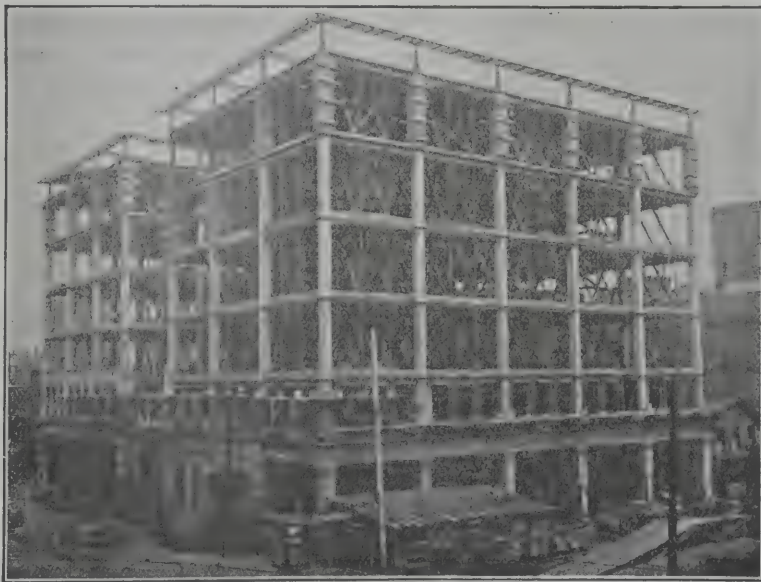
THE Matterdale new schools are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

THE firm of McTear & Co., of Belfast, have long held a reputation for their iron roofs. Mr. Alexander Burns, who was manager of that department during several years, has commenced business in Belfast under the title of the Rex Roofing Co. Besides roofing, the erection of shedding and workshops complete will also be undertaken. All who know Mr. Burns will wish him success in a business in which he ranks as a specialist.

WE have received a communication from Ellkay & Cornes, Ltd., informing us that Mr. James Cornes has now no interest in the management of that company, and that by an agreement which has been entered into his connection has entirely ceased. The company are supplying a combination range, copper and bath called the "Lanco," which, it is claimed, is an improvement on the combination previously supplied, and is the result of exceptional and practical experience in the needs of artisans' dwellings, miners' cottages, bungalows, &c. The company's title is to be changed to "Ellkay & Co., Ltd." The registered office will still be Bath House, Holborn Viaduct, but increased accommodation has been taken for London stock, general office, warehouse and show-rooms, where samples of their specialties may be seen, of which notice will shortly be given.

THE Duke of Norfolk last week presented Mr. J. G. Russell, who for a period of fifteen years and nine months has been manager of the works at the castle, with a silver bowl of antique design. Mr. Russell is leaving owing to the completion of the work. At one time there were 350 men under him, and for a number of years over 250 men were regularly employed.

KAHN SYSTEM REINFORCED CONCRETE



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VARIETIES.

MESSRS. WESTINGHOUSE & Co. have obtained the contract for the construction of an electric tramway system for Genoa. The contract is worth about 3,000,000 dols.

THE Model Cottage exhibition which was to have been opened in July at Newcastle-on-Tyne has been postponed until May 1908.

THE Littlehampton Urban District Council on Tuesday adopted a new scheme presented by Mr. Barrett, the engineer, for the drainage of Wick and a portion of Littlehampton, which is estimated to cost 16,000*l*.

THE extension of the G.P.O., Cardiff, overlooking Park Street, will take about nine months; the cost will be over 20,000*l*. The contract has been given to Messrs. Wm. King & Son, of Vauxhall Bridge Road, Westminster.

MAJOR J. STEWART, Local Government Board inspector, held an inquiry at Redditch, on Tuesday, into an application by the Redditch District Council for sanction for a new loan of 7,500*l*.—4,000*l*. for electricity undertaking extension, and 3,500*l*. for the provision of a refuse destructor in Summer Street.

THE Mysore Government, observing that no definite system is at present followed by the several municipal boards in the State in the matter of the preparation of estimates for municipal works and their execution, have caused to be issued definite instructions in the matter, with a view to remedy this defect and insure uniformity of practice in all municipal towns.

THE Board of Education have issued a list of the first circulating collection of water-colour paintings of the British school, which will be useful to authorities who desire to utilise the boon, which is easily obtained. There are 264 drawings, ranging from an example by Francis Barlow, who died in 1702, to one by William Simpson, who died in 1899. In fact, the progress of the art is fully exemplified. There are four drawings by Turner, three by Copley Fielding, two by David Cox, three by Samuel Prout. Architecture is well represented, for there are drawings by John Buckler, the Pugins, W. W. Deane, Louis Haghe, David Roberts and others.

THE Local Government Board have sanctioned the borrowing by the St. Helens Corporation of 48,000*l*. in connection with the Parr and Sutton intercepting sewer, and also 750*l*., the amount overspent on the Robins Lane sewer. At last week's meeting of the health committee, the borough surveyor was instructed to go over the levels again of the proposed Sutton sewer, and to prepare specifications for the tenders.

THE Glasgow Corporation have agreed "that it be remitted to a committee to consider and report as to the expediency of promoting legislation whereby lands and heritages, or any part or parts thereof, required for street and other improvements, can be compulsorily acquired on fair and equitable terms, and by a less cumbersome and costly process than that which prevails under the existing statutory law."

IN connection with the "City Beautiful Conference" to be held shortly in Liverpool three prizes have been offered by Mr. Meade-King, of the value of 5*l*., 2*l*. and 1*l*. respectively, for the three most beautiful private house fronts in Liverpool; and also three similar prizes for the three most beautiful shop or business fronts, consideration being given mainly to what the competitor has himself done to beautify the premises.

ON the application of Sir Augustus Webster, tenant for life of the Battle Abbey estate, Mr. Justice Neville, in the Chancery Division, has sanctioned a proposed agreement with a syndicate to bore the estate for the purpose of ascertaining whether the shale recently discovered there is in paying quantities. If so, a company will be formed with a capital of 40,000*l*. to work the shale and any oil, natural gas and minerals discovered. The agreement provides for the payment of certain rents, royalties and a percentage of the profits to the lessor.

THE Glasgow Corporation having remitted to the sanitary inspector, the gas engineer and the Corporation chemist to report regarding the effect on the atmosphere of the more general use in dwelling-houses of gas stoves for cooking purposes, have agreed that two houses in the Improvement Trust property in High Street be taken for a period of six months, at a rent of 9*l*. each, for the purpose of conducting experiments.

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THE new Wesleyan church at Pirton, near Hitchin, was opened on Wednesday, May 29, by Mrs. Smart, of Stevenage, and the Rev. Albert Clayton, the president of the conference, preached the dedicatory sermon. A public meeting was held in the evening, the chair being taken by Mr. Percy Blundell, of Luton. The building consists of a church 43 feet long by 27 feet wide, seating 220 adults, or about 256 in a mixed congregation. The church has three arches at pulpit end on columns, the central arch opening into the choir with a handsome traceried window in gable, and the two side arches opening into two vestries, which are shut off from the church and choir by swivel partitions, but can be thrown into it for extra accommodation when required. The seating and roof timbers are of pitch pine. Separate porches lead to the vestries. A bold narthex projects in front of church with wide doors, and a five-light traceried window in gable above, flanked by two bold angle buttresses. Low-pressure hot-water heating and ventilation on modern principles are provided. The church stands on an open site, well set back from and raised above the road, showing the building to advantage. The exterior is faced with red bricks, with sand-faced terra-cotta dressings, lead lights with rich-coloured glass in the windows. The works have been carried out under contract at 97½ per cent. from the design and under the superintendence of Messrs. George Baines & Son, architects, 5 Clement's Inn, Strand, London.

NEW CATALOGUE.

ELEGANCE is the principal characteristic of the examples of fibrous plaster decoration and of work in other materials found in the catalogue of Messrs. H. E. Gaze, Ltd. The treatment is sufficient to explain why the firm has contributed to the decoration of so many important buildings. We doubt whether any French firm could surpass some of the modelling in caryatides, plaques, trophies, which are shown. The ceiling mouldings and cornices by themselves would impart distinction to a room, and the friezes are no less effective. Good taste prevails throughout the designs, and therefore all of them can be adopted by architects for modern Renaissance buildings. New works have been erected for the firm to which architects can have access for

examining decoration in progress, and especially when their own designs are being carried out.

A TEST ON A REINFORCED CONCRETE FLOOR.

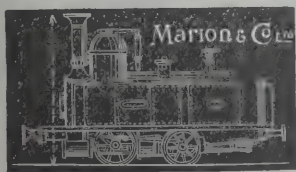
AN interesting and satisfactory loading test was carried out on a vacant site in Walworth on Tuesday, May 14, for the purpose of proving to the satisfaction of Mr. Arthur C. Blomfield, M.A., F.R.I.B.A., architect to the Governors of the Bank of England, the efficiency of reinforced concrete floors constructed on the Kahn system. The test was conducted in the presence of Messrs. William Dunn, F.R.I.B.A.; J. Rutherford, architect, H.M. Office of Works; P. H. Johnson, A.M.I.C.E., of the Midland Railway; C. J. South, A.M.I.C.E., of the Great Western Railway; Benjamin Hannen, and representatives of the Associated Portland Cement Manufacturers, in addition to Mr. Blomfield.

The test floor was constructed in accordance with the working drawing reproduced. It will be seen that the floor slab was supported by main beams and a wall, and in the centre by a subsidiary beam 15 feet 9 inches span, 12 inches wide by 20 inches deep, reinforced with two 1½-inch Kahn trussed bars. It was this subsidiary beam which was really under test, and its allowable deflection was specified not to exceed $\frac{1}{100}$ of the span, i.e. $\frac{1}{100} \times 189 = \frac{1}{10}$ inch, with a load of 450 lbs. per foot super. The decking slab was 5 inches thick, reinforced with ½-inch Kahn trussed bars spaced 12 inches centre to centre.

As regards the materials used, the aggregates consisted of crushed Thames ballast and sand, while the cement was "Ferrocrete." Two parts of the ballast were mixed with one of sand, and five parts of the final mixture were mixed with one of cement, so that the proportions of the concrete were 3½ ballast 1½ sand to 1 of cement. The age of the floor at the time of the test was 67 days. The reinforcement throughout consisted of Kahn trussed bars.

The load was applied by means of bricks piled upon an area measuring 15 feet 9 inches by 13 feet = 204½ square feet. The deflection was taken at two points, namely, one at the centre of the subsidiary beam in the centre of the floor slab and the other at the centre of the end main beam. These two deflectometers consisted of levers which, in

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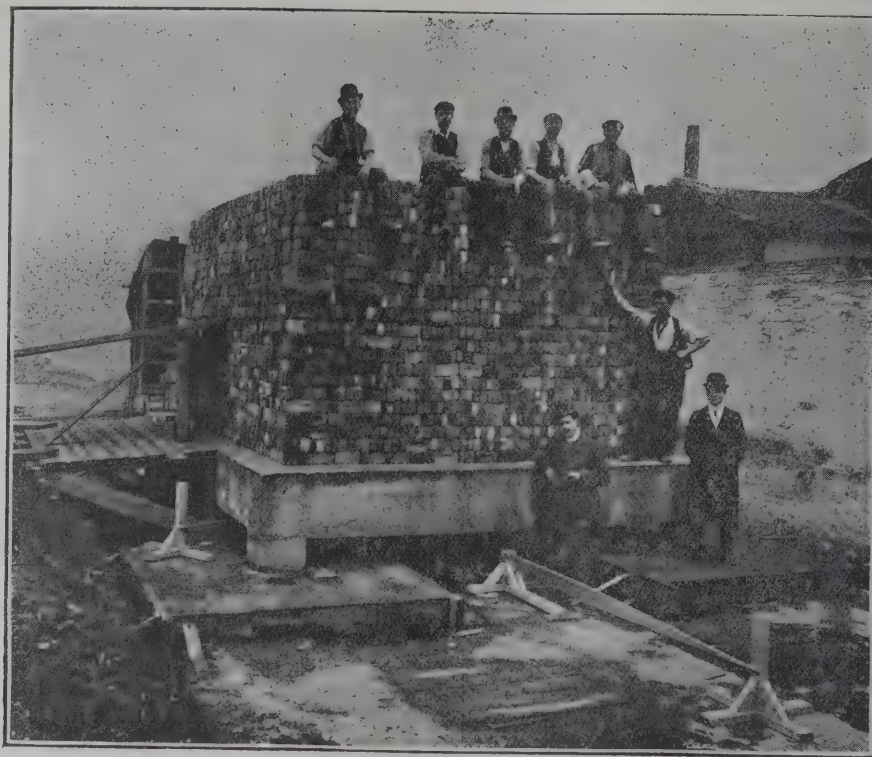
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recording, multiplied by ten the actual deflections of the beams. The deflection of the subsidiary beam was obtained by deducting from that registered by its deflector the amount of the deflection shown by the deflector under the main beam. The arrangement of the test

no deflection in the secondary beam. Eventually a load of 125,290 lbs. was evenly distributed over the area, giving a load of 612 lbs. per foot super. The deflection was ascertained to be $\frac{1}{8}$ -inch. As the clear span of the beam was 15 feet 9 inches = 189 inches, the deflection was therefore



and the position of the deflection-registering instruments are shown in the general photographic view.

The slab was first loaded with 300 lbs. per square foot, for which it was designed. This load produced practically

$\frac{1}{8} \times 189 = 18.125$ part of the span. As stated above, the allowable deflection under the load of 450 lbs. per foot super was $\frac{1}{8}$ of the span, so that the floor made a good showing.

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ALTHOUGH trestles are largely used to support drawing-boards, there can be no doubt about their inconvenience. Offices, especially in London, are usually limited in area, and a pair of trestles, when not in use, occupy too large a share of it. Then in many houses floors are not perfectly horizontal, and it is not easy to have the steadiness that is desirable when drawing. The Alliance folding drawing-stand, which has been introduced by Mr. W. H. Harling,

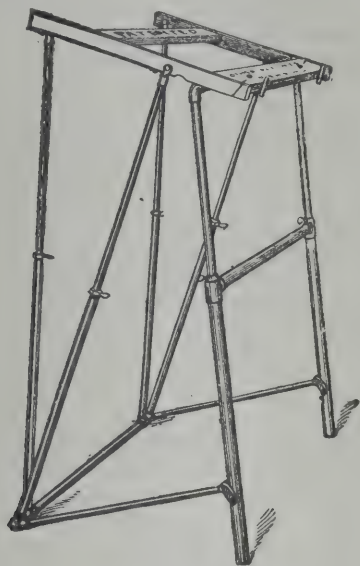


FIG. 1.

completely surmounts all the inconvenience which is inevitable with wooden trestles. In the first place, it is a complete stand which can, if desired, be used as a trestle. It can therefore be employed by photographers as well as draughtsmen. As the supports are adjustable, a camera or a drawing-board will be as steadily supported on uneven ground or on an inclined floor as in cases where the ground or floor is perfectly horizontal. As all the supporting parts

are made of metal, only a minimum amount of space is required. When out of use the stand can be folded, and then the depth is only 3 inches. Fig. 1, having a top $19\frac{1}{2}$ inches by $20\frac{1}{2}$ inches, is adapted to hold imperial drawing-boards; while Fig. 2, having a top of $21\frac{1}{2}$ inches by $26\frac{1}{2}$ inches, will carry double-elephant drawing-boards, and is therefore suitable for general use in the offices of architects and engineers. The two sizes are always kept in stock, but larger sizes can be obtained on order. The

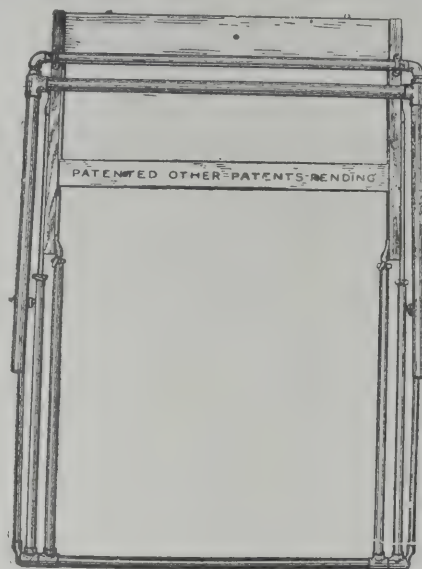
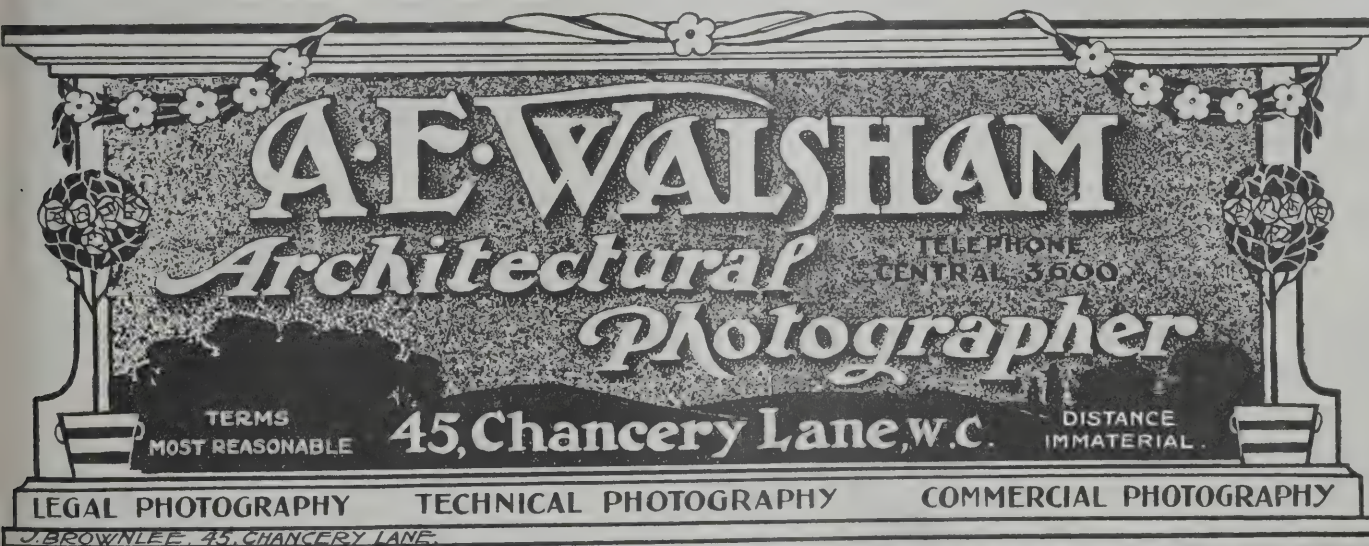


FIG. 2.

stand is $29\frac{1}{2}$ inches in height, but it can be raised to 4 feet or 4 feet 8 inches without any loss of rigidity. The drawing-board can be fixed either horizontal or inclined, as desired. The new stand will be found a capital substitute for the cumbersome wooden trestles; and as there can be no warping of material it will always remain in its normal state. It will be found an acquisition in all offices whether large or small.



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HOUSING PROBLEM IN GERMANY.

ALTHOUGH during the past year no laws were passed in Germany which could be said to have solved the difficult problem of hygienic house accommodation, still earnest endeavours were made through the so-called "kleinen mittel" (petty measures) at least to palliate the evil. Among these "petty measures" are reckoned all administrative decrees issued with a view to the improvement of dwellings (more especially for the poorer classes) without any radical interference on the part of Parliamentary legislation. First and foremost must be mentioned the activity of the Government authorities and municipal corporations for the purpose of providing suitable dwellings for their officials.

Besides the Imperial Home Office (Reichsamt des Innern) the Imperial Postal Administration also has for some time past devoted its attention to the question of dwelling accommodation. At first dwellings were provided for subordinate officials in small country towns and at remote railway

stations. In the year 1902, however, the matter of house accommodation in urban districts was placed in the hands of the General Post Office, and since then no less than 300,000*l.* have been expended by this department in buying dwelling-houses or renting apartments. For this sum were purchased 515 houses—in about 700 places or localities—comprising 1,365 family tenements or flats and 93 rooms for unmarried officials, and 215 houses were rented with 545 family tenements and 67 apartments for unmarried officials. These houses, chiefly situated in East Germany, resemble in size and general appointments healthy workmen's dwellings and with each "wohnung" or family tenement in rural districts is included a piece of arable land.

By a law promulgated on July 16, 1906, the Prussian State granted the sum of 750,000*l.* for improving the housing accommodation of its subordinate officials and employes, 3,700,000*l.* having previously been expended for the same purpose. Five-sevenths of this amount has been appropriated for railway employes (two-thirds served for the erection of fiscal buildings), whilst the remainder was applied for the benefit of officials in other Government departments. With the money hitherto expended for this purpose by the Prussian Government some 20,000 sets of apartments have been provided, so that the Government contribution for each dwelling amounts to about 185*l.* The 750,000*l.* recently granted will, in all probability, suffice to procure another 4,000 dwellings or flats. It may here be mentioned that in consequence of the steady rise in house rents that part of the salary of Prussian sub-officials which represents the Government allowance for rent was last year increased by 50 per cent.

Next to the Imperial Government and the Government of Prussia, the kingdom of Bavaria has been foremost in providing dwelling accommodation for officials. It has been at pains not only to provide healthy accommodation for officials, but also to grant loans at low rates of interest to the Government officials' building societies, and upwards of 175,000*l.* were devoted to this purpose in the course of the last few years.

The second of the "petty measures" consists in supporting the so-called workmen's building societies, comprising persons of limited income irrespective of calling or profession. These organisations, being formed on the

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principle of self-help and having purely benevolent aims, are all flourishing, chiefly as a result of the great assistance accorded them by the Federal Governments and municipal authorities in the shape of cheap credit and low-priced building sites. At the present time more than 700 mutual benefit building societies, with about 120,000 members, are carrying on their work for the public welfare. Latterly the State insurance institutes (Landes-Versicherungs-Anstalten) have rendered them special pecuniary assistance.

Considerable progress has also been made with regard to the official inspection of dwellings. In Bavaria and Hesse a chief inspector of dwellings was last year appointed in addition to the already existing local inspectors; his duties are to instruct and advise the latter and to assist the building societies as far as possible, and, being also in the service of the Federal Ministries of the Interior, this official will form a permanent link between the Government and the housing commissioners.

In Rhenish-Prussia, too, the communal authorities are actively engaged in promoting the effective inspection of dwellings, the town of Essen—which has become so well-known through the great Krupp works and which contains upwards of 231,000 inhabitants—being particularly active in combating the existing hygienic and moral evils by means of dwelling-house inspection.

WORKMEN'S COMPENSATION ACT, 1906.

THE committee of the Berkshire County Council report that they have considered the Workmen's Compensation Act, 1906, and its application to the staff of the Council's highways and bridges department. They are advised that with the exception of the county surveyor, who being a person employed otherwise than by manual labour whose remuneration exceeds 250*l.* a year is outside the scope of the Act, the whole of the staff, including those employed in the office as well as those working on the roads, will come within the definition of "workmen," and be entitled in certain events to compensation under the Act; and that the definition of the word "employer" includes a County Council, the exercise of their powers and duties being treated by the Act as their "trade or business." It appears

also, though the point is open to some doubt, that in certain cases workmen in the employ of contractors with the Council for haulage or bridgework or similar purposes might be entitled to claim compensation in the first instance from the Council, the Council being entitled to be indemnified by the contractors. The amount of compensation might in certain events amount to 300*l.* in case of death or in case of incapacity for work to a weekly payment of 1*l.* a week during incapacity, and the latter liability, if not redeemed, might continue for life. The liabilities of the Council will therefore be considerable, and the committee advise that an assurance be effected against all liabilities, whether arising under the present Act, the Employers' Liability Act or at Common Law. As the Act will come into operation on July 1 next, and the insurance companies have only recently settled their forms of policy and rates of premiums, the committee ask for authority to select an insurance company and to take the necessary steps to effect the policy.

THE GERMAN CEMENT TRADE.

THE struggle last year in overcoming the period of depression was more protracted and severe in the cement trade than in nearly all other branches of German industry. Unhindered over-production and ruinous competition had affected the trade to such an extent that it began to recover gradually only after the majority of other industries had already for some time enjoyed the benefit of the general economic improvement. This recovery was accelerated by the boom in the building trade, and plentiful orders for large quantities of cement from various foreign countries, and, as a result, most of the works succeeded in increasing their sales during the year under review. Owing to the growing activity in the building line, which was not disturbed by lock-outs, as in the previous year, both the demand at home and the exportation to foreign countries—which was particularly large to San Francisco and Valparaiso—attained considerable dimensions. The active exportation had, moreover, the effect of diminishing the competition of the works on the home market; those in West and Central Germany endeavoured to lessen competition by mutual price conventions, and the

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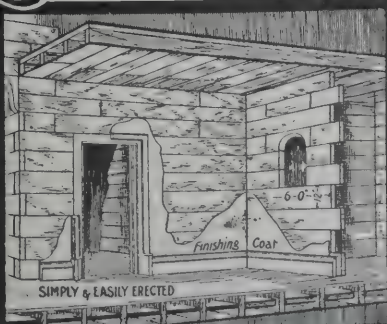
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Rhenish-Westphalian Syndicate actually succeeded in raising the price of cement from 17*l.* 10*s.* to 20*l.* and 20*l.* 3*s.* per double truck. Nevertheless, the prevailing conditions of competition gave rise to many complaints; on the one hand, the swelling of the ranks of producers by the continual establishment of independent new cement works naturally still more handicapped the syndicates which, by reason of their numbers alone, are already much restricted in their efficiency; whilst, on the other hand, Belgium in the West and Austria-Hungary and Russia in the East dump their produce over the unprotected customs frontiers into Germany. The position of the works in Upper Silesia became particularly unfavourable. Since the commercial treaties accorded all most-favoured-nation countries exemption from duty for cement, these works had to suffer most acutely by reason of the competition of the extremely efficient Austrian concerns, which are united in a powerful cartel. This cartel and one of the Austrian factories near the frontier could only be met by the Upper Silesian works paying them a considerable indemnity, and also by the latter undertaking to diminish their exports to Austria-Hungary. Russia also threatened to compete with the East German works. Protected by Customs rates, which much impaired the importation of German cement, the Russian works were active in their endeavours to dispose of their produce in Germany. The fact that competition from this quarter did not become more formidable was only due to the internal political disturbances, which naturally much impeded the efficiency of the Russian cement industry.

DRAINAGE OF PRETORIA.

In the report of the Pretoria Sewage Disposal Commission which has just been issued, it is stated that at present Pretoria has no sewerage system. The Town Council proposed to sewer the town, to conduct the sewage by gravitation through Daspoort, to treat it in septic tanks and filters, and to discharge the effluent from the filters into the Aapies river or to apply it to irrigation. The objections brought against the scheme were as follows:—That the treatment of sewage at the site proposed will cause annoy-

ance to neighbouring residents; that to turn the effluent into the Aapies will constitute a danger or an offence, or both, to residents lower down the river; that the proposed storm overflow will contaminate the river with crude sewage; that the erection of the proposed works will depreciate the value of adjacent property; that the Council can only justify establishing sewage works on this site against the will of the owner and of the neighbours by showing that no other site is practicable, and that they have failed to show this; that it is in any case unnecessary to expropriate so large an area.

The Commission then state:—Apart from the objections, we see no reason to doubt the general propriety of the scheme. No one has denied that a sewerage scheme of some kind is necessary, and bacterial treatment is a recognised method of dealing with the problem. The real question is as to the validity of the objections.

The conclusions of the Commission are as follows:—The scheme will probably be the cause of occasional annoyance to persons residing in the immediate neighbourhood of the site. The effluent will not appreciably injure the river. The storm overflow at Daspoort is unnecessary and should be abolished. The erection of the proposed works will substantially depreciate the value of adjacent property. The Council have failed to satisfy us that the location site will not meet all reasonable requirements. It is not strictly necessary to expropriate so much ground, but it is desirable, as much in the interests of the objectors as in those of the Council. In conclusion, the Commission state that they could not recommend His Excellency the Governor to sanction the proposed scheme.

AS AMERICANS SEE US.

THE deputy-consul of the United States at Birmingham, Mr. Ernest Harker, reports that continuous building operations in the district create a market for large quantities of construction materials.

For the fiscal year 1905-6 there were erected in Birmingham 1,180 houses and shops, 44 factories, 18 business premises, 6 churches and schools, 177 miscellaneous buildings, while 212 buildings were altered or enlarged. The

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city has 540,000 inhabitants and is still growing. Coventry, a neighbouring city, is also expanding, due to the rapid growth of the motor-car industry.

The total value of sawn, split, planed or dressed wood imported into the United Kingdom during the calendar year 1906 amounted in value to 90,195,507 dols., against 74,241,522 dols. the year previous. The receipts from Russia increased from 24,150,454 dols. to 29,069,064 dols.; from Sweden, 16,751,597 dols. to 19,481,926 dols.; from Canada, 15,901,340 dols. to 20,382,780 dols.; and from the United States, 8,241,642 dols. to 9,976,160 dols. The major part of this wood was for building purposes. There seems to be no reason why American lumbermen should not be shipping more well-seasoned wood in the form of floor joists, boarding for floors, beams and rafters for roofs, mouldings for window and door frames, matched boards for lining, doors, &c.

Considerable timber in the hewn state is also imported, the values in 1906 having been 18,009,500 dols. of hewn fir, oak and teak wood, and 13,202,834 of pit props or pit wood. The United States leads in the supply of the former, furnishing 4,260,752 dols. worth last year. The Vice-Consul forwards a manufacturer's wholesale selling price list of building hardware, which is available to the American trade at the Bureau of Manufactures.

The Consul, Mr. Albert Halstead, of Birmingham, suggests:—

"With proper cultivation of the British field the American proportion of wood and timber imports can be increased. Freight from the United States is necessarily a most important item, but if the slower vessels, including those of the tramp order, were used, American wood and timber should be able to compete on practically equal terms with that from Russia and Canada, though Scandinavian timber must always have a decided advantage.

"Only seasoned timber should be shipped, because this is a very damp climate, and wood that is not properly seasoned very often swells and gets out of shape. Lumbermen who would sell timber profitably in the United Kingdom must be prepared to keep large stocks on hand, that they may be able to fill orders without delay. A seaport should be selected for lumber storage purposes, so that by sea or rail other ports and the interior can be easily reached

and orders filled promptly. The time required to deliver lumber from the United States upon receipt of an order from the United Kingdom is too great to obtain all the possible trade in lumber, unless large stocks are kept here. At the same time lumber merchants must be prepared to give long credits and adapt themselves fully to British commercial conditions. Nor can they expect satisfactory results if they attempt to sell by the correspondence method. They must have agents or representatives on the ground.

"As to what is called in England 'builders' ironmongery,' it is imperative that such materials should be kept on hand in the United Kingdom at some central point, so that orders can be received and goods delivered promptly, because merchants who deal in hardware—and this really applies to all kinds of merchants in the United Kingdom—do not carry large stocks, but order as needed. They expect manufacturers or factors to be ready to supply them promptly."

BUSINESS IN CHICAGO.

ACCORDING to the report of Mr. Consul Finn on the trade of the Chicago district, one of the curious phases of the present prosperity of the United States is the number of vacancies in the public service—federal, State and municipal—and the few persons offering themselves for examination for these posts. These vacancies are caused by so many of the clever men who have held these positions having been induced to leave them by the much larger salaries offered them by the important firms with which they come in contact, salaries which they can never get from Government; on the other hand, a considerable number of men of ability enter the public service in the hopes of, in time, getting one of those good mercantile posts. The dearth, however, of applicants recently caused the postponement of examinations advertised to be held in Chicago for posts with salaries from 200*l.* a year upwards. He continues:—I have no means of knowing what British money is being invested in here, but from inquiries as to companies of all kinds in which people have put their money, and who later on write to the Consulate for information as to their investments, I know that much money is invested in wildcat schemes, often by people who

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can ill afford to lose it. Safe investments can be obtained here which will return from $4\frac{1}{2}$ per cent. to 6 per cent., but after that every increase in percentage promised means increased risk.

A demand for many British goods could be created by proper advertising. In 1906 His Majesty's Government sanctioned my devoting a part of the Consulate to exhibiting samples of goods, photographs, catalogues, &c., but the British merchant has been slow to take advantage of my proposal. Barbadoes, however, has sent samples of different products, and a number of inquiries about quantities available and prices have been made by local merchants with a view to business.

Such a sample-room or permanent exhibition of British manufactures, not heavy machinery or such articles, could, I am positive, prove of great benefit, but it must have the support of the British manufacturer who will keep his show of examples up to date. This plan of bringing and keeping the manufactures of a country before the public is being very strongly advocated by the United States consuls as the best way to bring the goods of their country before the public of other lands, and in several places in the United States European countries have some association of commercial agents who exhibit samples with good results. The British merchant is holding his own in this market as compared with other countries, but could do better if he would only adapt himself to the methods in vogue here, and to do this he must advertise, and for some articles he could, through an agent here, do a large mail order business. This idea has been brought before more than one British manufacturer but without success. The American manufacturer advertises all through the British empire, while European houses practically leave the United States alone.

The future of Chicago as the centre of the iron and steel industry would seem to be assured with the commencement of the building of the works of the United States Steel Corporation in Gary, Indiana, only a few miles from Chicago.

It is estimated that 1,500,000 tons of rails were rolled for Western railroads, more than half of which had to be brought from the Eastern States, but the new works will have capacity to supply this amount annually, and as half or more of the bars, structural shapes and plates used in

the West also have to be ordered and rolled further East the economy of having the new plant can be easily realised, while the erection of another plant is under consideration at or near Duluth, close to the mines.

During the year two blast furnaces, with an annual capacity of 300,000 tons, were completed; seven with a capacity of 1,100,000 tons were commenced, and seven with the same capacity are projected. Four of these are under construction and four projected at Gary. Eight 50-ton open-hearth furnaces, seven at South Chicago, with a capacity of 210,000 tons, were completed, while twenty-eight 60-ton furnaces are building at Gary, three 50-ton ones close by; twenty-eight more 60-ton ones are to be built during the year at Gary.

The United States Steel Corporation now produces about 75 per cent. of the output of this district, and when their projected schemes are completed will have 85 per cent., while next year the plant at Gary, which is termed "The Indiana Steel Company," should be able to turn out 1,500,000 tons.

They are also building rail mills at Gary with a monthly capacity of 75,000 tons, and at Chicago with 7,500 tons. Plate mills at Gary, monthly capacity 25,000 tons; and at South Chicago 7,500 tons. Steel bar mills at Gary, four mills, 14 inches, 12 inches, 10 inches and 8 inches respectively, with a monthly capacity of 30,000 tons; a track bolt plant at Jonet, Illinois, with an annual capacity of 240,000 kegs, and a pace bar plant of 120,000 tons. Cooling beds are being built at Milwaukee with sheer tables and blooming, slabbing and billet mills at Gary. The International Harvester Company and the Inland Steel Company at Indiana Harbour are each building bar mills of 6,250 tons monthly capacity, while the American Rolling Mills Company is putting up mills to roll iron bars with 4,000 tons capacity.

The great development of the year has been the increase in use or construction of open-hearth furnaces, twenty-one having been completed with an annual capacity of 873,000 tons, forty-seven under construction estimated at 2,189,360 tons, and those interested have decided to build seventy-six more with an output of 4,500,000 tons in the near future, while only one important addition of a Bessemer plant with an output of 300,000 tons has been made in Ohio.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800l. All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ALFRISTON.—June 8.—For the erection of a public elementary school. Mr. F. J. Wood, county surveyor, County Hall, Lewes.

AYLSHAM.—June 10.—For providing and fixing a water-closet in the old men's bedroom at the workhouse, and for laying the necessary drains therefrom. Mr. Henry J. Gidney, clerk, Aylsham, Norfolk.

BLACKMINSTER.—June 10.—For the rebuilding in brickwork of Blackminster bridge, near Evesham, and the Littleton and Badsey Railway station (G. W. R.). Deposit 1l. 1s. Mr. J. H. Garrett, surveyor of county bridges, Shire Hall, Worcester.

BOSTON.—June 15.—For school coal-house to be erected at Gipsy Bridge school, near Boston, also for painting as per specification. Mr. J. H. Tooley, 6 Bridge Street, Boston, Lines.

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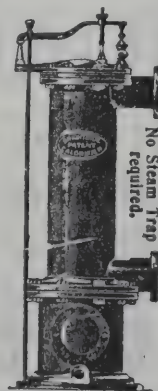
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BRISTOL.—June 14.—For the construction of the following sub-stations, for the electrical committee:—(1) Oldfield Road, Hotwells; (2) Chalks Road, St. George; (3) Cowper Street, St. George; (4) Cloud Hill, St. George. Deposit 2*l.* 2*s.* Mr. H. Faraday Proctor, city electrical engineer, City Electrical Engineer's office, Temple Back, Bristol.

BROUGHTY FERRY.—June 13.—For the erection of a post office at Broughty Ferry, Dundee. Deposit 1*l.* 1*s.* Mr. W. T. Oldrieve, H.M. Office of Works, Parliament Square, Edinburgh.

CHELMSFORD.—June 11.—For the erection of a post office at Chelmsford. Deposit 1*l.* 1*s.* The Commissioners of H.M. Works and Public Buildings, H.M. Office of Works, Storey's Gate, S.W.

CHERITON FITZPAINE.—June 14.—For the erection of farm buildings at Stockton Farm, Cheriton Fitzpaine, Devon. Messrs. Cook & Birmingham, land agents, Tiverton.

CROSBY.—June 14.—For the erection of an elementary school at Crosby, near Scunthorpe, Lincs, for the Lindsey County Council education committee. Deposit 2*l.* 2*s.* Bills of quantities and form of tender may be had on application before May 28 to Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

EAST HAM.—June 18.—For repairing, painting and sundry work at Fourth Avenue, Napier Road and Sandringham Road schools. Deposit 5*l.* Mr. R. L. Curtis, committee's architect, 11 and 12 Finsbury Square, E.C.

ENFIELD.—June 18.—For the erection of a block of schools at Eastfield Road, Enfield Highway. Deposit 3*l.* 3*s.* Applications for bills of quantities should be sent before May 31 to the architect, Mr. G. E. T. Laurence, 22 Buckingham Street, Adelphi, W.C.

FELTHAM.—June 11.—For alterations to nine classrooms at the Feltham industrial school, Middlesex, consisting of the insertion of new windows and air flues, and decorative work consequent thereon. The Architect's Department, 15 Pall Mall East, S.W.

FRESHFIELD.—For the erection of a convalescent home, Freshfield, Lancashire. Deposit 2*l.* 2*s.* The Estates Office, Birkdale

GREENSIDE.—June 18.—For the erection of a new Council school at Greenside, near Ryton. Mr. J. Morson, architect, 77 Westgate Road, Newcastle-on-Tyne.

HALIFAX.—June 17.—For the erection of a covered playshed at Siddal school. Mr. James Lord, C.E., borough engineer, Town Hall, Halifax.

HILL END.—June 25.—For the erection of additional works at the Herefordshire County lunatic asylum at Hill End, near St. Albans. Deposit 2*l.* Mr. George T. Hine, 35 Parliament Street, Westminster.

ILFORD.—June 25.—For the erection of a public library and hall, &c., at the junction of Kingswood Road and High Road, Seven Kings. Deposit 5*l.* 5*s.* Mr. Herbert Shaw, engineer and surveyor to the Council, Town Hall, Ilford, Essex.

IRELAND.—June 11.—For erecting a retaining wall at the mill race in Middleton, Armagh. Mr. H. C. Parkinson, Workhouse, Armagh.

IRELAND.—June 15.—For building a hotel in Foyle Street, Londonderry. Mr. Patrick H. Elliott, architect, Castle Street, Londonderry.

ISLEWORTH.—June 11.—For the carrying-out of certain work at Grosvenor House and Dundee House, Mill Plat. Mr. William Stephens, clerk, Union Offices, Isleworth, W.

JARROW.—June 10.—For excavating trench with wood backing and wallings to build a concrete quay wall near the ferry landing No. 1, Corporation Quay. Also for removing brick convenience and filling-up space at back of concrete wall, and making road alongside wall to quay line. Mr. J. Petree, borough surveyor, Jarrow.

LEADGATE AND WASHINGTON.—June 18.—For the erection of Council schools at Leadgate and Washington, Durham. For Leadgate school, at the office of Mr. C. T. Wilson, 21 Durham Road, Blackhill, R.S.O., Durham; for Washington school, at the office of Mr. J. W. Hanson, 79 King Street, South Shields.

LEEDS.—June 12.—For the erection of tenement dwellings. Deposit 3*l.* 3*s.* Mr. W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

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LELANT.—June 15.—For the erection of residence at Lelant, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

LEVENSCHULME.—June 11.—For the rebuilding of the Pack Horse hotel, Stockport Road, Levenschulme, Lancs. Deposit 2*l.* 2*s.* Mr. N. Hartley Hacking, architect, 50 Blackfriars, Manchester.

LITTLE HORTON.—For the various works (joiners' excepted) required in the erection of branch stores and thirteen through houses at Smiddles Lane, Little Horton, Bradford. Messrs. John Drake & Son, architects, Queensbury.

LONDON.—June 11.—For the supply and erection of an above-ground convenience at Church End, Willesden, N.W. Deposit 1*0*l.** Mr. O. Claude Robson, Public Offices, Dyne Road, Kilburn, N.W.

LONDON.—June 11.—For the erection of an extension to the Council electricity works, High Street, Mortlake, S.W. Deposit 1*l.* 1*s.* Mr. G. B. Tomes, A.M.I.C.E., The Council House, Mortlake, S.W.

LONDON.—June 19.—For alterations at their workhouse and infirmary in Harrow Road, W., for the Paddington Board of Guardians. Deposit 5*l.* 5*s.* Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

LOWESTOFT.—June 24.—For the building of retort-house and coalyard wall for the Gas and Water Company. Deposit 2*l.* 2*s.* Messrs. F. & C. Hawksley, civil engineers, 30 Great George Street, Westminster, S.W.

LUTON.—June 24.—For the extension of the electricity station buildings, for the Town Council. Deposit 2*l.* 2*s.* Mr. S. F. L. Fox, borough engineer, Town Hall, Luton.

NARBOROUGH.—June 12.—For the erection and completion of an isolation hospital at the new asylum at Narborough, near Leicester. Deposit 2*l.* 2*s.* Messrs. Everard, Son & Pick, architects, 6 Millstone Lane, Leicester.

NETTLESWORTH.—June 18.—For alterations at Nettleworth, Ford, Fulwell and Newbottle St. Matthew's Council schools, Durham. The County Education Committee's Architect, Shire Hall, Durham.

OLD TRAFFORD.—June 12.—For the erection of a public elementary school at Stretford Road, Old Trafford.

Deposit 2*l.* 2*s.* Mr. Frank Mee, architect, 32 Victoria Street, Manchester.

PONTEFRAC.—June 11.—For alterations and additions to the Central Café. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

PORTSMOUTH.—July 1.—For fitting-up and furnishing the free library at the Municipal Institute in Park Road, and the conversion, removal and refixing of various old fittings. Deposit 3*l.* 3*s.* Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea.

ST. ERVAN.—July 5.—For the erection of a Wesleyan chapel at St. Ervan Village, St. Issey, R.S.O., near Padstow, Cornwall. Mr. W. T. Martyn Mear, architect and surveyor, Rock, Wadebridge.

ST. HELENS.—June 19.—For the erection of schools in College Street, St. Helens, Lancs. Deposit 1*l.* 1*s.* Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

SCOTLAND.—June 12.—For the mason, carpenter, slater, plumber, plasterer, painter and glazier's work of dwelling-houses to be erected in King Edward Street, Fraserburgh. Mr. W. S. F. Wilson, architect, Broad Street, Fraserburgh.

SEACOMBE FERRY.—June 10.—For pointing of brickwork, repairing and renewing brickwork and slating, and generally repairing hydraulic tower, engine-house, &c., Seacombe Ferry, Cheshire. Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

SETTLE.—June 14.—For taking-down and rebuilding retaining wall at Mill Bridge, Long Preston; also work for improving corner at Town End, Wigglesworth. Mr. W. A. Stuart, highway surveyor, Town Hall, Settle.

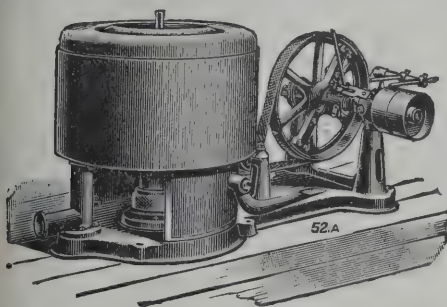
SOUTH SHIELDS.—June 17.—For the construction of conveniences, Laygate Circus. Mr. S. E. Burgess, borough engineer and surveyor, Chapter Row, South Shields.

STAINLAND.—June 8.—For the erection of a fireproof mill at Dog Lane mills, Stainland, Yorks. Messrs. Chas. F. Horsfall & Son, architects, Lord Street Chambers, Halifax.

STOCKPORT.—June 10.—For engine-house, engine-bed, economiser-setting, &c. Deposit 5*s.* Mr. E. C. Mills, engineer, 40 Victoria Buildings, Manchester.

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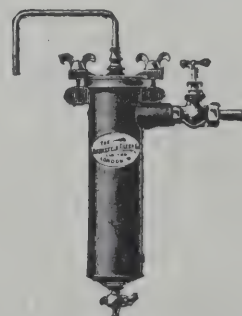
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STROOD.—June 19.—For alterations to the girls and infants' departments of the Strood Church of England school, Kent. Deposit 10s. 6d. Mr. Apsley Kennette, correspondent, Guildhall, Rochester.

SWANAGE.—June 11.—For building Swanage Wesley Centenary hall and school, Dorset. Messrs. W. T. Chinchin & Son, architects, Wimborne.

TERRINGTON ST. CLEMENT.—June 8.—For the erection of shop, with house and premises and private dwelling-house, at Terrington St. Clement, Norfolk. Deposit 2l. 2s. Messrs. Walker & Walker, architects and surveyors, Wisbech.

THORNE.—June 8.—For the erection of a Primitive Methodist church at Thorne, Yorks. Mr. W. G. Smithson, A.R.I.B.A., architect, 13 Bond Street, Leeds.

WALES.—For the erection of twenty-five cottages at Glyn Neath. Mr. Glendinning Moxham, architect, 39 Castle Street, Swansea.

WALES.—June 8.—For the erection of a general accident and surgical hospital at Wyndham Street, Barry. Deposit 2l. 2s. Mr. J. C. Pardoe, surveyor, 160 Holton Road, Barry.

WALES.—June 10.—For the erection of county court offices at Pentre, Rhondda Valley. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—June 10.—For the erection of 54 dwelling-houses on the Capel Estate, Tonyrefail. Mr. Rhys S. Griffiths, architect, Tonypandy, Rhondda.

WALES.—June 11.—For the erection of twenty-eight houses at Troedryhiw. Mr. T. Edmund Rees, architect and surveyor, Gernant, Merthyr Tydfil.

WALES.—June 12.—For the following works, for the Glamorgan County Council, viz.:—(1) Erection of a school at Pengam; (2) erection of a school at Gilfach Fargoed; (3) additions and alterations to Gendros Council school; (4) additions and alterations to Waunarlwydd Council school; (5) additions and alterations to Peniel Green Council school, Llanamlet; (6) forming playground, improving ventilation, &c., at the Maindy Council school, near Cowbridge. The Glamorgan County Offices, Westgate Street, Cardiff.

WALES.—June 12.—For building a new chancel, vestries, organ chamber, south chapel and heating chamber to the parish church of St. John, Penydarren. Deposit 2l. 2s. Mr. E. M. Bruce Vaughan, architect, Cardiff.

WALES.—June 13.—For alterations and additions to the Smiths' Arms, Aber-Bargoed. Mr. Geo. Kenshole, architect and surveyor, Station Road, Bargoed.

WALES.—June 13.—For the erection of a residence, with stables and cottage, at Creigian. Deposit 2l. 2s. Messrs. A. O. Evans, Williams & Evans, architects, Post Office Chambers, Pontypridd.

WALES.—June 13.—For taking-down and rebuilding the Cross Keys hotel at Dunraven Street, Tonapandy. Deposit 2l. 2s. Mr. James T. Jenkins, architect and surveyor, Porth, Rhondda.

WALES.—June 14.—For fireproof flooring (1,000 yards approximate), concrete staircases and iron fire-escape staircases for the Carmarthen new workhouse. Mr. Arthur I. Jones, architect, 2 Spilman Street, Carmarthen.

WALES.—June 14.—For the enlargement of Hirwain parish church. Mr. George E. Halliday, diocesan surveyor, 19 Castle Street, Cardiff.

WALES.—June 17.—For the execution of jobbingwork at their schools for ensuing twelve months, for the Ebbw Vale education committee, Mon. Deposit 10s. 6d. Mr. Henry Waters, committee's architect, Waungoch, Beaufort, or at Market Chambers, Ebbw Vale.

WALES.—June 18.—For the erection of county court offices at Swansea. Deposit 1l. 1s. H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—June 19.—For the erection of ten houses at Perth. Mr. James T. Jenkins, architect, Perth.

WALES.—June 21.—For the erection of a chapel, lecture hall, classrooms, &c., at Park Hill, Bangor. Messrs. Richard Davies & Sons, architects, Bangor.

WALNEY.—June 17.—For the whole or separate trades in new church, Walney, Barrow-in-Furness. Messrs. Austin & Paley, architects, Lancaster.

WEST HAM.—June 17.—For the cleansing, repair and painting of schools to be executed during the summer vacation. Deposit 1l. Send names by June 8 to Mr. William

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Jacques, A.R.I.B.A., architect to the education committee, 2 Fen Court, Fenchurch Street, E.C.

WHITEHAVEN.—June 17.—For the erection and completion of a mixed secondary school. Deposit 2*l.* 2*s.* Messrs. Grayson & Ould, architects, 31 James Street, Liverpool.

THE Dundee Technical Institute committee have finally approved of the plans of Mr. J. Langlands for the erection, at a cost of 45,000*l.*, of a new Technical Institute for Dundee. The style adopted is a Classic Renaissance, the façade being divided into three bays. Under the centre bay is the main entrance and vestibule, leading to the inner hall, from which runs the main stair. To the right and left of the main entrance are the library and examination hall, directors' room and offices. On the first floor are the board-room and four lecture-rooms, and the second floor is wholly occupied by the art department. The art department contains a large art hall with two painting annexes, lecture-room and classrooms for architecture, design and life classes.

DR. LYSTER, medical officer to the Handsworth Urban District Council, in his annual report upon the sanitary condition of the district states, in regard to new streets and new buildings, that during the year he reported two sites to the plans and buildings sub-committee as undesirable for building purposes, and likely to lead to bad health of the persons occupying such houses. "It is a deplorable fact," he says, "that such sites are attractive to the makers of ground rents on account of their low price, and houses that are erected on these and other sites only just fulfil the bare requirements of the local by-laws. Partly owing to the bad state of repair into which these houses rapidly fall, and partly owing to the special situation of some of such houses, there are now parts of the district rapidly degenerating into slums." Under the present systems of road and house planning and construction this is inevitable, and as a large proportion of land in Handsworth still remains unbuilt upon, the medical officer suggests that additional powers in the direction of town planning should be asked for, as well as power to restrict the number of houses per acre, and to provide for open spaces.

TENDERS.

BEDFORD.

For alterations and additions to Swan hotel. Mr. T. THURLOW, architect, High Wycombe.

Brignell	£4,900	0	0
Sims	4,500	0	0
Minter	4,381	0	0
Corby & Son	4,381	0	0
Foster	4,213	0	0
Ellis & Co.	3,827	0	0
Redding & Son	4,100	0	0
Hinkins & Sons	4,042	0	0
Warton & Dunstall	3,987	0	0
Dawes	3,827	0	0
Banyard & Son	3,775	0	0
Howard	3,700	0	0
Fitch & Cox	3,699	0	0
Tout	3,698	0	0
Gibson	3,667	0	0
Martin	3,586	10	0
HUNT & SON, High Wycombe (accepted)	3,571	0	0

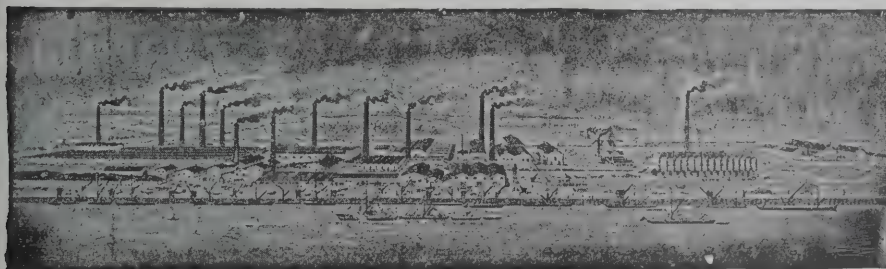
BLAKENEY.

For alterations and additions to Council school. Mr. R. S. PHILLIPS, architect, Gloucester. Quantities by Messrs. VALE & KINGSFORD, Gloucester.

Coleman	£1,913	10	0
Byard & Sons	1,850	0	0
Simmonds	1,830	0	0
Cooke	1,825	4	6
Saunders & Sons, Ltd.	1,790	15	6
Jones	1,725	0	0
Wall & Hook	1,725	0	0
Preece	1,720	0	0
Drew	1,690	0	0
Walters & Son	1,660	0	0
Orchard & Peer	1,658	10	0
Woolley & Son	1,635	0	0
Griffiths	1,626	10	0
COLLINS & GODFREY, Tewkesbury (accepted)	1,584	0	0

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CANTERBURY.

For the restoration of Holy Cross Church. Messrs. JENNINGS & GRAY, architects, Canterbury.

Wallis & Sons	£1,739	0	0
Whiting Bros.	1,590	0	0
Denne	1,580	0	0
Judges	1,575	0	0
Denne & Son	1,568	0	0
Mount	1,500	0	0
Adcock & Son	1,444	0	0
Brewster	1,388	0	0
Ingleton	1,337	0	0
BROWNING (accepted)	1,346	0	0

CHIDDINGLY.

For the erection of master's house in connection with Council school.

CRUSE, Lewes (accepted)	£410	0	0
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CHELTHENHAM.

For repairs at workhouse. Mr. THOS. MALVERN, architect, Cheltenham.

Pearce & Sons	£261	17	0
Persey & Cornock	223	15	9
Brown	209	0	0
Saunders & Sons	205	10	6
Eggleton & Co.	182	17	6
Coates	166	0	0
PARSLOW, Cheltenham (accepted)	165	12	6

COBHAM.

For the erection of two shops. Messrs. DARTNELL & BANKS, architects, Croydon.

Bacon & Son	£997	0	0
Cropley & Sons	987	0	0
Kyle	860	0	0
Skilton	838	0	0
Deacon & Son	825	0	0
Tucker	813	0	0
Baldwin	790	0	0
Gathercole Brothers	780	0	0

COLNE.

For drainage, paving, flagging, &c., of streets.

Atkinson	£1,675	10	7
Green & Sons	1,632	3	0
WARD & TETLEY, Bradford (accepted)	1,500	0	0

FORFAR.

For reconstructing the steading at North Mains farm, recently destroyed by fire.

Accepted tenders.

Morrison, joiner	£421	17	0
Adamson, mason	359	0	0
Kerr, slater	192	0	0
M'Laren & Son, plumber	83	14	6

HODDESDON.

For making-up Briscoe Road, including drain. Mr. W. H. FLOOD, surveyor, Hoddesdon.

Redhouse	£909	9	6
Cuffley	891	4	6
Rose	873	6	1
Soan	835	14	4
Randall	799	12	2
Wallace & Inns	747	7	0
Swaker	733	19	9
Brazier	725	1	7
Bell	704	0	0
Griffiths & Co.	690	13	10
Free & Sons	668	5	8
McEntee	657	16	0
Pearson, Wilson & Co.	654	0	8
Bloomfield	651	0	0
Trueman	648	5	4
Rogers & Wood	636	8	6
E. G. Porter	621	2	8
Williams	600	4	3
G. Porter	597	11	2
Tofts	596	1	2
JACKSON, Forest Gate (accepted)	586	12	0
Surveyor's estimate	635	1	8

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GREAT YARMOUTH.

For the completion of St. James's Church.	Messrs. OLLEY	
& HAWARD, architects, Great Yarmouth.		
Pestell	£3,346	0 0
Bowman & Sons	3,320	0 0
Hawes & Son	3,275	0 0
Harman	3,211	19 0
Wiseman	3,198	0 0
Bell & Sons	3,166	0 0
Moore & Sons	3,100	0 0
Redding & Sons	3,100	0 0
Eastoe	3,030	0 0
Porter	2,991	3 4
Hadingham	2,975	10 0
B. G. Beech	2,975	0 0
G. W. Beech	2,966	10 0
Carter & Wright	2,950	0 0
SPENCER, LANTS & Co., Felixstowe (accepted)	2,865	0 0

LONDON.

For alterations at St. Clement's parish hall, Fulham Palace Road, S.W.	Messrs. MONSON & SONS, architects, Acton Vale, W., and at 22 Buckingham Street, Adelphi, W.C.	
Adamson & Sons	£3,366	0 0
Patman & Fotheringham	2,821	0 0
Johnson	2,665	0 0
Christie	2,649	0 0
Howell	2,620	0 0
Bendon, Ltd.	2,505	0 0
Bulled & Co.	2,497	0 0
Blackburn	2,300	0 0
Godson & Sons	2,300	0 0
Southern Building Co.	2,175	0 0
SIMMS, Fulham, S.W. (accepted)	1,983	0 0

NANTWICH.

For the erection of chapel and schools in Broad Lane.	Mr. R. MATTHEWS, architect, Nantwich.	
Huxley	£525	0 0
Gresty	494	0 0
Manley	487	0 0
Lawton & Chesters	468	0 0
Healey	427	0 0

NANTWICH—continued.

Cox & Vaughan	£410	0 0
Harding	405	0 0
Matthews	384	0 0
Platt Bros.	375	0 0
READ, Nantwich (accepted)	372	0 0

NEWLYN.

For improvements in harbour, including wharves, sheds, retaining walls, &c.	Mr. W. T. DOUGLASS, engineer, 15 Victoria Street, Westminster, S.W.	
Knights, Hyland & Co.	£25,521	14 10
Tilbury Contracting and Dredging Co.	24,392	15 10
Playfair & Toole	22,170	4 8
Bevis	21,245	6 5
Matcham & Co.	19,756	10 4
Hobrough & Co.	18,430	7 1
Riley	18,186	14 0
Lester	18,147	0 0
Cole	17,005	18 7
Carkeek	15,989	0 0
Fasey & Son	15,319	2 10
NEAL, LTD., Plymouth (accepted)	14,924	17 4
Engineer's estimate	14,700	0 0

NORTHWOOD.

For construction of about 700 yards of 9-inch stoneware pipe sewer, with manholes, &c.	Mr. W. LOUIS CARR, surveyor.	
Free & Sons	£1,601	0 0
Neave & Nairn	1,247	0 0
Neave & Son	1,181	0 0
Pitkin	1,066	8 0
Willis & Powis	998	19 0
Bell & Sons	989	0 0
Langley & Johnson	982	13 6
Champlis	976	9 0
Swaker	961	19 10
Johnson & Langley	953	16 8
Mann	899	0 0
Lee	849	15 6
Halsey & Son	732	3 0
Hoffman	688	15 1
WATSON, jun., Southall (accepted)	625	0 0

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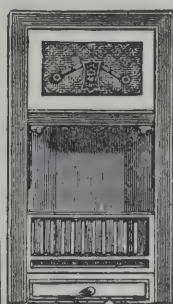
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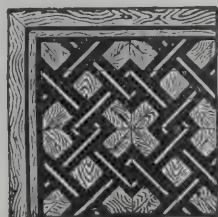
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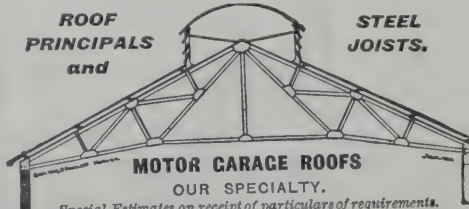
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OLDBURY.

For drainage works. Mr. JOHN T. EYRES, engineer, Birmingham.

Sutherland & Thorpe	£2,965	3	6
Boore	1,988	13	2
Riley	1,931	4	0
Macdonald	1,527	17	9
Neal, Ltd.	1,450	0	0
Johnson & Langley	1,368	11	6
HARPER, Carlton, Notts (accepted).	1,235	18	10

OYSTERMOUTH.

For street works in Victoria Avenue. Mr. W. P. PUDDICOMBE, surveyor.

Bevan	£211	1	3
Walker	200	5	0
Bennet Bros.	181	18	1
MORRIS, Mumbles (accepted)	159	19	6
Surveyor's estimate	190	0	0

SUTTON.

For cleaning and painting at the Downs school, Banstead Road, Sutton, Surrey. Mr. W. T. HATCH, engineer-in-chief.

Jones & Co.	£2,246	0	0
Richards	1,561	19	0
Southern Building Co.	1,219	0	0
Kinnaird	1,039	7	8
Vigor & Co.	989	0	0
Simms & Sons	982	0	0
Patrick	959	0	0
Wontner & Co.	887	0	0
Proctor & Son	834	9	2
M. McCarthy	768	0	0
Bostel & Sons	735	0	0
P. McCarthy	699	0	0
HUSSEY, Kensington (accepted)	690	0	0

STROOD.

For rebuilding Rochester Bridge station: WALLIS, Maidstone (accepted)

	£4,800	0	0
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UFFCULME.

For drainage works, alterations and repairs, &c., at the Council school. Mr. P. MORRIS, architect.

Spiller & Son	£624	10	0
Pullman & Son	563	18	6
Gillard & Son	550	0	0
Woodman & Son	531	0	0

UPPER WARLINGHAM.

For the erection of detached residence. Messrs. DARTNELL & BANKS, architects, Croydon.

Cheeseman	£1,480	0	0
Bacon & Son	1,393	0	0
Gathercole Bros.	1,200	0	0
Horrocks	1,195	0	0
Truett & Steel	1,105	0	0
Quittenton	1,095	0	0
Baldwin	1,046	0	0

WALTHAMSTOW.

For alterations and additions at engine-house and other works, for Metropolitan Water Board.

Abbott, Heinrich & Co.	£959	10	7
Almond & Son	895	0	0
Mattock Bros.	847	0	0
FITCH & Cox, Enfield (accepted)	799	0	0
Hyde & Co.	751	0	0

WARWICK.

For alterations and additions to Hatton House, near Warwick, for Mr. J. P. Arkwright. Mr. C. M. C. ARMSTRONG, architect, Warwick.

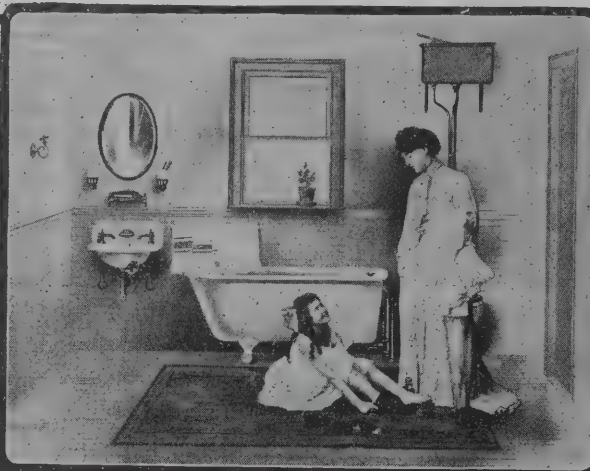
Smith & Sons	£1,815	0	0
Collins & Godfrey	1,758	0	0
PARNELL & SON, Rugby (accepted)	1,722	0	0
Broad, Ltd.	1,643	0	0

WELLINGTON.

For 900 yards of glazed pipe sewer. Mr. E. T. HOWARD, surveyor.

Sweet & Burge	£330	10	0
TWYFORD, Wellington (accepted)	327	0	0

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WEST HORSLEY.

For the erection of detached residence, Messrs. DARTNELL & BANKS, architects, Croydon.

Tucker	£1,119	0	0
Cummins & Sons	1,075	0	0
Skilton	998	0	0
Truett	995	0	0
Everitt	994	0	0
Bacon & Sons	989	0	0
Gathercole Bros.	980	0	0

WREXHAM.

For laying sewers in Bennion's Lane, Norman Road and Percy Road. Mr. JOHN ENGLAND, borough engineer.

Franklin & Co.	£182	12	0
Stephens	168	8	0
Davies Bros.	166	0	0
Harris	155	5	5
JONES, Wrexham (accepted)	153	18	3

CORRESPONDENCE.**A Folding Drawing-Stand.**

SIR,—I have to thank you for your notice of my drawing-stand on page 21 in your issue of May 31. I would, however, call your attention to the fact that by an error you omitted my address. I should therefore be glad if you would kindly insert this letter, pointing out that my address is 47 Finsbury Pavement, London, E.C., and I shall be most happy to send my list with prices to anyone who may desire to receive it on hearing from them.—Yours faithfully,

W. H. HARLING.

The National Association of Master Monumental Masons and Sculptors.

SIR,—The first general meeting of the above Association will be held at the Cannon Street Hotel, London, on Wednesday, June 12, when the election of president, vice-presidents, officers and committee will take place. Also the passing of the rules and constitution and other important business will be considered. Those wishing to join

the above or attend the meeting should communicate with the hon. secretary, Mr. William Borrowdale, New Durham Road, Sunderland, who will forward tickets of admission.—Yours faithfully,

WILLIAM BORROWDALE.

TRADE NOTES.

MESSRS. PINCHIN, JOHNSON & Co., LTD., of 23 to 25 Billiter Street, E.C., inform us that they have just signed the lease for their new premises, which are situated at 26 and 27 Bevis Marks, London, E.C., and that the name of the buildings will be Minerva House.

MESSRS. ROBERT BOYLE & SON, ventilating engineers, London and Glasgow, have supplied a number of their latest patent "air-pump" ventilators for the new White Star liner *Adriatic*, the largest vessel afloat.

New premises for the Wilts and Dorset Bank are being erected at Bridgwater. The materials being used are granite facings up to the sill level and Doulting stone from the Chelynch beds of the Ham Hill and Doulting Stone Company, Ltd. The architect is Mr. G. M. Silley, of London, and the contractor Mr. Pollard, of Bridgwater.

A PAMPHLET has been issued by the Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), on the preparation of concrete roofs for asphalte. The notes are intended to prevent the mistakes which sometimes occur, and directions are given concerning falls, gutters, chases, kerbs, &c. A similar booklet will soon be issued on the application of asphalte to damp-courses and building below ground. The directions are easily understood.

MESSRS. FARNHAM, LTD., have just completed cleaning by sand-blast the entrance to the Holborn Viaduct Hotel for Messrs. Spiers & Pond. This piece of work is particularly interesting, as it shows the excellent result of the sand-blast dry system of cleaning. The Portland stone-work, although much time-stained during the forty years which the building has stood, has been absolutely restored to its original colour, not only on the plain surfaces, but on the fine carved work and statuary. An inspection of this building will be interesting to architects, as it shows that it is possible to restore effectively the original brightness of the stone.

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NEW CATALOGUES.

THE mere fact that Messrs. E. F. Blakeley & Co. have erected big workshops for Armstrong, Whitworth & Co., Hadfield Steel Foundry Company, Vickers, Sons & Maxim, and other workers in steel is a test of excellence which the initiated will at once recognise. They have demonstrated the absurdity of the prejudice which many people have accepted as if it were an infallible truth, that Americans alone are able to construct buildings with extraordinary expedition. The numerous examples, from churches and mission halls to shipbuilding and engineering shops, are enough to suggest the facilities possessed by the firm for executing all kinds of structures. They are even able to organise so well that many stores, bungalows and sheds have been sent from Liverpool for erection by natives on the West Coast of Africa.

THE Trussed Concrete Steel Company, Ltd., have issued a pamphlet on reinforced concrete, especially in connection with the Kahn trussed bar. The illustrations of buildings in which the system has been employed are numerous. Among them are the new Scottish Provident building, the City Chambers, Leeds; Messrs. Hudson, Scott & Son's factory at Carlisle and Whitbread's brewery. As to the American buildings, they are in legions, some of them being the largest yet constructed. The company have erected not merely buildings of many sorts, but viaducts, arched bridges, retaining walls and storage tanks. Although there are obstacles at present to the general adoption of reinforced concrete, the list of works in this country in which the Kahn system is utilised is remarkable. The description of the methods employed is explicit.

THE contractors for the new Admiralty block of buildings are Messrs. Mowlem & Sons. The foundations will cost 30,000*l.*, and the building, which is to be of Portland stone, about 100,000*l.* The architect is Sir Aston Webb, R.A. The foundations were finished some time back, and the work on the superstructure will be shortly commenced.

VARIETIES.

THE applications for new "linings" brought before Glasgow Dean of Guild Court on the 30th ult. represented a total sum of 41,308*l.*, made up of small works.

A CORNER plot of land situated at the junction of Fifth Avenue and Thirty-eighth Street, New York, measuring 25 feet by 100 feet, has just been sold for the record sum of 700,000 dols.

AN institute is to be erected in connection with Christ Church, Gosport, at a cost of 2,000*l.* It will consist of a two-storeyed building containing a library and reading-room.

THE Hull Corporation have approved of the plans and estimates of the abattoirs, and will apply to the Local Government Board to borrow the sum of 44,556*l.* The local butchers have declared that if an abattoir is built they will not use it.

THE consent of the Local Government Board has been received by the Norwich Town Council for a loan of about 50,000*l.* for the new sewage disposal works at Whittingham farm, and the necessary pumping plant at Trowse station.

FROM a Parliamentary White Paper issued giving an account of the fee fund of the House of Lords during the year ended March 31 last, it appears that the fees received on private Bills during the twelve months amounted to 26,267*l.* 7*s.* 6*d.*, and on judicial proceedings 1,659*l.* 8*s.*

THE City Board of Guardians have received the plans of the new workhouse and infirmary to be erected at Homerton, previous to their being submitted to the Local Government Board for approval. The estimated cost for the main scheme is 67,691*l.*

A MEETING of ironmongers and their assistants was held last week in the municipal technical school, Suffolk Street, Birmingham, when it was unanimously decided to establish a class for ironmongers' assistants in connection with the school. The course will include instruction in arithmetic, metallurgy, drawing and workshop practice.

THE Local Government Board inquiry into the proposals of the Newport Corporation to borrow 26,000*l.* for a higher elementary school at Stow Hill, and 20,000*l.* (in addition to



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CRATHORNE HALL, YORKSHIRE.—ENTRANCE FRONT, GENERAL VIEW.

the sum of 20,000*l.* already authorised) for the erection of a technical institute, before Mr. R. H. Hooper, M.I.C.E., and Mr. T. J. Williams at Newport, has terminated.

PUBLIC works are being put down at Wishaw for the manufacture of seamless tubes on the Inshaw process. Already eight or ten acres of ground have been marked off, and the company have the option of extending the area to twenty acres. Some hundreds of men are expected to be employed in the new industry.

THE Burnley Town Council have decided, after an elaborate series of engineering reports and consideration of various suggested sites for new waterworks, to adopt the Hurstwood Valley site. It is proposed to construct a reservoir to hold 325,000,000 gallons, and Mr. Diggle, of Westminster and Heywood, the consulting engineer, estimates the cost at about 170,000*l.*

At the last meeting of the Stourbridge Board of Guardians the building committee presented a report respecting the cost of the new workhouse. The total expenditure was 102,427*l.* The loans amounted to 115,403*l.*, showing an unexpended balance of 12,975*l.* After providing for every possible contingency there would be a clear saving effected of 10,000*l.* on the loans.

A DAY SCHOOL is to be erected at Leek in connection with the Congregational church. The new school will take the place of an existing one in Union Street, and will have accommodation for 200 girls and 100 infants. The architect for the work is Mr. Reginald T. Longden, of Burslem and Leek, who is also the architect for the new Congregational church and schools at Wolstanton, Stoke-on-Trent.

For the first quarter of this year the official return shows that 293 strikes took place in Germany. The building trade was responsible for sixty-three of these, and the metal and textile industries for twenty-two each. The return shows that seventy-eight were successful, eighty compromised, and 135 failed. In regard to the lock-outs (twenty-four), ten failed, eight were successful and six were compromised.

At a meeting of the Aberdeen Town Council it was reported that the alterations carried out on the town house last year had cost 5,205*l.* Objection was taken to a proposal to give Mr. Rust, city architect, an honorarium of 250*l.*—in addition to his fee—for his services in connection with various plans prepared by him previous to a design being selected. The recommendation to give the honorarium was adopted by twenty-two votes to three.

THE last work in connection with the rebuilding of Crewe railway station was finished on Saturday, when the electrical plant in connection with the signalling was switched on. Crewe Station, which is now one of the largest in the world, has cost nearly a million pounds, and has been in course of erection twelve years. Almost everything is worked electrically.

THE contracts for the raising of the Assouan dam have been signed by the Egyptian Government. Although the level of the water will be raised by 23 feet, only very few of the sluices require alteration. The four existing locks will be rearranged, two new gates 72 feet deep supplied and a fifth lock added to the north of the present four. The contract for these alterations has been placed with Ransomes & Rapier, Ltd., who executed the original contract.

THE West Riding education committee have decided that new elementary schools are to be erected at Bentley-with-Arksey, near Doncaster, for 150 children, at an estimated cost of 1,800*l.*; Aughton (Aston-cum-Aughton), for 120 children, estimated cost, 1,440*l.*; Great Houghton, for 240 children, estimated cost 2,880*l.*; South Hiendley, for 150 children, estimated cost 1,800*l.*; and Thrybergh, for 360 children, estimated cost 4,320*l.* At Featherstone 11,845 square yards of land have been purchased for 500*l.* for a new school, and at Knottingley 6,618 square yards for 650*l.* for a similar purpose.

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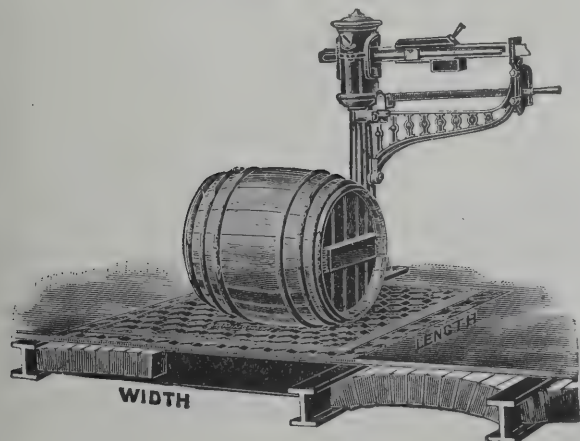
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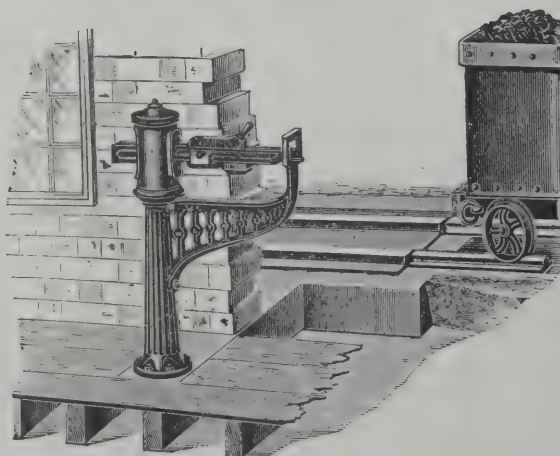
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To complete the new waterworks at Masham and the drainage and sewage-disposal works for the town, the Harrogate Corporation applied last week to the Local Government Board for sanction to a loan of 100,000*l.* for the waterworks and 36,500*l.* for the drainage scheme. Mr. E. W. Dixon, the engineer, said the excess in the estimate for the waterworks was due to circumstances over which they had no control. He denied that any new machinery had been thrown on the scrap heap.

A SPECIAL meeting of the Cardiff Mental Hospital visiting committee was held on Thursday to consider tenders for furnishing the asylum. The Local Government Board wrote stating that they could not sanction the loan of 25,000*l.* for furnishing until they had full details of the tenders accepted by the Council. The sub-committee recommended that 4,000*l.* be set aside for the farm buildings, 1,000*l.* for the piggeries, 1,000*l.* for stabling, and 2,000*l.* for the sheds for thirty cows, motor-house, &c.

At a meeting held in Glasgow last week in the office of Messrs. Ramsay & MacLeod, writers, it was unanimously resolved to form an Employers' Council, consisting of three representatives from each of the associations in Glasgow connected with the building trade, the objects of the Council being to secure united action in dealing with all matters affecting the interests of any section of the building trade. Mr. William Nicol was appointed president, and Mr. J. D. Ramsay, writer, secretary.

THE electricity committee of the Manchester Corporation have decided to ask the Council to take the necessary steps for borrowing a further sum of 112,850*l.* to meet the cost of new works during the next three years. Mr. Pearce, chief engineer, estimates that 3,250*l.* will be needed for super-heaters and other things at the Stuart Street station, 6,300*l.* for new mains, 32,000*l.* for transforming plant and switch-gear for supplying large consumers, and 14,600*l.* for additional plant at the Corporation sub-stations.

THE annual report of the medical officer for Dudley records a lower death rate than in any other year on record, and states:—The lessening of mortality in the borough had been brought about by improvement in housing and sanitary conditions. That the housing of the labouring classes had undergone great change for the better must be evident,

it is said, to anyone who made careful observation of the number of new streets, houses erected on the outskirts of the town, and the condition to-day of the slum properties in the central parts of the borough. There yet remained an enormous amount to be done before the housing could be considered entirely satisfactory, but this work was being well and thoroughly done.

THE ceremony of laying the record-stones at the Howden and Derwent reservoir of the Derwent Valley Waterworks will be performed on the 21st inst. The records will be built in the face of the dams, at about 40 feet above the level of the old river bed. The works in progress at each reservoir will be examined, and the record-stone in each dam will then be laid. It is proposed to have a short and simple ceremony in which the Bishops of Southwell and of Sheffield will take part. The temporary village for the workmen, with its population of about 900, will also, it is likely, be visited.

THE general purposes committee of Wednesbury Town Council recommend that application be made for sanction to a loan of 8,000*l.*, with a view to plant being laid down for the generation of electric current, which hitherto has been supplied in bulk to the Corporation by the Midland Power Company. The outlay for erecting new works and providing engines and other plant is estimated at 7,860*l.*, and the scheme will, it is stated, enable the mains to be extended to the King's Hill district, for which purpose it is proposed to carry the wires overhead on the tramway poles.

THE site of the Urban Housing and Rural Home-steads Exhibition, which is to be opened in July at Letchworth, now presents a field of great activity. Three sites of ground have been set apart at Letchworth for the exhibition—two for the creation of rural homesteads and small holdings buildings, and one near Letchworth station for urban cottages ranging in cost from 175*l.* to 250*l.* There will probably be some fifty houses erected of at least thirty different types. The exhibition is much more comprehensive in its scope than was the 1905 Cheap Cottages Exhibition, and, besides comprising cottages of a higher value and wider range than before, an exhibition of manufacturing implements, builders' merchants' materials, temporary buildings, &c.



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THE water committee of Aberdeen Town Council, who have before them the question of a new or additional water supply for the city, have resolved to obtain additional expert advice on the matter, and will ask Sir Alexander R. Binnie, Mr. Strahan, and Dr. Houston, the well-known bacteriologist, to furnish them with a report on the subject.

In view of the success attending the Garden City at Letchworth, Herts, a scheme is on foot for the establishment of a garden suburb at Upminster, Essex. A special feature will be the placing of shops and business premises in one particular corner of the estate, and the allocation of the remaining area to commodious detached and semi-detached residences of two or three storeys. Only four houses are being built to the acre, the frontage in each case varying from 40 feet to 80 feet, and the garden being between 250 and 300 feet in depth. The prices, for leaseholds range from about 395*l.* to 835*l.*, and moderate ground rents with freedom from tithe and land tax are asked. The prices for freeholds range from 595*l.* to 1,035*l.*

At a meeting of combined committees interested in the development of the Caledonian Canal, held in the council chamber, Inverness, it was reported on behalf of the executive that they had carefully considered the question in all its aspects and had resolved to submit the scheme provisionally arrived at by them. The leading features of it are that the approaches to the canal at both ends be improved, that the canal be deepened throughout to 26 feet, that the locks be enlarged to 600 feet long by 80 feet wide, and that Loch Oich be lowered to the level of Loch Lochy. It was agreed that Mr. D. J. Reid, C.E., Inverness, be asked to survey the ground and prepare technical and engineering information, including an estimate of the probable cost of giving effect to the committee's recommendations. It was also agreed that an engineer of first rank be engaged to support the case as prepared by Mr. Reid.

THE scheme for the additional water-supply for Kidderminster and district has now been completed, and the contractors have handed over to the Corporation the whole of the new pumping works. Messrs. Wilcox & Raikes, of Birmingham, have been the consulting engineers, and Messrs. T. Vale & Co., of Stourport, the contractors. The cost of the works has been something like 20,000*l.* It

is claimed that by the new scheme the entire district can be supplied with water at a much less cost in working expenses than by the old duplicated system, which will now be held in reserve. The new well, while not yielding as much water as was originally estimated, will yield twice as much as the district at present requires, and the engines will only be worked during the day instead, as formerly, pumping a continuous service into the reservoirs.

At the town hall, Bridlington, Mr. H. Shelford Bidwell, M.I.C.E., inquired recently on behalf of the Local Government Board into the application of the Town Council for sanction to borrow two sums—3,547*l.* and 555*l.*—for extra work in connection with the erection of the new sea wall and the Victoria Terrace footpath, immediately to the north of the Royal Prince's Parade. It was shown that the extra cost was incurred largely through springs in the foundations; drainage having to be provided along over half a mile of wall. The town clerk said the wall had been completed in October, 1906, and the Council deferred borrowing the money for which sanction was now sought, in the hope that the Local Government Board would extend the period for repayment of the whole capital expenditure of over 20,000*l.* from twenty-five years to fifty years, contending that for such a permanent structure, likely to last over a century, fifty years at least ought to have been granted. The Council hoped also that the Coast Erosion Commission would support an extension of time for the repayment of such heavy expenditure.

AN INDIAN BOND FOR BRICKWORK.

The majority of engineers and some builders frequently leave the question of bond in brickwork to the unhampered choice of the working mason. Such casual proceeding, says *Indian Engineering*, is seldom attended with any serious risk in case of walls whose thickness is the length of a single brick, for here the bricklayer will be pretty certain to adopt either the Flemish or the English bond, both of which are unobjectionable in the majority of cases, though the latter is distinctly the sounder arrangement. When, however, as is the case in the majority of works which engage an engineer's attention, the thickness much

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The above illustration shows Fire Escape Staircase recently erected at the Goyt Mill, Stockport.

exceeds that of a single brick, consequences of such neglect in detail are frequently deplorable. We have seen large masses of brickwork—notably in lock walls—consisting of nothing but headers, if we except those stretchers which appear on the exposed face of the wall and which of course occupy but a minute fraction of the wall's cross section. Such a structure, if we ignore the adhesion of the mortar, has but little more longitudinal strength than has a huge faggot of short sticks without that string which is usually provided by the woodcutter.

It is scarcely surprising therefore that the majority of such walls develop transverse cracks, even when they are exposed to nothing more in the way of bending moment than is incidental to ordinarily careless construction.

The main desiderata of a good bond are three:—(1) The bricks should overlap in each direction an aggregate extent which is approximately proportional to the bending moment or shearing stress to which the wall may be exposed in that plane; (2) the bond should not necessitate the cutting of bricks; (3) it should be applicable to walls of all thicknesses and yet sufficiently simple to be easily learnt by the ordinary bricklayer. The "Habri" bond pre-eminently satisfies all these requirements; the first two demonstrably, and, concerning the last, we have never met a mason who did not readily comprehend the system as soon as it had been illustrated in his presence by the piling of a few dry bricks.

In the Habri bond every course, in a wall of indefinite thickness, is essentially identical with every other course, and consists of a cycle of three rows of bricks—two rows of stretchers followed by one row of headers. This arrangement in each course is, however, shifted half a brick in a direction at right angles to the rows, as compared with the course upon which it rests, the direction of the shift remaining constant throughout the wall's height. When, under the above clause of this rule, a row of headers would be divided by the plane of a face of the wall, a row of half bricks is *not* inserted, but a row of stretchers substituted.

In the case of a wall half a brick thick this bond necessarily reduces—as do all other bonds—to a wall consisting of stretchers only. When the wall is one brick thick we have one course of headers only, followed by three courses of stretchers only; the arrangement being here identical

with common English bond, which is undoubtedly the soundest arrangement in a one-brick wall under ordinary circumstances.

It is, however, in walls exceeding one brick in thickness that the value of our systematic rule becomes evident. Starting from the face an arch abutment of indefinite thickness would have in its first course one row of headers followed by two rows of stretchers, and so on. The second course would show one row of stretchers followed by one row of headers and then two rows of stretchers, the last three rows being repeated indefinitely. The third course would consist of two rows of stretchers followed by one row of headers, and so on. The fourth course would have three rows of stretchers next the face followed by the usual cycle of one row of headers and two rows of stretchers. This completes the cycle of courses, the fifth course being identical with the first not only in arrangement, but also in horizontal position. In the case of a wall under a vertical load, the direction in which the half-brick step by which each course has its arrangement shifted as compared with that of its predecessor is made has no importance, though of course it should remain unaltered throughout the wall. When, however, the wall is exposed to an inclined thrust it is preferable to make the shifts as you ascend in the same direction as the thrust. Thus in an arch abutment the shifts are made from the face; in a revetment wall towards it.

The name Habri is that of a distributary channel upon which the bond was first employed some twenty years ago.

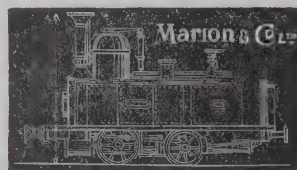
REINFORCED CONCRETE.

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economical than any system of equally substantial and durable construction. But certain precautions must be observed, or very serious accidents are certain to result from its use by inexperienced or careless men, especially by the "skin" contractor, and it may be well to mention some of the probable sources of trouble.

1. *Quality of Materials.*

When subject to inspection by competent superintendents, the cement will usually be fresh and of a reliable brand, the sand and aggregate will be free from clay and dirt, due proportions be used, and the method of mixing and tamping be reasonably efficient and uniform. Then the resulting structure can reasonably be expected to have the computed strength, which will increase for an unknown time, perhaps continually.

But many contractors prefer to believe that an addition of lime paste strengthens Portland cement, and if this were true more paste would make it still stronger, attaining a maximum strength without any cement at all. Of course, the setting is delayed, but this is of less consequence in walls, where most of the contractor's experience has been gained. Owners of proposed structures know very little concerning the relative strengths of various brands of cement, and they are likely to consent to the substitution of an inferior grade, if the contractor offers a small discount on the cost of the work.

The aggregate also varies considerably, as crushed soft sandstone is sometimes supplied instead of hard limestone or granite. The contractor is also inclined to suggest coal cinders as much cheaper and just as good, while cinder concrete is entirely unfit for structural members, being only suitable for use as a mere filling.

2. *Workmanship.*

The wooden forms require to be true and to retain their shapes without deflection or bulging when the concrete is tamped in place. Concrete should always be mixed in a suitable machine, for the hand process is very uncertain, even when done under careful supervision. It must be tamped carefully and uniformly without displacing any part of the steel reinforcement, and this work must be done by experienced men, not by common labourers employed by chance.

3. *Setting.*

Since the wooden moulds are expensive and the owner desires the completion of the building at the earliest moment possible, there is always a temptation to remove the moulds too quickly in order to use them for a higher part of the structure. This should never be done, for it probably causes most of the serious accidents and sometimes the destruction of buildings, as frequently reported in the newspapers. Cracks are also likely to occur in the exposed surfaces of beams and floor-slabs, thus seriously weakening those members.

4. *Protection from Concentrated Loads.*

During the construction of a building the materials for the upper storeys or the roof are frequently piled up in masses on the floors already built. This is perhaps safe while the forms are in place, since these are usually strongly shored and supported. But after these are removed, such concentrated loads generally cause a permanent deflection and may rupture the floor. The average labourer or mechanic regards a floor as similar to a solid ledge of natural rock, perfectly able to support any load that may be piled on it. Here, then, is a great risk to concrete structures unless very carefully superintended.

5. *Use of Steel Columns Enclosed in Concrete.*

Although buildings consisting of several storeys have been successfully built, in which the supporting piers or columns are of concrete reinforced by steel rods and bonds only sufficient to prevent bending out of verticality it is evident that for higher structures, or those exposed to heavy floor loads, the column loads should be borne by a steel column to which the floor beams are properly connected, and not be supported merely by a stiffened concrete pier. This is especially true in case the piers are exposed to side pressures or jolts or moving loads are carried on the floors.

6. *Fireproof Interiors.*

Interiors should be made fireproof. Reinforced concrete is merely incombustible, not fireproof, like terra-cotta or bricks. It is calcined to a considerable depth by exposure to great heat and is liable to be washed off by a stream of water, possibly exposing the steel to heat and certainly

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requiring extensive repairs. Therefore, as careful precautions should be taken as in case of a steel frame fireproofed building to avoid wood finish, wooden partitions, wooden furniture and accumulations of books and papers, which would supply materials for destructive fire. Wire-glass, metal sash and metal-covered doors would also be excellent.

It is probable that these precautions are often impossible, and that a chief reliance must be placed on prompt extinguishment of any local fire before it has time to spread through the building.

7. Precautions against Frost.

Construction should not continue during freezing weather, and all completed work not fully set should be thoroughly protected from frost. The average contractor usually argues that a "frozen set" for plastering or mortar is even better than one without freezing. But this is certainly doubtful, unproven and to be avoided always. His argument merely tends to extend the season for his building operations, and is therefore open to suspicion, especially since the experience of every architect reminds him of serious damages to his buildings by frost. Freezing certainly is likely to make the concrete less compact, cause cracks and retard setting. The use of salt, hot water, heated sand and aggregate are merely palliatives to soothe the conscience of the superintendent. This danger will be most likely to occur in northern cities, where the building season is too short for the amount of work to be done, and owners and contractors are willing to take almost any risk in order to complete the building and make it produce revenue at the earliest date.

These suggested dangers in the use of reinforced concrete show, in my opinion, that the use of this material should only be permitted under the direct supervision of a competent engineer or architect, and never be left to the mercies of an inexperienced contractor, who sometimes regards a structure as safe if it does not fall before his pay is received. Yet the chief danger would come from a failure to observe all of the preceding precautions rather than through dishonesty in materials or workmanship.

With proper care in execution this material is certain to be widely employed for many kinds of structures, will be

reasonably resistant to fire, and its strength will increase for a long time. It will doubtless take the place of wood construction for all the more important or expensive buildings, except tall fireproof office buildings and department stores. For these the loss of time in erection and the loss of rental would more than exhaust any saving in the cost of construction, not to mention the probable higher rate of insurance on the building and its contents.

In computing the safe strength of any proposed reinforced-concrete structure, the designer should be very conservative in applying formulas and data based on experiments made at testing-stations, where all precautions are observed and the work is done by experts in a manner far superior to that possible in actual structures.

Reinforced concrete was invented in 1868 in France by Joseph Monier, a gardener, being first utilised by him in building a greenhouse. Its use extended very slowly, so that the material has been largely employed in France and Germany only during the past fifteen years for all classes of buildings, even for those of monumental character, covered by large domes and vaults. Few accidents have occurred, as the properties of the material have been carefully determined by experiments made by the most famous investigators in Germany and France, and the governments have made and strictly enforced stringent rules for the execution of the work. *Béton und Eisen*, a monthly journal of the most scientific character, contains numerous examples of recent structures, calculations of their safe strength and discussions of all matters of interest.

To indicate the very careful regulations for reinforced-concrete construction, it may be of interest to quote a few points from the general order issued by the Prussian Minister of Public Works in 1904:—

"Complete drawings, calculations and specifications must be submitted in order to obtain a permit to build.

"Only Portland cement of the Prussian standard is allowed.

"Sample blocks must be tested.

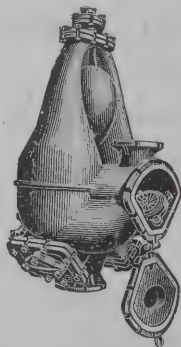
"No concrete to be made in freezing weather, and concrete must be protected from frost.

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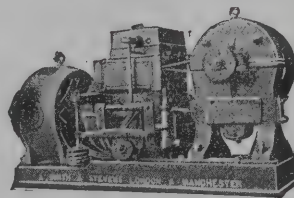
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A Prussian building ordinance is made to be obeyed strictly, not suspended at the request of an alderman or the order of a city council. It is evident that it would be almost impossible for a dangerous accident to occur in Prussia, and at this new material may safely be used there. There could be a State building law in Illinois requiring the minimum precautions necessary for safe building. Until such a law exists and is enforced reinforced-concrete construction should be executed only by competent engineers and architects. If left to the ordinary contractor serious accidents will certainly occur, casting undeserved odium on a very useful and promising method of construction.

Mr. F. Oswald, of this committee, reports that he has completed the Madison county almshouse, consisting of concrete basement and two storeys of brick; floors, steel beams and reinforced concrete, iron stairs, the latter item increasing the cost of wooden stairs about 40 per cent. The floors are finished with a 3/4-inch coat of Portland cement and crushed granite screenings, half-and-half, excluding the use of wooden floor for sanitary reasons and fire protection. The dormitories floor for sanitary reasons and fire protection. The dormitories floor will be covered with heavy linoleum or matting.

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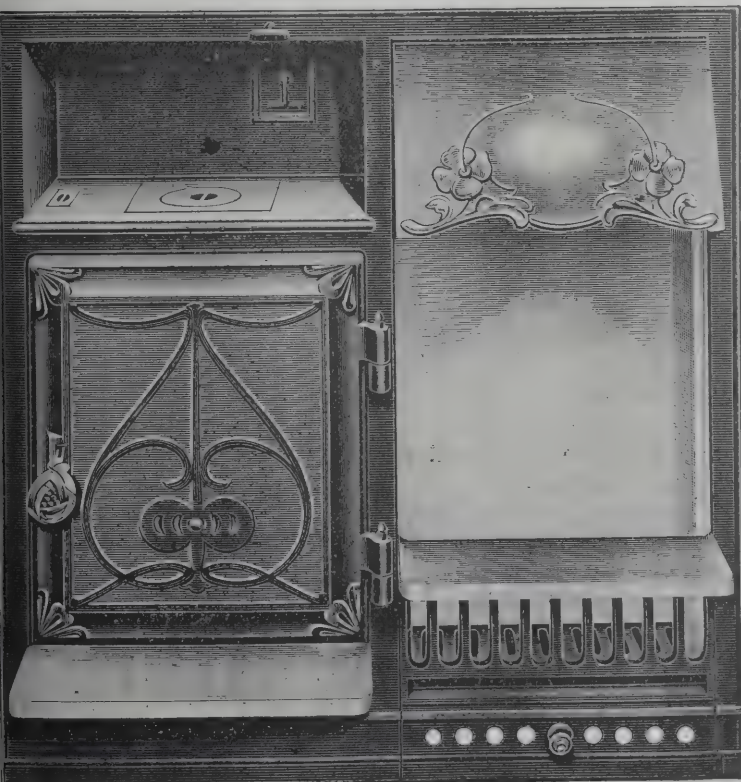
It is reported that the timber trade of the Portland district was the largest last year on record and was generally profitable. Logs advanced steadily, the average advance during 1906 being 50 per cent. Sawn timber advanced in proportion and prices at the close of 1906 were 17 per cent higher than at the beginning. There was an unusual demand caused by the earthquakes in San Francisco and Chile. Mills in the interior, however, had great difficulty in making deliveries, as the railroads had not sufficient rolling-stock to carry the traffic. The result has been a heavy loss to such mills and demoralisation of their trade.

The reported cut of the saw mills for the year is given in the trade journals as 2,000,000,000 feet in Oregon and 1,250,000,000 feet in Washington. These figures are prob-

ably exaggerated, and are given only as an indication of the immense volume of the industry. The district contains the largest saw mills in the world, and Portland is the largest lumber producing city, its mills having cut 643,532,893 feet, of which one mill alone cut 146,000,000 feet and two others over 100,000,000 feet each. Grays Harbour mills, Washington, cut 545,235,221 feet and Tacoma mills 396,700,000 feet, of which one mill cut 130,000,000 feet. There are 577 mills in Oregon, 841 mills in Washington and 260 mills in Idaho, employing in the aggregate 39,382 men, not including those employed in logging operations. Numerous additions were made to the number of mills during the year. A new one built at Potlatch, Idaho, is said to be the largest in the world, and can cut 750,000 feet daily.

The lumber output in Astoria was hampered at the end of the year by deficient railway transport. Labour was so well remunerated that, although the town is surrounded by forests, there was an actual scarcity of fuel, as men could not be found to cut wood and bring it in. There is little timberland now in the hands of the United States Government in this district. It has almost all been taken up by selectors, and through them bought up by syndicates controlling large areas, who hold it for future use or sale. Logging has developed wonderfully during 1906. Timber near the streams has long since been logged off, and numerous small logging railroads have been built into the forest to bring out the logs, which has stimulated the industry. The price of logs has advanced to 27. 8s. per 1,000 feet for the best. The output of the saw mills has increased by a large percentage in the district, the cut of the lower Columbia River mills being 125,000,000 feet; of Grays Harbour and Willapa Harbour 600,000,000 feet; and that of the mills on Tillamook Bay 14,000,000 feet; making 739,000,000 feet. This amount of lumber is at the lowest calculation worth 1,920,000l., a very great amount when the smallness of the population is taken into account. The tendency is to increase the cut. Of this output the largest part goes to California by sea, a good proportion to the States east of the Rocky Mountains and the rest to foreign ports.

Puget Sound exported 37,525,000 feet of timber in excess of 1905. There has been great activity in the business, and



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the coasting trade, on account of the San Francisco disaster, has been very great. The demand at interior points, by railway, has also been heavier than in any previous year. Mills are running day and night and are unable to cope with the demand, being far behind on orders. New industries established in Pierce county during last year were chiefly engaged in the manufacture of timber. The timber in Western Washington is principally Douglas fir, red cedar, hemlock and spruce. The county of Pierce is estimated to have 602,907 acres of timber land, of which about 22,384 acres have been logged off. There are thirty-one saw mills and fourteen shingle mills in this county, with a daily capacity for manufacturing 2,000,000 feet of timber and about 1,000,000 feet shingles. It is reported that the total shipments of timber from Tacoma during the year amounted to over 141,000,000 feet, the average value being 2½. 10s. per 1,000 feet.

THE PEARSON CASE.

JUDGMENT was given in the House of Lords last week by the Lord Chancellor, Lords Halsbury, Macnaghten, James, Ashbourne, Atkinson and Collins in the appeal by Messrs. Pearson & Son, Ltd., v. the Lord Mayor and Corporation of Dublin. The action was brought by the appellants to recover from the respondents two sums of 11,907£. and 36,374£. and costs in respect of main drainage works for the city of Dublin, executed by the appellants for the respondents, but the 11,907£. has since been paid. In connection with the construction of the outfall works at Pigeon House harbour, it was intended to utilise as far as practicable an existing north harbour wall on the Liffey side of the harbour, and for that purpose and for preventing the escape of sewage matter to construct a concrete lining to the inner surface of the wall, the thickness of the concrete to be determined by the exact profile of the wall when exposed by excavation. The appellants claimed 36,374£. for work and labour done and materials supplied by them at the request of the respondents in completing the work, the subject of the contract, for extra expenses in connection therewith, in addition to the works included in the contract. The appellants also claimed damages for alleged false re-

presentation in regard to the North Harbour Wall. The respondents denied the alleged fraudulent misrepresentations and denied that the appellants suffered damage by reason of them. The action came before the Lord Chief Baron and a special jury, and a verdict was entered for the respondents. The appellants asked that the verdict and judgment should be set aside and a new trial ordered. The King's Bench ordered that the verdict and judgment should be set aside so far as related to the cause of action for fraud and a new trial on the question was ordered. The Court of Appeal, however, reversed this decision. The respondents contended that there was no evidence that the representation as to the character of the dock wall was false to their knowledge. The Corporation throughout the entire specification disclaimed any knowledge of the actual state of things existing at the time of the contract.

The Lord Chancellor, according to the *Irish Times*, in giving judgment, said:—This is an action for deceit brought by Messrs. Pearson & Sons, contractors, against the Dublin Corporation. Inasmuch as I am about to propose that the case be remitted for a new trial, it is desirable that I should say no more than is necessary to explain my view. The plaintiffs' case is that they were induced to enter into a contract for the construction of certain sewage works by statements made by and on behalf of the defendants as to the existence to a depth of 9 feet below ordnance datum of an old wall. Undoubtedly evidence was adduced at the trial from which the jury might, if they thought right, conclude that the plaintiffs were so induced by statements made on behalf of the defendants. Also there was evidence for the jury that those statements were made either with a knowledge of their falsity, or which is the same thing, with a reckless indifference whether they were true or false on the part of the engineers employed by the defendants to make the plans, which were submitted to plaintiffs as a basis of the tender, and had the case rested there, I gather that the Lord Chief Baron would have left the case to the jury, and that the learned judges who subsequently had this litigation before them would have approved this course. But another feature of the case was considered fatal to the plaintiffs' claim. The contract contained clauses which need not cite at length, to the effect that the contractors not must rely on any representation made in plans or else-

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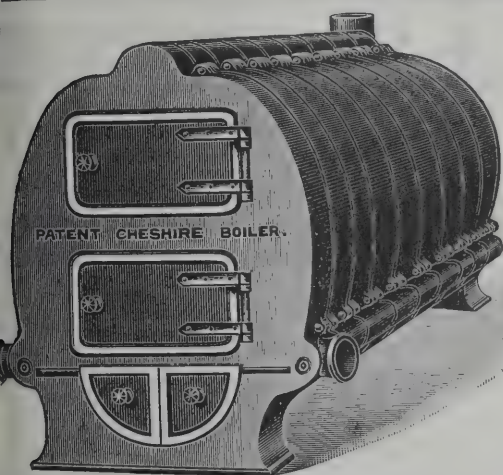
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here, but must ascertain and judge of the facts for themselves, and therefore the Lord Chief Baron withdrew the case from the jury. As I understand it, the view he held, substance confirmed by the Court of Appeal, was that the plaintiffs so forewarned had no right to rely on any representation and could not be heard to say they were induced to act on statements on which by contract they were not to rely; or, at all events, it was said that the defendants being themselves innocent, are protected by such clauses against the consequence of contractors acting in false statements made by defendants' agents, however fraudulent those agents might be. Now, it seems clear that no one can escape liability for his own fraudulent statements by inserting in a contract a clause that the other party shall not rely upon them. I will not say that a man himself innocent may not under any circumstances, however peculiar, guard himself by apt and express clauses from liability for the fraud of his own agents. It suffices to say that in my opinion the clauses before us do not admit of such a construction. They contemplate honesty on both sides, and protect only against honest mistakes. Serjeant O'Connor and Mr. Ronan, in their able arguments, and the arguments on both sides have been very able, make a further point. They say that though the principal is liable for the fraudulent representation of his agent, yet that rule only applies where the representation is in fact been made by the agent. I cannot accept that contention. The principal and the agent are one, and it does not signify which of them made the incriminated statement or which of them possessed the guilty knowledge. It is not necessary to say anything as to the Public Authorities Protection Act, for the Court of Appeal held that it did not apply to this case, and I am entirely of the same opinion. I respectfully recommend to your lordships that this case be sent for a new trial, and that the respondents pay the costs of this appeal and the costs in the King's Bench Division and the Court of Appeal, the costs of the first trial to abide the event.

Lord Ashburne: I concur in the opinion of the Lord Chancellor that the appeal should be allowed, and as that involves the grant of a new trial, I shall say as little as possible upon the merits of the case. With the highest deference for the opinions of the Lord Chief Baron and the

learned Judges of the Court of Appeal in Ireland, I am of opinion that the case should not have been withdrawn from the jury. I think that there was evidence given at the trial upon which a jury might reasonably, if they thought proper, act in finding that the plaintiffs had suffered serious damage in consequence of the acts of the defendants or of their agents. The evidence went to indicate—(1) that the plaintiffs were influenced in making the contract referred to in the case by statements for which the defendants were liable as to the existence of an old wall in an important position to the depth of 9 feet; and (2) that those statements so made were false in fact, and were made by the engineers of the defendants recklessly, and without any real belief in the existence of the facts represented. It may be inferred from the evidence of Mr. Hellins that the false representations were of the highest importance, were calculated to deceive and were intended to be acted on. But the decisions of the Lord Chief Baron and of the learned Judges in the Court of Appeal were not founded upon the opinion that there was no evidence fit to be submitted to the jury. They rested mainly upon the construction of the contract, whose 43rd clause provided that the contractors must not rely on any representation made in the plans, but must ascertain and judge of the facts themselves. The Lord Chief Baron laid it down that the contractor was "not entitled in point of law to say he acted to the extent of a hair's breadth upon the statement contained in the plans." I am entirely unable to concur in this view, and with much deference to the opinions of the Lord Chief Baron and the learned Judges of the Court of Appeal, I cannot conceive how, in face of the evidence in the case, this clause 43 could be regarded as establishing a defence. Such a clause might in some cases be part of a fraud, and might advance and disguise a fraud, and I cannot think that on the facts and circumstances of this case it can have such a wide and perilous application as was contended for. Such a clause may be appropriate and fairly apply to errors, inaccuracies and mistakes, but not to cases like the present. The respondents' counsel argued their case with great acuteness, but they could not overcome the broad contentions they had to face that there was evidence for the jury, and nothing in the contract to prevent the jury fully considering that evidence. I think the order suggested by the Lord Chancellor is correct.



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Lord Atkinson, in the course of his judgment, said :— As I understand the argument addressed to your lordships by the counsel for the defendants they rested their case on grounds totally different from those on which the decision of the Court of Appeal was based. They did not rely upon the distinction between conscious and unconscious fraud at all, but contended that on a true construction of the contract, incorporating as it does the plans and specifications, it was plain that the only representations made to the plaintiffs were made by the defendants themselves, not by their engineers; that it was admitted they themselves gave to the plaintiffs such information as they had; that they did so innocently, believing it to be true; that they did not warrant this information to be accurate; that they were, therefore, not responsible for the fraud of their engineers, if fraud there was; and that it was perfectly legitimate for them to protect themselves, as they contended they had protected themselves, by this article 43, and the other articles referred to; and that they were, therefore, in point of law entitled to the direction their counsel had asked for and obtained. I do not think that this contention is sound. On the whole, I am of the opinion that the decision of the Court of Appeal in Ireland was wrong and should be reversed.

Lord Halsbury, Lord Macnaghten, Lord James and Lord Collins concurred.

As the result of a discussion on the question of costs, it was finally decided that the order appealed from should be reversed, and that the respondents should pay the costs of the appeal to the House of Lords and the costs in the Court of Appeal.

SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, Mr. J. W. Wilson, vice-president in the chair, a paper was read on "Working Experiences with Large Gas-engines," by Mr. Cecil A. St. George Moore, B.A. Camb., of which the following is an abstract :—

The author commenced by comparing the various forms of gas-engines built in Great Britain with those built on the Continent, and enumerated the various characteristics of the

different types of engine as designed by various manufacturers with regard to number and arrangement of cylinders, single and double-acting engines and other points of design. After pointing out the advantages or otherwise of positive scavenging, and which is still an open question, the author considered the various methods used for governing, and remarked that in continental practice this point had received very careful attention.

The author next dealt with the relative advantages of the two and four-stroke cycles, the Körting and the Oechelhäuser engines being taken as the most prominent examples of the former type. The author considered that the thermal and mechanical efficiencies of the Körting type of engine were lower than in the case of the four-cycle type, and he gave results of tests bearing out this conclusion.

He then gave some details of the design of the piston and cylinder of the Körting engine, and mentioned several defects in those parts which had given trouble, and described modifications in design that had been adopted to overcome those defects. After giving some details as to the actual wear of cylinders in practice, the author proceeded to discuss the question of the correct method of supporting the piston, and referred to the difficulty of keeping the rods quite straight if the piston was supported from the guides.

The next point considered was metallic packing. After noting the essential points of a satisfactory packing, the author described a form of packing that he had found to work well in practice. Reference was then made to the theory of stratification of the working mixture as applied in the Körting engine, and an account was given of some curious effects noted on changing the position of the point of ignition in the cylinder. The author then treated at some length the question of pre-ignition in large engines, and referred to some probable causes of the same.

After noticing the utilisation of the waste heat of the exhaust, the author concluded by considering the properties of producer gas and its suitability for use in large engines. He laid great stress on the necessity for thorough cleaning of the gas, and mentioned the effects of tarry gas when supplied to an engine. He arrived at the conclusion that a percentage of about 27.6 of hydrogen in producer gas was not too great for its satisfactory use in large engines.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800l. All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

IRELAND.—July 20.—The County of Cork Joint Hospital Board invite competitive plans for a sanatorium for consumptives with accommodation for seventy patients. A prize of 100l. will be paid for the plans which the Board may adopt, provided that said plans are sanctioned by the Local Government Board, and said plans shall become the absolute property of the Board. Intending competitors will receive a map of the site and other information on sending P.O. for 10s. to Mr. E. J. Murphy, secretary of the County of Cork Joint Hospital Board, Court House, Cork.

NORTHENDEN.—June 17.—The Sale and Ashton-upon-Mersey education authorities invite applications, on or before June 17, from architects practising within 20 miles of Manchester desirous to enter into a limited competition for designs for a school to accommodate 400. Mr. W. Taylor, Technical School, Sale.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

BECKERMET.—June 15.—For cementing and plastering two dwelling-houses at Beckermert. Mr. Walter Trippiear, joiner and builder, Beckermert, Cumberland.

BELFAST.—June 25.—For building and completing a three-storeyed building for a children's infirmary. Deposit 2l. 2s. Messrs. McCarthy & Brookes, building surveyors, Scottish Provident Buildings, Belfast.

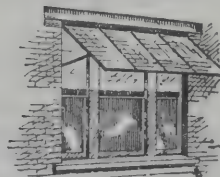
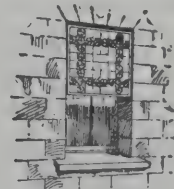
BOSTON.—June 15.—For school coal-house to be erected at Gipsy Bridge school, near Boston, also for painting as per specification. Mr. J. H. Tooley, 6 Bridge Street, Boston, Lines.

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COVENTRY.—July 8.—Schemes and tenders for the works required to be executed and materials supplied in the erection of a dust destructor, boiler plant, &c., on a site at Bishopgate Green, Foleshill Road, Coventry. Deposit 5*l*. Mr. J. E. Swindlehurst, M.I.C.E., St. Mary's Hall, Coventry.

DARTFORD.—June 26.—For the erection of cottages and other buildings in connection with the Joyce Green Hospital. Deposit 1*l*. Metropolitan Asylums Board, Embankment, E.C.

BISHOP'S STORTFORD.—June 25.—For repairs to the farm buildings at the sewage farm. Mr. R. S. Scott, surveyor, 7 North Street, Bishop's Stortford.

BOURNE.—June 18.—For erection of additional classrooms and a new system of heating at Star Lane Council school, Bourne, Lincs. Deposit 1*l*. Mr. W. B. Purser, County Surveyor's Office, Grantham.

BRIXHAM.—June 17.—For certain alterations to store, &c., for a model bakery in Bolton Street. The Manager of the Brixham Co-operative Society, Brixham, Devon.

CATCLIFFE.—June 29.—For repairs and alterations at the Catcliffe school, Woodhouse, Yorks. Mr. S. Abson, divisional clerk, Education Offices, Woodhouse.

CHELMSFORD.—June 17.—For repairs, painting, &c., at the union house, Wood Street, and at the cottage homes, Beehive Lane, Great Baddow. Mr. W. W. Duffield, clerk, 96 High Street, Chelmsford.

CLIFTON.—June 18.—For the conversion of property into five cottages at Clifton, near Workington. Messrs. Stoker & Nicholson, architects and surveyors, Old Town Hall, Washington Street, Workington.

CREWE.—June 17.—For alterations to Hightown Wesleyan schools. Deposit 1*l*. 1*s*. Mr. H. D. Struthers, director of education, Education Offices, Municipal Buildings, Crewe.

CRICKLEWOOD.—For the erection of groups of ten small villas at the Dollis Hill estate, Edgware Road. Mr. George H. Paine, architect and surveyor, 62 Moorgate Street, E.C.

CROOK.—June 20.—For rebuilding portion of factory at Crook. Deposit 1*l*. Mr. H. T. Gradon, architect, Market Place, Durham.

DORCHESTER.—June 20.—For certain repairs at the following Council schools, the work to be carried out during the summer holidays, viz.:—Almer, Gillingham, Lytchett Minster, Morden, Portland Eastern, Stour Provost, Wareham and West Chickerell. The Secretary to the Education Committee, Dorchester.

EAST HAM.—June 18.—For repairing, painting and sundry work at Fourth Avenue, Napier Road and Sandringham Road schools. Deposit 5*l*. Mr. R. L. Curtis, committee's architect, 11 and 12 Finsbury Square, E.C.

EASTON.—June 25.—For the erection of five cottages at Easton, near Portland, Dorchester, for the Great Western Railway Co. The Engineer at Bristol station.

ENFIELD.—June 18.—For the erection of a block of schools at Eastfield Road, Enfield Highway. Deposit 3*l*. 3*s*. Applications for bills of quantities should be sent before May 31 to the architect, Mr. G. E. T. Laurence, 22 Buckingham Street, Adelphi, W.C.

FERRYHILL.—June 22.—For the erection of new public-house at Ferryhill, Durham. Mr. Thos. H. Murray, architect and surveyor, Consett.

GOLCAR.—June 18.—For the erection of three dwelling-houses in Handel Street, Golcar. Mr. Arthur Shaw, architect, Golcar, Yorks.

GOOLE.—June 28.—For alterations, repairs, &c., required at the Old Goole Provided school. Applications by June 17 to Mr. Hy. Lindley, divisional clerk, Education Office, Goole.

GRAVESEND.—June 25.—For the enlargement of the post-office. Deposit 1*l*. 1*s*. H.M. Office of Works, &c., Storey's Gate, S.W.

GREENSIDE.—June 18.—For the erection of a new Council school at Greenside, near Ryton. Mr. J. Morson, architect, 77 Westgate Road, Newcastle-on-Tyne.

HALIFAX.—June 17.—For the erection of a covered playshed at Siddal school. Mr. James Lord, C.E., borough engineer, Town Hall, Halifax.

HALIFAX.—June 20.—For alterations to boot department, Central Stores, Northgate. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HALSTEAD.—June 24.—For the erection of a classroom and other alterations and additions at the Castle Hedingham

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For Index of Advertisers, see page x.

Council school, Essex. Mr. Whitmore, architect, 73 Duke Street, Chelmsford.

HILL END.—June 25.—For the erection of additional works at the Herefordshire County lunatic asylum at Hill End, near St. Albans. Deposit 2*l*. Mr. George T. Hine, 35 Parliament Street, Westminster.

HUDDERSFIELD.—June 29.—For the erection of higher elementary school at Hillhouse. Deposit 1*l*. 1*s*. Mr. K. F. Campbell, M.I.C.E., borough engineer, 1 Peel Street.

ILFORD.—June 25.—For the erection of a public library and hall, &c., at the junction of Kingswood Road and High Road, Seven Kings. Deposit 5*l*. 5*s*. Mr. Herbert Shaw, engineer and surveyor to the Council, Town Hall, Ilford, Essex.

IRELAND.—June 15.—For building a hotel in Foyle Street, Londonderry. Mr. Patrick H. Elliott, architect, Castle Street, Londonderry.

IRELAND.—June 17.—For the erection and completion of a new Crown post office at Portrush, co. Antrim. Deposit 1*l*. Mr. Acheson Ferguson, Scottish Provident Buildings, 2 Wellington Place, Belfast.

IRELAND.—June 22.—For building six shops and dwelling-houses at Waterloo Street, Londonderry. Mr. Patrick H. Elliott, architect, Castle Street, Londonderry.

IRELAND.—July 1.—For building a teacher's residence at Antrim. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

KEIGHLEY.—June 21.—For the erection of public urinals on the town hall site. Mr. Walter Fowlds, borough engineer.

KNUTSFORD.—June 17.—For alterations and additions to the old school buildings in Adams Hill. The Union Offices, Knutsford.

LEADGATE AND WASHINGTON.—June 18.—For the erection of Council schools at Leadgate and Washington, Durham. For Leadgate school, at the office of Mr. C. T. Wilson, 21 Durham Road, Blackhill, R.S.O., Durham; for Washington school, at the office of Mr. J. W. Hanson, 79 King Street, South Shields.

LEEDS.—June 19.—For alterations and additions to be carried out at the dwelling-house at the Manor Road Depot,

Holbeck. The Waterworks Engineer's Office, Municipal Buildings, Leeds.

LELANT.—June 15.—For the erection of residence at Lelant, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

LEYTON.—June 18.—For the cleansing, painting, repairs and alterations to schools, and repairs and redressing to tar-paving to be executed during the summer vacation, for the Leyton District Council education committee, Essex. Mr. William Jacques, architect, 2 Fen Court, E.C.

LONDON.—June 18.—For buildings at their King's Road power station, for the St. Pancras Borough Council. Deposit 2*l*. The Electricity Department Offices, 57 Pratt Street, N.W.

LONDON.—June 19.—For alterations at their workhouse and infirmary in Harrow Road, W., for the Paddington Board of Guardians. Deposit 5*l*. 5*s*. Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

LOWESTOFT.—June 24.—For the building of retort-house and coalyard wall for the Gas and Water Company. Deposit 2*l*. 2*s*. Messrs. F. & C. Hawksley, civil engineers, 30 Great George Street, Westminster, S.W.

LUTON.—June 24.—For the extension of the electricity station buildings, for the Town Council. Deposit 2*l*. 2*s*. Mr. S. F. L. Fox, borough engineer, Town Hall, Luton.

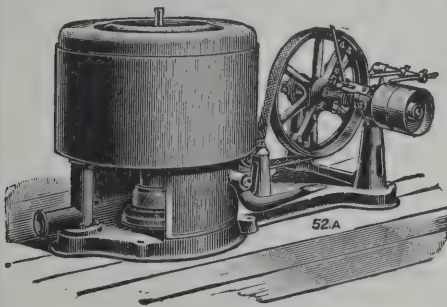
MANCHESTER.—June 19.—For the erection of a scullery at the infirmary of the Manchester workhouse at Crumpsall. Deposit 10*s*. 6*d*. Mr. A. J. Murgatroyd, architect, 23 Strutt Street, Manchester.

NETTLESWORTH.—June 18.—For alterations at Nettlesworth, Ford, Fulwell and Newbottle St. Matthew's Council schools, Durham. The County Education Committee's Architect, Shire Hall, Durham.

PORTSMOUTH.—July 1.—For fitting-up and furnishing the free library at the Municipal Institute in Park Road, and the conversion, removal and refixing of various old fittings. Deposit 3*l*. 3*s*. Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea.

ST. ERVAN.—July 5.—For the erection of a Wesleyan chapel at St. Ervan Village, St. Issey, R.S.O., near Padstow, Cornwall. Mr. W. T. Martyn Mear, architect and surveyor, Rock, Wadebridge.

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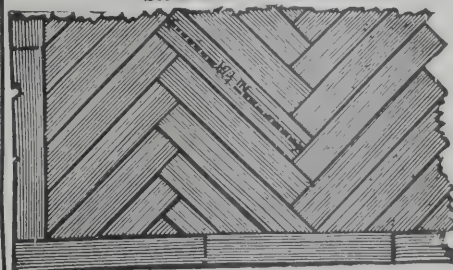
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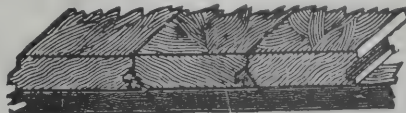
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ST. HELENS.—June 19.—For the erection of schools in College Street, St. Helens, Lancs. Deposit 1*l.* 1*s.* Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

SCARBOROUGH.—June 18.—For the erection of excursion station buildings, for the North-Eastern Railway Company. Mr. William Bell, the company's architect at York.

SOUTH ELMSALL.—June 18.—For the erection of an hotel, stabling, boundary walls, &c., at Moorthorpe, South Elmsall, near Doncaster. Messrs. Garside & Pennington, architects and surveyors, Pontefract and Castleford.

SOUTH SHIELDS.—June 17.—For the construction of conveniences, Laygate Circus. Mr. S. E. Burgess, borough engineer and surveyor, Chapter Row, South Shields.

STROOD.—June 19.—For alterations to the girls and infants' departments of the Strood Church of England school, Kent. Deposit 10*s.* 6*d.* Mr. Apsley Kennette, correspondent, Guildhall, Rochester.

WALES.—June 17.—For the execution of jobbingwork at their schools for ensuing twelve months, for the Ebbw Vale education committee, Mon. Deposit 10*s.* 6*d.* Mr. Henry Waters, committee's architect, Waungoch, Beaufort, or at Market Chambers, Ebbw Vale.

WALES.—June 17.—For the erection of a dayroom and discharge block at the infectious diseases hospital, Bangor. Mr. John Gill, A.M.I.C.E., city surveyor, Bangor.

WALES.—June 17.—For the general renovation and repairs, the erection of front boundary wall, colouring of walls and ceilings, painting and varnishing of the interior of Siloam chapel, Cefn Cribbwr, near Bridgend. Mr. Jesse Hurley, architect, 10 Bridgend Road, Aberkenfig.

WALES.—June 18.—For erection of three cottages at Pelaw Junction, near Stella Gill, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

WALES.—June 18.—For the erection of county court offices at Swansea. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—June 20.—For additions and alterations to Gylfach, St. Dogmaels, Cardigan. Mr. L. Lewis, architect and surveyor, Priory Street, Cardigan.

WALES.—June 19.—For the erection of ten houses at Perth. Mr. James T. Jenkins, architect, Perth.

WALES.—June 20.—For the erection of fifty-seven houses at Treherbert, Rhondda Valley. Deposit 2*l.* 2*s.* Mr. J. D. Walters, Maesgwyn, Treherbert.

WALES.—June 21.—For the erection of a chapel, lecture hall, classrooms, &c., at Park Hill, Bangor. Messrs. Richard Davies & Sons, architects, Bangor.

WALES.—June 21.—For rebuilding &c., the following:—Tellings Cottage, Saundersfoot, Pembrokeshire; White Park Cottage, Saundersfoot; Zealand House, Saundersfoot; Garnons Cottage and outbuildings, Taylor's Park, near Tenby. Mr. T. Roderick, architect, Aberdare.

WALES.—June 24.—For building Hafod inn, Clydach, near Brynmawr. Mr. T. Roderick, architect, Clifton Street, Aberdare.

WALES.—June 24.—For the erection of a house at Maindy Crescent, Ton. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—June 27.—For the conversion of the present temporary wards into permanent structures, and for the erection of additional buildings in connection therewith, at the Monmouthshire Asylum, Abergavenny. Deposit 3*l.* 3*s.* Mr. E. A. Johnson, architect, Abergavenny.

WALNEY.—June 17.—For the whole or separate trades in new church, Walney, Barrow-in-Furness. Messrs. Austin & Paley, architects, Lancaster.

WATH-ON-DEARNE.—June 15.—For the erection of a colliery rescue station. Messrs. J. M. Bottomley, Son & Wellburn, architects, 13 Bond Street, Leeds.

WEST HAM.—June 17.—For the cleansing, repair and painting of schools to be executed during the summer vacation. Deposit 1*l.* Send names by June 8 to Mr. William Jacques, A.R.I.B.A., architect to the education committee, 2 Fen Court, Fenchurch Street, E.C.

WHITEHAVEN.—June 17.—For the erection and completion of a mixed secondary school. Deposit 2*l.* 2*s.* Messrs. Grayson & Ould, architects, 31 James Street, Liverpool.

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Mention this Journal.



WIGAN.—June 30.—For repairs and painting to be done at the workhouse. The Master, Union Workhouse, Frog Lane, Wigan.

WORKINGTON.—June 26.—For alterations to premises in John Street and Jane Street. Messrs. W. G. Scott & Co., architects and surveyors, Workington.

WORSBROUGH BRIDGE.—June 17.—For the erection of a house, shop and appurtenances, Park Road, Worsbrough Bridge. Mr. Arthur Whitaker, architect, Saville House, Worsbrough Bridge, near Barnsley.

A DAY SCHOOL is to be erected at Leek in connection with the Congregational church, which will have accommodation for 200 girls and 100 infants. The architect for the work is Mr. Reginald T. Longden, of Burslem and Leek, who is also the architect for the new Congregational church and schools at Wolstanton.

In St. Mary's Hall, Coventry, on the 7th inst., Mr. A. Brightmore opened on inquiry on behalf of the Local Government Board, in regard to the application of the Coventry City Council for sanction to a loan of 30,000*l.* for the erection of municipal offices in Earl Street and St. Mary Street. It was said by the representative of the Corporation to be impossible owing to the financial conditions of Coventry to seriously undertake the erection of a town hall with municipal offices which would cost from 120,000*l.* to 130,000*l.* It was hoped to get a rental of about 700*l.* to 750*l.* from ten shops which it was proposed to erect under the municipal offices. Mr. T. F. Tickner, the architect, gave details of the plans, and said his estimated cost of 26,736*l.* was arrived at by cubing, which he considered the best system. He thought the shops should readily fetch a rental of 100*l.* a year each. By Mr. Eales: If necessary, in years to come, the shops proposed could be adapted as offices. He did not consider this an ideal site for a town hall. By Mr. Maddocks: A scheme could be devised to provide the requisite office accommodation on this site, and leave the matter of a town hall itself for the future. He did not know a case of combined municipal offices and shops. A memorial, signed by 988 persons, representing 18,364*l.* rateable value, against the scheme was presented.

TENDERS.

ABINGDON.

For the erection of Abingdon manual instruction-room and cookery centre. Mr. EDMUND FISHER, architect, 19 Buckingham Street, Strand, W.C. Quantities by Messrs. HICKS & LYNAM, 12 John Street, Adelphi, W.C.

Stephens, Bastow & Co., Ltd.	£1,568	0	0
Rice & Son	1,537	12	5
Pye, Parkinson & Co., Ltd.	1,522	0	0
Goddard & Son	1,499	0	0
Buckle & Sons	1,375	0	0
Bosher & Sons	1,332	19	7
Wheeler	1,320	0	0
Burfoot & Son	1,317	0	0
Romain & Son	1,277	19	11
Colborne	1,249	0	0
Cox	1,245	0	0

ALPHINGTON.

For Council school for 120 infants and remodelling existing school as a mixed school. Mr. PERCY MORRIS, county architect (education), Exeter.

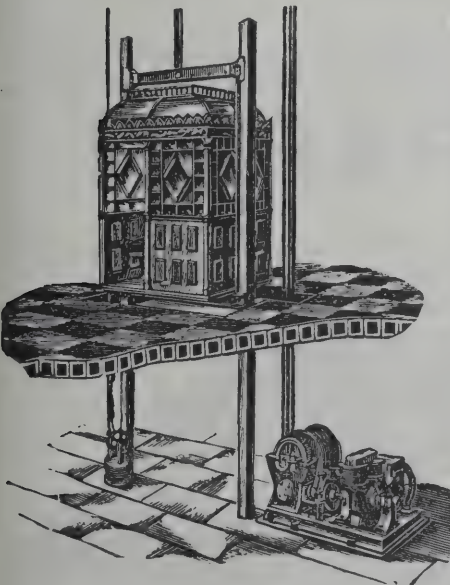
Stacey	£2,215	0	0
Ellis & Sons	2,120	0	0
Perkins & Co.	2,099	3	11
Roberts	1,935	16	8
Westcott, Austin & White	1,874	0	0
Cockerell	1,852	10	3
Narracott	1,827	7	1
Triggs	1,773	10	10
Ham & Passmore	1,728	2	0
Badcock	1,726	4	7
Stephens & Sons, Ltd.	1,692	0	0
Woodman & Son	1,626	13	6
Coles (recommended)	1,372	9	0

BROUGHTON.

For erecting two semi-detached houses. Mr. W. H. BUTTRICK, architect, Scunthorpe.

Stamp	£548	0	0
Whitlam & Whitfield	485	0	0
Pallister	420	0	0
BEVANS, Broughton (accepted)	416	0	0

LIFTS

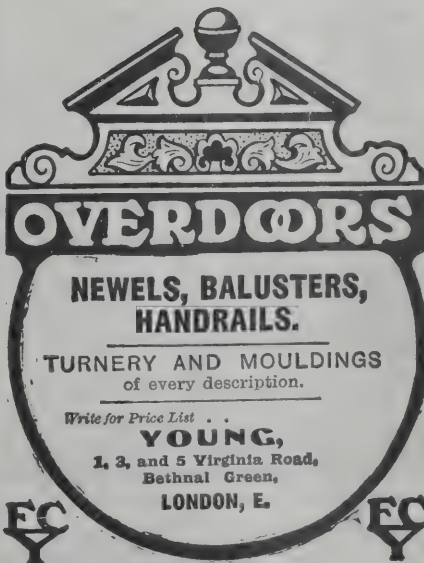


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CARLISLE.

For the erection of attendant's house at Stanwix sewage disposal works.

BEATY, West Walls (*accepted*) £371 1 10

For attendant's house at Wetheral sewage disposal works.

J. & R. BELL, Nelson Street (*accepted*) £375 12 2

CASTLEFORD.

For alterations to premises for Industrial Co-operative Society. Messrs. GARSIDE & PENNINGTON, architects, Pontefract and Castleford.

GALLAGHER BROS., Castleford (*accepted*) £1,070 0 0

For shopfitter's work to premises for Industrial Co-operative Society. Messrs. GARSIDE & PENNINGTON, architects.

Sage & Co. £2,098 0 0

Curtis & Co. 1,460 0 0

Broadbent 1,385 0 0

Cowling & Co. 1,340 0 0

Taylor Bros. 1,226 0 0

Horsman & Co. 1,188 0 0

Barran 1,164 0 0

Hirst & Son. 1,129 0 0

Allinson 1,025 0 0

BLAKEY, Wakefield (*accepted*) 1,023 0 0

CHRISTOW.

For the erection of teacher's house and other work at Council school, Christow, Devon. Mr. P. MORRIS, county architect, Exeter.

White, Chatton & Co. £1,055 3 3

Bearne 814 16 0

Zealley 787 5 1

Francis 690 15 0

Stacey 649 0 0

Gillard & Son 640 0 6

Westcott, Austin & White, Exeter (*recommended*) 622 10 0

DERBY.

For the construction of electrical tramways on Nottingham Road.

TOMLINSON, Derby (*accepted*) £19,574 17 10

CHINGFORD.

For roadwork in Suffield Road and St. John's Road. Mr. J. T. GRIFFIN, surveyor.

Porter £659 14 8

Adams 649 0 0

Wilson 621 0 0

Parsons & Parsons 620 0 0

FRENCH BROS., Buckhurst Hill (*accepted*) 570 0 0

CHIPPENHAM.

For erecting business premises. Mr. R. E. BRINKWORTH, architect, Bath. Quantities by Messrs. AMOR & UNDERWOOD, Bath.

Hayward & Wooster £2,898 0 0

Long & Sons 2,883 0 0

Wills & Sons 2,857 0 0

Chancellor & Sons 2,687 0 0

Downing & Rudman 2,577 0 0

Moore & Son 2,375 0 0

LIGHT, SON & Co., Chippenham (*accepted*) 2,281 0 0

DUDLEY.

For erection of bakery and stables in King Edmund Street. Mr. W. F. EDWARDS, architect, Birmingham.

ROUND, Dudley (*accepted*) £1,121 0 0

For erection of Wesleyan chapel. Mr. W. F. EDWARDS, architect, Birmingham.

HARPER & SONS, Blackheath, Staffs (*accepted*) £1,314 0 0

ECCLES.

For erecting public elementary school. Mr. H. LORD, architect, Manchester.

RAMBOTTOM, Pendleton, Manchester (*accepted*) £9,670 0 6

GUILDFORD.

For the making-up Laundry Road. Mr. C. G. MASON, C.E., borough surveyor.

Norris £335 0 0

Streeter & Co. 300 5 0

James & Co. 297 0 0

FRANKS, Guildford (*accepted*) 260 0 0

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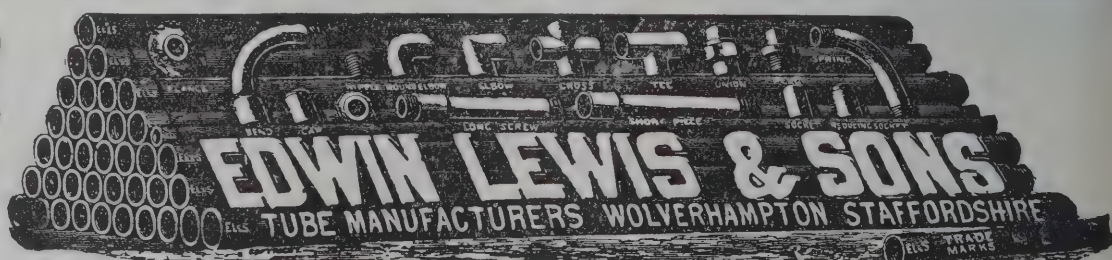
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Higgs & Outhwaite	£4,137	0	0
Stephens, Bastow & Co.	3,998	0	0
Drowley & Co.	3,950	0	0
Haslemere Builders Co.	3,938	0	0
Mussellwhite & Sapp	3,933	0	0
Mitchell Bros.	3,913	0	0
Smith & Sons, Ltd.	3,819	0	0
Martin, Wells & Co.	3,800	0	0
Milton & Sons	3,790	0	0
Kemp	3,779	0	0
Fitt	3,772	0	0
Fry	3,754	0	0
Cropley Bros.	3,694	0	0
Billett & Musselwhite	3,649	0	0
Goddard & Sons	3,638	0	0
Jarman, Daws & Co.	3,599	0	0
Cook & Sons, Crawley (recommended).	3,522	0	0

LEDBURY.

For laying-out cemetery, building walls and drainage. Mr. R. G. GURNEY, surveyor, Ledbury.

Lewis & Co.	£1,133	0	0
Smith	1,057	14	7
Westwood	846	14	6
Hill, Ledbury (accepted)	800	0	0
Dyke	744	0	0

LONDON.

For making-up and paving Holroyd Street, Putney.

Kavanagh & Co.	£762	0	0
Adams	761	5	9
Mears	725	0	0
Wheeler	703	9	2
Mowlem & Co.	699	0	0
E. & E. Iles	698	10	10
Hoffman	677	14	10
Parry & Co.	675	0	0
ETHERIDGE (accepted)	667	0	0
Woodham & Sons	663	0	0

LONDON—continued.

For supply of arc lamp carbons during twelve months, for St. Pancras Borough Council.

Compagnie Française	£1,506	13	10
General Electrical Co. (Nubia)	1,378	6	3
Sun Electrical Co.	1,231	4	0
Siemens Bros. & Co.	1,180	5	6
Brush Electrical Co.	1,089	15	0
Mayer & Co.	1,041	1	9
International Electric Co.	1,038	17	0
General Electrical Co. (Apostle)	1,038	16	6
Braulik	1,026	0	0
Electrical Co.	1,016	11	5
Crompton & Co.	975	19	6
Sirius-Werter	916	9	9
Sloan Electrical Co.	886	8	7
Pestalozzi & Co.	875	9	10
Johnson & Phillips	868	10	0
TUCHMAN (accepted)	771	15	0
Geipel & Lange	757	16	1

For the making-up and paving of part of Larpent Street, Putney.

Kavanagh & Co.	£713	0	0
Adams	712	12	5
Mowlem & Co.	669	0	0
Mears	657	0	0
E. & E. Iles	649	18	8
Wood & Sons	649	8	7
Woodham & Sons	643	0	0
Wheeler	641	10	8
Hoffman	640	16	0
Parry & Co.	625	0	0
ETHERIDGE (accepted)	618	0	0

For the erection of offices and factory, for the Zeta Wood Flooring Co., at Stratford. [Mr. J. HAMILTON, architect.]

Smith	£2,016	0	0
Nash	1,714	0	0
Jarvis & Sons	1,635	0	0
Irwin	1,611	0	0
Shurmur & Sons	1,566	0	0

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LONDON—continued.

For the erection of school on land adjoining the Southfield school, Wandsworth, for the accommodation of 352 boys, 352 girls and 412 infants, as follows:—Class-rooms to accommodate 48, 48, 48, 48, 40, 40, 40 and 40 in each department. Infants' department—Classrooms to accommodate 56, 56, 56, 56, 48, 48, 48 and 44. Halls for each department 49 feet 4½ inches by 28 feet 6 inches.

Nightingale	£20,440	0	0
Guttridge	19,804	0	0
Davey	19,372	2	4
Martin, Wells & Co.	19,060	0	0
Flint	19,005	8	2
Kingerlee & Sons	18,992	0	0
Johnson & Co.	18,971	0	0
Galbraith Bros.	18,887	12	8
J. & M. Patrick	18,862	0	0
Unsigned	18,643	0	0
Lole & Co.	18,595	3	10
Wallis & Sons	18,566	0	0
Wall	18,500	0	0
Unsigned	18,481	18	8
Moss & Sons	18,392	15	7
J. & C. Bowyer	18,185	0	0
Blake	17,831	15	5
Holliday & Greenwood	17,777	0	0
F. & E. Davey	17,124	1	8
CLAYTON, Aldine Works, Shepherd's Bush (recommended)	17,121	0	0
Architect's (Education) estimate	18,063	0	0

For repainting at Deptford Creek Bridge, Albert Bridge, Greenwich Tunnel and Highgate Archway.

Deptford Creek Bridge.

Inns	£295	0	0
Vigor & Co.	247	0	0
Westgate	216	11	6
PROCTOR & SON, Plumstead (accepted)	201	16	0
Chief engineer's estimate	344	3	11

LONDON—continued.

Albert Bridge.

Markham & Markham	£2,099	0	0
Westgate	1,312	18	10
McCarthy	1,283	11	0
Proctor & Son	1,041	1	11
Vigor & Co.	935	0	0
INNS, London (accepted)	890	0	0
Woollaston Bros.	717	0	0
Chief engineer's estimate	990	15	1

Greenwich Tunnel.

Proctor & Son	365	17	6
Inns	355	13	7
Westgate	298	17	9
Griggs & Son	244	11	3
Vigor & Co.	238	10	0
Loasby & Salmon	192	18	9
WOOLLASTON BROS., South Hackney (accepted)	154	0	0
Chief engineer's estimate	286	11	2

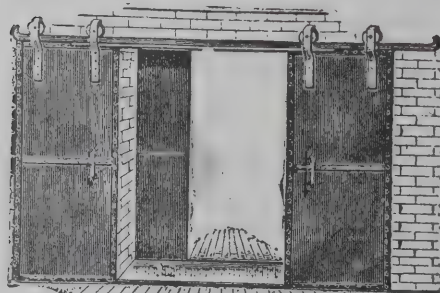
Highgate Archway.

Markham & Markham	543	0	0
Inns	355	0	0
Proctor & Son	334	1	11
VIGOR & CO., Poplar (accepted)	259	0	0
Chief engineer's estimate	298	19	7

For providing and fixing a steam-heating installation on the vacuum system, and calorifiers for hot-water supply at Central School of Arts and Crafts, Holborn.

J. & F. May	£5,650	0	0
Richmond & Co.	5,645	0	0
Moorwood, Sons & Co.	5,360	0	0
Simpson & Co.	4,925	0	0
Brightside Foundry and Engineering Co.	4,742	0	0
Ashwell & Nesbit	4,730	0	0
G. & E. Bradley, Elfort Road, Highbury (recommended)	4,589	0	0
Chief engineer's estimate	4,750	0	0

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LONDON—continued.

For partial reconstruction of the Sparta Street and Plough bridges, in connection with the electrification of the tramways from Greenwich to Lewisham.

Thorne & Sons	£4,151	3	0
Ewart	4,074	15	9
Pedrette & Co.	3,867	12	9
Fasey & Son	3,777	11	8
Greig & Matthews	3,720	18	3
Pearson & Son	3,670	0	0
Moran & Son	3,600	0	0
Motherwell Bridge Co.	3,446	9	5
Dick, Kerr & Co.	3,439	17	3
Morton & Co.	3,378	9	10
Hay & Co.	3,375	2	3
Wall	3,306	12	7
Muirhead & Co.	3,193	5	0
ROWLINGSONS & Co., London (accepted)	2,941	5	9
Chief engineer's estimate	3,349	14	3

For the making-up and paving of Hazlewell Road, Putney.

Kavanagh & Co.	£2,763	0	0
Wheeler	2,594	0	0
Adams	2,581	13	3
Iles	2,541	19	8
Hoffman	2,485	11	10
Woodham & Sons	2,479	0	0
Mowlem & Co.	2,470	0	0
Mears	2,447	0	0
Parry & Co.	2,375	0	0
ETHERIDGE (accepted)	2,150	0	0

For the making-up and paving of part of Calbourne Road Balham.

Kavanagh & Co.	£987	0	0
Adams	978	0	0
Griffiths & Co.	895	0	0
Wheeler	885	7	4
Mowlem & Co.	868	0	0
Pearce	836	0	0
Iles	795	3	6
Wood & Sons	768	16	7
ETHERIDGE (accepted)	757	0	0

LONDON—continued.

For adaptation of school for mentally defective children on the Haverstock Hill site as a school for the accommodation of physically defective children, works committee having intimated that they were not prepared to undertake the work at the amount of the estimate of the architect (education).

Vigor & Co.	£1,148	10	0
Chinchen & Co.	1,119	0	0
McLaughlin & Harvey	1,027	10	0
Peattie	995	6	9
Thompson & Beveridge	990	0	0
Lascelles & Co.	975	12	1
Stevens & Sons	933	0	0
Parrott & Isom	916	0	0
Williams & Son	914	0	0
Christie	896	0	0
Marchant & Hirst	891	0	0
King & Son	890	0	0
Godson & Sons, Kilburn (recommended)	858	0	0

For making-up St. Alban's Road North, Kensington.

Smith	£555	7	4
Drake	281	0	0
Adams	280	0	0
Kavanagh & Co.	279	0	0
Neave & Son	271	0	0
Mears	262	0	0
Parry & Co.	252	0	0
Griffiths & Co.	249	0	0
Wimpey & Co.	249	0	0
Rogers & Co.	243	0	0
J. MOWLEM & Co., Grosvenor Wharf (accepted)	225	0	0

For improvement of school, Cayley Street, Limehouse, works committee of L.C.C. having declined to undertake contract at architect's estimate, viz. 13,760*l.* (See *Architect*, May 17.)

C. Wall, Ltd., Lloyd's Avenue (recommended)	£12,209	6	0
For fitting-up of padded rooms at Long Grove asylum.			
Pocock Bros. (accepted)	£1,505	15	0

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For addition of children's ward to infirmary.

Wills	£2,550	0	0
J. Williams	1,849	8	6
Jones	1,771	0	0
JENKINS, Merthyr (<i>accepted</i>)	1,767	0	0
W. Williams	1,730	0	0
Hughes & Sterling	1,687	0	0
Hatherly & Co.	1,597	0	0

MUNDESLEY.

For the erection of schools. [Messrs. OLLEY & HAWARD, architects, Great Yarmouth.]

Blyth	£4,326	0	0
Eastoe	3,725	0	0
Carter & Wright	3,700	0	0
Bullen	3,697	15	0
Randall	3,680	0	0
Porter	3,612	17	9
Neale	3,611	4	2
Lincoln	3,610	18	0
Spencer, Santo & Co.	3,500	0	0
Hawes & Sons	3,495	0	0
Blyth & Sons	3,380	0	0
Mace	3,344	19	0
Batchelor & Sons	3,286	0	0
GREENGRASS, Norwich (<i>accepted</i>)	3,200	0	0

NEW BARNET.

For sewerage and other work in East Barnet Road, New Southgate. Mr. HENRY YORK, surveyor.

Adams	£1,390	0	0
Rogers & Co.	1,370	0	0
Kavanagh	1,287	0	0
BELL & SONS, Tottenham (<i>accepted</i>)	1,239	0	0

PRESTON.

For erecting branch stores and four houses at Tardy Gate.

T. & R. Colley, Preston	£2,053	17	6
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RAMSGATE.

For painting at the cottage homes.

Welby	£160	17	6
Ballard & Co.	159	18	0
Houghton	148	0	0
Jarman Bros.	137	0	0
ASSITER, Ramsgate (<i>accepted</i>)	125	17	6

REDDITCH.

For erecting premises for the Union Club. Mr. J. JOHNSON, architect, Redditch.

Pitts	£2,147	0	0
Tilt Bros.	1,999	0	0
Yeoman	1,984	0	0
Surman	1,925	0	0
Dallow & Son	1,900	0	0
Huins & Son	1,845	0	0
Cragg	1,750	0	0
EDKINS, Redditch (<i>accepted</i>)	1,740	0	0
Marshall	1,710	0	0

SMALLTHORNE.

For roadwork in South Street, Bradley. Mr. JOHN WILLIAM DEANE, surveyor.

Williams	£485	10	0
Barke	435	0	0
HOROBIN, Cobridge (<i>accepted</i>)	434	0	0

SOUTHEND-ON-SEA.

For painting, &c., at technical school.

Hubbard	£417	0	0
Pawley & Beckwith	323	16	6
Davey	319	0	0
F. & E. Davey, Ltd.	287	0	0

TILBURY.

For paving with cement at schools. Mr. C. M. SHINER, architect, Grays.

Hobman & Co.	£409	0	0
Constable	335	0	0
CHITTENDEN & SIMMONDS, West Malling (<i>accepted</i>)	312	18	0

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HOUSE IN BUCKINGHAMSHIRE—GARDEN FRONT.

WOKINGHAM.

For erection of Wokingham manual instruction-room and cookery centre. Mr. EDMUND FISHER, architect, 19 Buckingham Street, Strand, W.C. Quantities by Messrs. HICKS & LYNAM, 12 John Street, Adelphi, W.C.

Parron & Son	£1,607	16	0
Stephens, Bastow & Co., Ltd.	1,568	0	0
Stokes & Sons	1,545	0	0
Ward & Fletcher	1,475	0	0
Rice & Sons	1,474	11	6
Beauchamp	1,472	12	0
Martin, Wells & Co.	1,465	0	0
Goddard & Son	1,439	0	0
Page, Parkinson & Co.	1,426	0	0
Bosher & Sons	1,397	0	0
Jarman, Daws & Co.	1,380	0	0
Burfoot & Son	1,377	0	0
Osman	1,370	18	8
Godwin	1,357	0	0
Stimsons	1,349	0	0
Davies & Lawrence	1,305	11	0
Romain & Son	1,284	13	7
Hughes	1,279	0	0

TRADE NOTES.

As announced in a previous issue, Messrs. Pinchin Johnson & Co. have secured premises to be known as Minerva House, Bevis Marks, London, E.C., and it is their intention to take possession on June 24, so that on and after that date all communications should be sent to that address.

HOBBS, HART & Co., LTD., announce that they have refitted their lock furniture show-room at 76 Cheapside with a large and varied selection of the best and most artistic designs

for this class of work, of which an early inspection is invited.

THE Workhouse infirmary, Watford, is being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, patent Manchester grates and special inlet ventilators, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

THE "Swincam" camera stand for photographers is the most useful and adaptable stand we know of. Both professional and amateur photographers are taking it up. The patentee, Mr. William Boulter, of Southport, has designed a cheaper form of tripod, known as Model B; it is 4 feet 6 inches high, weighs 3 lbs. 9 oz., and the cost is only 1*l.* 11*s.* 6*d.* The advantage of the "Swincam" stand is the possibility of fixing in any awkward position, so that the lens can be brought to any desired angle and fixed there without resorting to the use of a swinging back or front to the camera.

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ALTHOUGH the use of lifts may be occasional, and only a short time is occupied with a journey in one of them, there is no reason why, in dwelling-houses at least, they should not be made as handsome as the staircases which they have superseded to a great extent, or to which they are supplementary. The illustrations in the catalogue of lifts for private residences, issued by Messrs. R. Waygood & Co., Ltd., are evidence of a recognition of the necessity of beauty of form. The lines of the metalwork in the lifts and in the protecting grilles are in the flowing curves to which the material lends itself. The woodwork is also suitably designed, and the upholstery is luxurious. In addition the automatic push button enables the inmates to be independent of servants, for the most timid lady can ascend and descend without the least misgiving concerning her safety. The list of mansions in which the passenger lifts are introduced is evidence of the confidence which Messrs. Waygood have secured. Among their clients are the King and the Prince of Wales. The lifts are to be found in the palaces of the King of Siam and the Khedive.

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A STRONG ROOM.

THE resources of Hobbs, Hart & Co., Ltd., are so extensive, the limits to their power of construction cannot easily be defined. One of their latest productions is a steel strong-room, which is 18 feet long, 10 feet wide and 9 feet high. It was prepared for one of the London banks. We may say of it that it is the most recent development of the efforts to obtain security which have been in progress from the time of Agamemnon. His treasury depended mainly on the intricacy of the approaches. But Messrs. Hobbs, Hart & Co.'s treasure chamber is self-sufficient. Even if it were placed in the open air it could not be injured unless powerful explosives were employed. Throughout it is constructed of heavy steel plates of special manufacture to a thickness of 8 inches. The entrance and emergency doors are secured by patent clutch bolts, which fit into recesses in such a way that the openings are as safe as any other part of the structure. The locks, it is needless to say, have a character of their own. It would require an army of burglars to attempt an opening. Fire is also guarded against by means of chambers with fire-resisting chemicals. The strong-room is lighted by electricity, which is controlled by the opening or closing of the door, and there is not, therefore, even a remote chance of fused wires

or sparks. The workmanship is perfect, and a more substantial example of its class has not appeared. It will extend the reputation of the firm.

WINCHESTER CATHEDRAL.

AN important meeting of the Greater Chapter has been held in the chapter-room at Winchester Cathedral for the purpose of considering a report as to the defects in the structure discovered during the works of renovation which have been in progress. The meeting was presided over by the Dean, and there was a large attendance of members. The Dean reported that Mr. T. G. Jackson, R.A., had carefully examined the transepts, and that further defects in the structure had been found, one of the walls being between 4 and 5 feet out of the perpendicular. Numerous cracks had also been discovered in the walls. Mr. Jackson said that it was most important that the work should be taken in hand at once in order to make the building secure, and that to carry out the work necessary a further 30,000*l.* would be required, in addition to the 30,000*l.* for work which had already been sanctioned. It was agreed that there was no option but to undertake the task at once, and it was decided to make a further appeal to the diocese and to churchmen generally.

THE Duke of Richmond and Gordon, K.G., has offered to present to the Corporation of Chichester what is known as the Pudens Stone, which was dug up many years ago in the North Street of the city. The stone bears a Roman inscription, recording the building of a temple, "Pudens, the son of Pudentinus, giving the ground." Hitherto it has been at Goodwood House, but in future it will be exhibited at the Council House.

At a meeting of the Provincial Grand Lodge of Gloucestershire, held in the chapter-room of Gloucester Cathedral, it was decided to provide the sum of 750*l.* to defray the cost of preserving and restoring the beautiful pinnacle at the west end of the building.

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VARIETIES.

THE finance committee of the Sheffield City Council recommend the Council not to effect insurances with any company under the Workmen's Compensation Act, 1906, but to undertake themselves the liability.

"A DAY at Doncaster and an Hour out of Durham" forms the subject of an interesting article by William Dean Howells in this month's *Harper's Magazine*. It is accompanied with neat illustrations of Durham Cathedral, Finchale Priory and Durham Castle.

THE War Office authorities have paid to the Petersfield Rural District Council the sum of 2,000*l.* for extraordinary traffic on the district roads. This sum has been paid on condition that the Council accept the sum eventually awarded. Negotiations for the payment for damage done to the roads have been proceeding for over two years.

THOSE responsible for the production of *Country Life* claim that it is one of the best produced journals of this country. The summer number to hand fully justifies this claim; it is well illustrated, printed on good paper and replete with interest. The central feature is a most interesting illustrated article on Chantilly, now the property of the Institut de France.

MR. JOHN YOUNG, burgh surveyor, Ayr, reports that for the past financial year seventy-one warrants were granted at the Dean of Guild Court for buildings estimated to cost 104,607*l.*, as compared with 110 warrants for buildings costing 97,547*l.* in the previous year, being an increase of 7,060*l.* The warrants granted during the year included 220 dwelling-houses, costing 60,845*l.*; twenty business premises, &c., costing 36,255*l.*; twenty-two alterations costing 4,957*l.*; and eighty-five minor warrants costing 2,550*l.*

THE Liverpool City Council, which already possesses a municipal electricity undertaking, have resolved to make application to the Local Government Board for sanction to borrow 25,000*l.* for the erection of gasworks and the laying of the necessary mains for the supply of Fazakerley, the suburban district most recently incorporated within the city, and outside the boundary within which the private gas company having a monopoly in gas supply in Liverpool has jurisdiction.

THE municipal authorities at Rotterdam have under consideration a scheme for the construction of a new port, which will be in itself as large as all the docks now existing at Rotterdam, and will be known as the port of the Waal. It is estimated that the cost will amount to two and a quarter millions sterling, out of which about 480,000*l.* will be expended in the purchase of land. The proposed port will be situated on the southern bank of the Meuse, opposite Delfshaven.

THE Truro Rural District Council have considered complaints that Giant's Quoit, Veryan, which figures prominently in the legendary and historical records of Cornwall, had been destroyed by blasting and used for road metalling. The Quoit was poised on a cairn or beacon of hard rock, and, with Giant's Cradle close by, was of archaeological interest. The surveyor said that when approaching the Quoit he stopped quarrying, but the tenant of the farm instructed his men to "blast the thing down."

EXPENDITURE to the amount of 41,648*l.* has been authorised by the Sheffield waterworks committee in preparing mains and reservoir-tanks in connection with the Derwent Valley supply. The biggest item is 25,410*l.* for a 24-inch main from tunnel end to Hadfield dam, including easements and outlet works. Tanks are to be provided at Carsick, Ringinglow and Lydgate. The city will take 7,000,000 gallons daily from the Derwent Valley.

THE Tunbridge Wells Town Council have agreed to sanction the extensions recommended by the electrical engineer, and to apply to the Local Government Board for sanction to a loan of 9,600*l.*, made up as follows:—500 kw. steam turbo alternator, condensing plant and ancillary fittings, 4,850*l.*; boiler, superheater, &c., 1,203*l.*; public lamps, 900*l.*; contingencies, approximately 10 per cent., 707*l.* 6*s.* 9*d.*

THE Worcester City Council, consequent upon consideration of a special report by Mr. Shaw, the electrical engineer, have agreed to apply to the Local Government Board for sanction to a loan of 10,000*l.*, for a further extension of the Hylton Road generating station and machinery there, and laying mains and services and providing meters, &c., and made up of the items mentioned at the foot of the resolution, viz.:—Extension of boiler-house and coal store and enlarging the Cross distributing station, 1,050*l.*;

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machinery, including one 400 k.w. direct current generator, 4,150*l.*; mains, 3,800*l.*; services, 500*l.*; meters, 300*l.*; contingencies, 200*l.*

THE churchyard cross at Over Peover, near Knutsford, was last week dedicated by the Archdeacon of Chester in memory of the late Sir Philip Mainwaring. The steps and base of the old cross have been very carefully reset on new foundations, and a new shaft and head of Portland stone, 11 feet in height, now takes the place of the original cross which was destroyed in the seventeenth century. The shaft is octagonal and carries an open canopied head with a gable roof, under which the figures of Our Lord on the Cross, St. Mary and St. John stand clear against the sky. The whole work, the design of Mr. H. S. Rogers, of 7 Dean's Yard, S.W., including the resetting, has been carried out by Messrs. Farmer & Brindley, of Westminster.

A CONFERENCE of the building trades was held in London on the 6th inst., the delegates present representing a dozen trades unions, comprising a membership of about 190,000. After consideration three resolutions were agreed to, declaring that as the prosperity of a nation depended upon the spending power of the majority, it was necessary to maintain a good standard of wages, and the rapid spread of labour-saving appliances made it necessary to consider the limitation of the hours of work, that unemployment was increased by systematic overtime, and that both the employers and workers' associations ought to co-operate in abolishing unnecessary overtime. It was resolved to call a further conference to decide how to carry out the resolutions.

MR. RICHARD BELL, M.P., at Derby, on Saturday night addressed the local branch of the Building Trades' Federation. He commented on the very small audience, and, referring to men who refrained from joining their trades union, said a great number of these remained outside because they had full confidence in those within the union, and thought that whatever concessions were gained by those in the organisation would come equally to themselves. That was a manifestly unfair attitude. Other men kept aloof because the union was not perpetually agitating for an increase in wages or a reduction in hours. But the union was of great value even when not doing aggressive

work. The trades union in time of peace was like a watch-dog. A resolution was passed urging each branch of the building industry to ally itself to the local federation.

THE Patent Lightning Crusher Company, of Boundary Lane, Walworth Road, London, are introducing a new process of refuse destruction which is most efficient and economical. A few days since a demonstration took place at the Manor Place depôt of the Southwark Borough Council. The plant has been in use there for nearly a twelvemonth, and refuse which was absolutely destroyed and unrecognisable consisted of tins, rabbit skins, a horse shoe, fragments of glass, china and vegetable matter. The whole was treated most satisfactorily, and there is no doubt that the company have a process which will compare more than favourably with any other on the market, seeing that the cost of erection of the required machines is comparatively a few pounds, as against the thousands spent in erecting more expensive undertakings.

THE action of the Attorney-General *v.* The Tame and Rea District Drainage Board, which has been going on since 1899, and was last heard before Mr. Justice Kekewich in 1903, when it was ordered to stand out of the list, with liberty to either party to apply, has been restored to the list by Mr. Justice Joyce on the application of the Attorney-General. The borough of Tamworth and the District Council seek, through the Attorney-General, to obtain an injunction against the drainage board for polluting the river Tame with the effluent from their sewage farm. When proceedings were first instituted the drainage board said they would do all they could be legally called upon to do to satisfy the applicants. They agreed that, if the Court would appoint an independent engineer to go into the matter, they would construct such works as he considered necessary. The Court appointed a well-known specialist, the late Mr. Santo Crimp. Mr. Santo Crimp conducted an exhaustive examination of the sewage farm, and came to the conclusion that greater tank capacity and more filter beds for storm-water were necessary. The Board thereupon spent 120,000*l.* in nearly doubling their tank capacity and constructing four new filter beds. It is not anticipated that the case will come on for hearing before the Long Vacation.

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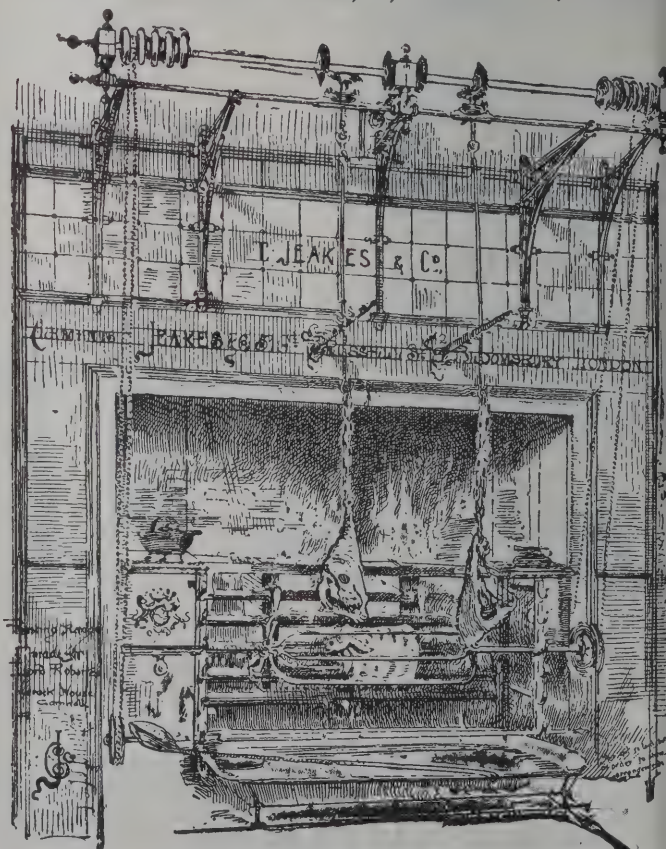
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LONDON ELECTRIC SUPPLY BILL.

THE Parliamentary committee of the London County Council recommend:—

(a) That the clauses in the London County Council (Electric Supply) Bill, 1907, providing for the compulsory acquisition of the electrical undertakings of the metropolitan borough councils by the Council, and for the transfer to the Council of the powers of purchase possessed by local authorities throughout the area of supply proposed in the Bill in regard to electrical undertakings in their several districts, be deleted.

(b) That the provision in the Bill for the expenditure of a sum not exceeding 4,500,000*l.* on the proposed undertaking be so amended as to limit any such expenditure to a sum not exceeding 100,000*l.*

(c) That the special powers sought in the Bill in regard to the breaking up of streets in London be deleted, and that the general law on the subject be incorporated in the Bill, so far as it is applicable, together with a clause dealing with routes to be followed in laying electric lines.

(d) That the powers sought in the Bill to enable the generating stations and other works comprised in the Council's tramway undertaking to be appropriated as part of the proposed undertaking be omitted, but that power be sought to enable the Council to supply surplus electrical energy from its Greenwich generating station for the purpose of the proposed undertaking, and to permit of the use of the Council's tramway ducts for purposes of the undertaking.

(e) That provision be made in the Bill to the effect that any assignment or transfer shall be subject to the following conditions, namely:—

1. The undertaking to be purchasable by the Council at the end of a period not exceeding fifty years on the terms of the Electric Lighting Act, 1888, or on such other terms as may be specified in the deed of assignment and approved by the Board of Trade.

2. The amount of dividend which may be divided by the transferees to be regulated by the prices charged by them for electrical energy on a basis to be approved by the Board of Trade.

3. The maximum prices to be charged by the transferees not to exceed those prescribed by the Bill, and such maximum prices and the relation between price and dividend to be subject to periodical revision.

4. Facilities to be granted to the Council at any time to examine accounts and works of the proposed undertaking and the assignment to contain such other provisions as may be deemed necessary for securing adequate control by the Council with regard to the powers transferred or assigned.

(f) That the Bill do provide for the cesser of the Council's powers thereunder unless a transfer or assignment has been made within a period of one year from the passing of the intended Act.

(g) That the Parliamentary committee be authorised to insert the necessary clauses in the London County Council (Electric Supply) Bill, 1907, in order to give effect to the foregoing resolutions and to make any further alterations in the Bill that may appear necessary.

ITALIAN CEMENT.

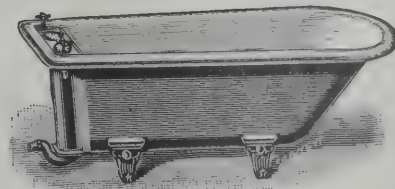
CEMENT is one of the principal industries of the district of Civita Vecchia, and the whole output of the two cement factories is contracted for and sold ahead of time. There is a steadily increasing demand for cement, so much so, in fact, that both factories are enlarging their plants. Italian cement could easily be placed on foreign markets, especially at the present time, when cement is in demand in North and South America, where, owing to the recent earthquakes, it is supplanting to a great extent bricks and stones in the building of houses, but the output of the local factories is not sent further inland than Rome. High freights prevent its being exported even to comparatively near ports. "I have been told," says the British Consul, "that the freight charge at present for a cargo of cement from Civita Vecchia to Sardinia is the same as that for the same quantity exported from Marseilles to Constantinople. Considering that a large number of vessels clear from Civita Vecchia in ballast, no doubt it would prove an easy matter to reduce rates by developing the export trade of this port and giving it a stable character."

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LIABILITY FOR CHURCH BUILDING DEBT.

IN the Irish Court of Appeal, constituted of the Lord Chancellor, Lord Justice FitzGibbon and Lord Justice Holmes, judgment was given in an appeal made on behalf of three defendants, S. G. Montgomery, James Neill and John M'Meehan, in the action of James Bowman and Henry Bowman against Rev. William A. Hill and others. The plaintiffs in their action, which was heard before Mr. Justice Barton in the Court below, alleged in their statement of claim, says the *Irish Times*, that they and the defendants were, in the year 1900, at the time of the passing of a certain resolution, all members of the Board of Deacons of Hamilton Road Presbyterian church, Bangor, co. Down, and also of the congregation. This board had the management of the temporal and financial affairs of the church. Funds being required to pay off, amongst other debts, the building debt on the church, the plaintiffs and appellants entered into a guarantee with the Bank of Ireland for a sum of 4,000*l.* The plaintiffs under these circumstances claimed 1,090*l.* 8*s.* 2*d.*, their proportion, which they had repaid to the bank; to have it declared that they were entitled to a lien on the property for this sum; asked that it be enforced by a sale or receiver, and also contributions from those that were liable should the property not realise sufficient to meet the claim. The defence was a denial of any request that the plaintiffs and appellants should become guarantors; a denial that any resolution authorised them to pledge the property, and a statement that the resolution of May 30, 1900, was *ultra vires*. Mr. Justice Barton made an order that the plaintiffs were entitled to the lien, and in default of payment that there should be a sale. From this order the appeal was taken.

The Lord Chancellor, in the course of his judgment, said that by the resolution of May 30, 1900, the plaintiffs were entitled to assume that they were authorised to raise the loan; secondly, that it was for the church building; and thirdly, that it was a congregational debt. But on the other hand, neither the bank nor the members of the congregation entered into contemplation that the 4,000*l.* was to be secured on church property. The bank had no intention to look to the church premises. His Lordship referred to the lease of the ground on which the premises were built. In it, amongst other matters, trustees were nominated on

behalf of the congregation. The trusts were enumerated upon the breach of which the lessor had power to re-enter; there was to be a body of trustees to discharge the trusts according to a code, which enacted that the lease was to be submitted to the Presbytery, under whose control the Board of Deacons was to act, and that the Presbytery were to see that every lease should contain such a declaration of trust as secured the property to the congregation in connection with the General Assembly; that a sale might be made, but his Lordship said, that meant a sale consistent with the trust—not a sale that would do away with the trust. Having regard to this and the terms of the actual lease, it would have been illegal to dispose of the property otherwise than according to the terms of the code of lease. A mortgage on lien as security for the debt in question would have been wholly invalid. He was of opinion that the appeal must be allowed and the action dismissed with costs.

Lord Justice FitzGibbon, in concurring, said in the course of his judgment that the relief sought—as the foundation of the whole suit—was emphatically specific relief against the property. If the property was sufficient to satisfy the claim, no further or other relief was sought; it was only if there were a deficiency after a sale of it that contribution was sought against those who had not already contributed. In every fact that Mr. Justice Barton had stated in his summary his Lordship said he thought he was entirely right; but immediately after that the Court parted company with him. Mr. Justice Barton had said in the course of his judgment that it seemed to him that James Bowman had a very clear right of indemnity out of all the trust property of the congregation; that personal liability of the kind was not contemplated by the terms of the trust, and did not seem consistent with the condition upon which Bowman undertook the trusts. But (Lord Justice FitzGibbon continued), with all respect, if personal liability could not be established against members of the congregation as such, because it was not contemplated under this trust, this must be equally fatal as to establishing a lien against the property, which lien was not only not contemplated by the terms of the trust, but would destroy the trust itself; every witness on both sides had stated no one thought of making the church property liable for the debt by a lien, charge, or sale. The

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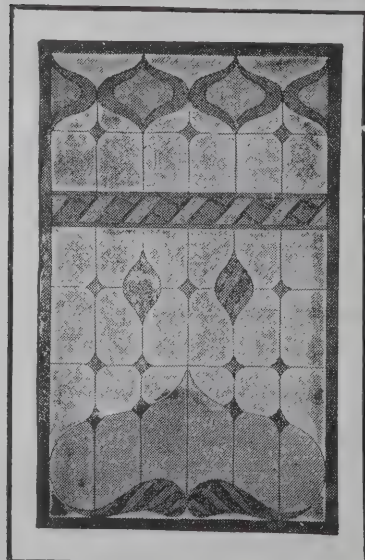
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case of *Minnit v. Talbot*, on which the decision was founded in the Court below, was distinguishable from the present. His Lordship held that the whole body of the congregation could not, under the circumstances, have given a mortgage on the premises, or appointed a receiver, say, by enabling him to go round with the plate on Sundays. He did not rest his decision on the law of charities, but on the most conclusive, satisfactory proof of the laws of this church and the terms of this lease.

Lord Justice Holmes, in the course of his judgment, in which he concurred, said it seemed clear to him that the intention of the lessor and the lessees was that the premises should be demised for the charitable purposes mentioned in the lease alone—a church and a manse therefor. The plaintiffs, he had not the slightest doubt, never thought that the premises would or could have been charged for a congregational debt. This had been introduced by the ingenuity of counsel.

PLUMBING AND HEATING.

A DISPUTE has occurred between plumbers and heating engineers at Leicester, which threatens to delay the completion of the new wing of the infirmary. The operative plumbers complain that men who are not plumbers, but heating engineers, have been set on to do plumbers' work, hence the stoppage of work, which has occurred under like conditions on other enterprises. The Operative Plumbers' Union wrote in April to the effect that men other than plumbers were laying pipes for the hot-water supply, and asking that the work should be placed in the hands of such operatives; while in reply it was urged that the laying of the pipes was part of a scheme for the heating and ventilation of the whole institution, and that in the opinion of the architect it was engineering work. This was the view taken by the Board of Governors, and the work went on, with the result that plumbers engaged in other parts of the building came out, with the approval of the union and also of the Employers' Association, it being urged that engineers were being paid less wages than the plumbers would have received. A conference took place under the presidency of Sir E. Wood with a view to settling the difficulty, and it was proposed that the engineers should be allowed to do

the work provided the men engaged were paid the standard rate of wages prevailing in the plumbing trade. The plumbers declined to accept this solution, claiming that the work comes within their duty and that they should do it. This was not accepted, hence the deadlock, which is unfortunate because it is delaying the completion of a much required building. The dispute is of more than local interest for the question is continually arising, and on both sides it is recognised that a settlement is desirable that shall be applied nationally.

SURVEYS FOR ROAD IMPROVEMENTS.

TOWARDS the close of his term of office as State engineer of New York, Mr. Henry A. Van Alstyne issued a manual of instructions to his staff engaged on highway improvements, which, according to the *Engineering Record*, gives a comprehensive statement of the methods which experience up to that time indicated to be best suited to secure satisfactory results. So far as the surveys are concerned these were based on transit lines, following in general the line of the existing highway. The azimuth of each line was taken, and each transit point referenced to as permanent objects as possible by at least three measurements.

The offsets to the existing fences and all other measurements of the survey within the right of way were made with sufficient accuracy to show the true location of the objects within the nearest foot. Walls, fences or other objects which indicate the boundaries of the road or of abutting property were located, and the name of the owner of abutting property noted. Where it was evident that it would be necessary to widen the road a note was made stating on which side the land should be taken and the reasons for it.

All buildings or other permanent objects within 100 feet of the transit line, or beyond 100 feet if they were of a nature to be affected by the details of the proposed improvement, were located. No more time was spent in locating objects beyond the fence lines or beyond the probable location of the improved road than was necessary to ascertain their approximate size and location, and all dimensions of

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such objects were estimated in the field and recorded at once in the notes.

The magnetic bearing of each property line and intersecting highway boundary line and the station at which they intersect the base line were recorded. Where property lines or intersecting roads are definite, their apparent location was recorded, and not left for the draughtsman to locate from the sketch. The location of all drives was recorded and a tabulated list made showing their character, whether house, barn or field entrance.

Existing paved ditches, kerbing, catch-basins, railroad tracks, lines of telegraph and telephone poles and shade trees were located, and the name of the company owning the tracks or poles noted.

All bridges were located and sketch elevations, showing the design of the abutments and superstructure, size of openings, &c., drawn in the back portion of the note-book. Complete notes regarding the condition of both bridge and abutments were required.

All culverts were located and a tabular list, giving in each instance the station, size of opening, material of construction, length, condition and a recommendation regarding the proper size of new culvert, if one was necessary, was made in the back portion of the note-book. In describing the condition of culverts but two classifications were used, "good" and "bad." When a culvert was described as "good," the understanding was that it was likely to meet all requirements for at least five years after the proposed improved road was finished. When a culvert was designated as "bad," the understanding was that it was likely to utterly fail within five years from the date of the completion of the road. If a culvert was designated as "good," and any additions or alterations were necessary, the engineer was required to make recommendations regarding it and secure all data for preparing plans and estimates.

The approximate area of the watershed at each stream crossing was given if it could be readily obtained and a note made as to whether or not the water ever overflowed the road.

A tabulated list by stations of the nature of the soil was recorded in the back of the note-book, and an entry made at least every 1,000 feet whether or not the character of the soil changes. A thorough effort was made to determine the

existence of unstable soil or places which were rendered unstable by water. Inquiry was made of highway officials and occupants of adjoining lands regarding spots that broke up badly in the spring and their location recorded.

Notes were made in the back of the note-book regarding the location of quarries or outcrops of rock suitable for road material and masonry, the quality and quantity of the field stone in the vicinity of the road, the location of gravel pits, and the available places for procuring water for roller and carts.

Samples of available stone and gravel for each road were secured and forwarded with the survey books to the division engineer's office. All samples were marked plainly with the county, petition number, station, and name of the owner of the property where sample was obtained.

Information was also secured and recorded regarding distance to the nearest side-track or boat landing where stone could be delivered, and the name of railroad or waterway, the most advantageous locations for a crushing plant, prices of labourers and teams, and places where Telford, gravel base, side drains, paved ditches or any form of special construction was needed. In general, objects located by cross-section measurements were not located by transit measurements, and *vice versa*. Elevations were referred to tide-water datum by connecting with a canal, railroad or geological survey bench mark, where this could be done at small expense, and check levels were run where existing bench marks were not found near each end of the survey. Assumed elevations taken from the U. S. Geological Survey contour maps were used where no better information was obtainable.

All elevations were taken to the nearest tenth of a foot except the elevations of turning points and bench marks, which were taken to hundredths of a foot. A bench mark was established at least every 1,000 feet.

At each 100-foot station, at each change of grade, and at crossroads, elevations were taken on the base line, and at such other points on either side of the base line as were needed to plot an accurate profile and cross-section of the road.

Usually the slopes beyond the fences were merely indicated, as: Down 1 in 10, level, &c., giving the approximate distance for which the rise or fall was continuous,

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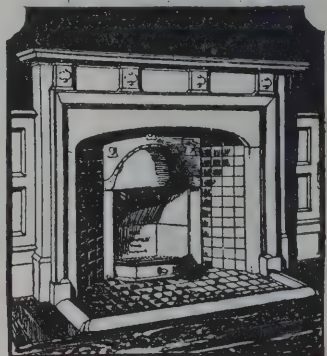
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but in all cases where there were cuts or fills on the existing road, where the road was narrow or where there was a probability of heavy cutting or filling-in improving the road, the cross-section was extended beyond the fence line as far as needed.

The location of the edges of the beaten track, the edge of sidewalk, line of trees, top of railfence line, and such measurements were shown in the cross-section notes by the use of letters written under the distance figures.

All elevations upon the outcropping rock were noted by the letter "R" under the distance figure, and at places where rock was near the surface soundings or borings were made to determine the depth of overlying earth, the reading and distance figures being enclosed in a circle when recorded to denote a boring.

Cross-sections were taken where there were marked changes of grade at the sides of the road, even though there was no change in the beaten track.

Elevations of the ground and of the bottom of sills were taken at the front corners of buildings where they were within 50 feet of the base line, or beyond that distance, if a cut or fill on the improved road was liable to affect the buildings.

A cross-section was taken directly over each culvert showing the elevation of the road, top of cover, top and bottom of openings, and a profile up and down the ditch far enough to give the required information for draining from the new culvert usually placed lower than the old one. Wherever, in the opinion of the engineer in charge, new culverts were needed, he indicated their proposed location and size, and took a profile along the proposed location for an outlet. Where streams entered or left the highway at places not opposite culverts, their location was noted and a profile taken far enough up and down the stream to secure all information necessary in considering the advisability of planning a new drainage system. A cross-section was taken near each culvert in addition to the regular culvert section. This cross-section was for use in the computation of the regular earthwork, as well as the culvert excavation, and showed the general elevation of the road and land immediately adjoining the culvert and stream channel.

A survey party usually consisted of six men and divided to make a location squad and a cross-section squad.

The location squad, after establishing a zero station, located a line along the road by sighting forward at some well-defined object or at a flag set as a foresight. This line was then measured and all location measurements and notes made as the survey progressed. A temporary marker was placed at every station for the use of the cross-section squad. When the survey had progressed to a point where an angle became necessary or advisable, a permanent transit point was located by driving an iron pin at the end of some even foot. This was referenced, a new foresight taken, and the base line carried forward as before. The location squad took with a transit the azimuths of all lines run, and referenced them to the magnetic north line established at station O. The magnetic bearing of each line was read and recorded as a check.

The members of the cross-section squad ran bench levels to determine the first height of instrument and then proceeded with the cross-sections. To avoid confusion a regular routine was followed in securing the rod readings and distances and in calling the information to the recorder, a common method being for the rodman to proceed first to the left, the instrumentman calling each reading, then the tapeman calling the distance, and then the rodman calling the nature of the point on which he held. On turning points after the instrumentman had called to the recorder the rod reading, the rodman checked the instrumentman's reading by sliding a card or slip of paper along the rod to the reading called, then holding the rod again for the instrumentman to observe. The rodman kept separate notes of rod readings on all turning points and bench marks and computed their elevations, and he kept the rod on each turning point until a back sight was taken.

Where a marked improvement in line or grade could be made, where the cost of maintenance in after years could be decreased, or where the grade of the old highway was so steep that a maximum grade of 7 per cent. could not be obtained with a reasonable amount of excavation and embankment, a new location of portions of the road was often advisable. When the engineer in charge of the survey party thought this was the case he promptly reported the facts to the division engineer, and unless receiving instructions to the contrary, proceeded to survey a new location along the most desirable route.

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Surveys of a new location in general proceeded as on the old highway, except that, in determining the proper alignment and grade, lower limits of curvature and percentages of grade were usually desirable, and a somewhat greater expense was justifiable to secure this result.

It was considered impossible to fix limits for curvature or grades, for while 5 per cent. may, in a large portion of the State, be a proper limit for new location grades, the importance of most roads in mountainous regions will not warrant the expense necessary to secure this low limit. No new location, however, was run on greater than 7 per cent. grades, except by direction of the division engineer, and sharp curves and angles in alignment were avoided. In running a line on maximum grade several trial lines might be necessary to secure the best results and a profile was plotted in all cases before leaving the vicinity.

Cross-sections were extended further on new location than on the old highway, especially on side-hill work, as it might be advisable to move the centre line in preparing plans. Care was taken on new location work to secure the correct names of all property owners from whom land was to be acquired and, if necessary, the county records were consulted.

Swamps, woodland, pasture, cultivated land, vineyards, &c., were carefully noted, and any data which could be obtained regarding cost of acquiring and clearing the land was noted.

Where a line for a new location was run so as to form a closed circuit with the base line in the highway, the azimuth of both the base line and the new location line was taken with a transit, and the fact that the circuit closed was ascertained before the field books were returned to the office.

Surveys for new right-of-way to be acquired were made by a party especially detailed for the purpose. The notes were placed in the original survey field-book, if this could be done without confusion; if not, they were placed in a new book of standard form. The surveys were of two kinds:—First, surveys of parcels of land along the sides of existing highways; and second, surveys of parcels of land where an entirely new location was proposed.

Plans and descriptions of parcels of land along the sides of the existing highway were prepared in the office from

the data of the original survey, unless the parcel to be required was of such irregular shape as to make its computation difficult, in which case a survey of it was made in the following manner:—An enclosing transit line was run around the piece of land along the new boundary line and the existing highway line. A magnetic bearing was taken at some angle where the needle was least subject to local attraction, and the bearing of all the sides calculated from this magnetic north, the needle reading of each line being taken and recorded as a check. The starting-point of each survey was referenced to the base line by station number and offset distance, and also to any permanent reference point in the vicinity. The angle points, points of curvature and points of tangency of the new right-of-way line were monumented with 1-inch gas-pipe rods 3 feet long, or some equally permanent monument. These were placed by the construction force when the right-of-way plan had been prepared from the data of the original survey.

In a survey where an entirely new location was made, the centre line of the proposed road, as shown on the plans, was run in with a transit, using circular curves and their connecting tangents and following the line of the original survey except at such places as were modified in preparing the plans. Unless a greater width was advisable the strip of land acquired on a new location was 60 feet wide, 30 feet on either side of the centre line. Rods of 1-inch gas pipe 3 feet long, or some equally permanent form of monument, were placed on the boundary lines of the land to be acquired at all angles, points of curvature and points of tangency.

The streets and buildings committee of Edinburgh Town Council have adopted a scheme for the improvement and widening of the bridge over the canal at Fountain Bridge by which a new steel drawbridge, 32 feet in width, and worked by an electric motor, should be erected over the canal at a cost of 4,000*l*. The cost, which includes 500*l*. in respect to approaches, falls to be entirely borne by the Corporation, the North British Railway Company being understood to have refused to make any contribution.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100*l.* and the second 20*l.* The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1*s.* with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800*l.* All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

IRELAND.—July 20.—The County of Cork Joint Hospital Board invite competitive plans for a sanatorium for consumptives with accommodation for seventy patients. A prize of 100*l.* will be paid for the plans which the Board may adopt, provided that said plans are sanctioned by the Local Government Board, and said plans shall become the absolute property of the Board. Intending competitors will receive a map of the site and other information on sending P.O. for 10*s.* to Mr. E. J. Murphy, secretary of the County of Cork Joint Hospital Board, Court House, Cork.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

ALNWICK.—June 26.—For new shop front and alterations to premises, Bondgate Without. Mr. George Reavell, jun., architect, Alnwick and Morpeth.

BASINGSTOKE.—July 8.—For the erection of a Council school at Basingstoke, Hants. Deposit 2*l.* 2*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

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BISHOP'S STORTFORD.—June 25.—For repairs to the farm buildings at the sewage farm. Mr. R. S. Scott, surveyor, 7 North Street, Bishop's Stortford.

BOLTON.—June 24.—For repairing and painting the interior of the workhouse infectious hospital. Mr. Samuel Coope, F.S.I., 24 Mawdsley Street, Bolton.

BRECON.—July 5.—For alterations and improvements to the Guildhall. Borough Surveyor, Castle Street, Brecon.

BURNLEY.—For the following works required in rebuilding the Hall inn, St. James's Street:—Mason, carpenter and joiner, slater, plasterer, concreter. Mr. Abm. Nutter, architect, 23 Nicholas Street, Burnley.

CATCLIFFE.—June 29.—For repairs and alterations at the Catcliffe school, Woodhouse, Yorks. Mr. S. Abson, divisional clerk, Education Offices, Woodhouse.

COVENTRY.—July 8.—Schemes and tenders for the works required to be executed and materials supplied in the erection of a dust destructor, boiler plant, &c., on a site at Bishopgate Green, Foleshill Road, Coventry. Deposit 5*l.* Mr. J. E. Swindlehurst, M.I.C.E., St. Mary's Hall, Coventry.

DARTFORD.—June 26.—For the erection of cottages and other buildings in connection with the Joyce Green Hospital. Deposit 1*l.* Metropolitan Asylums Board, Embankment, E.C.

EASTON.—June 25.—For the erection of five cottages at Easton, near Portland, Dorchester, for the Great Western Railway Co. The Engineer at Bristol station.

EDINBURGH.—June 22.—For the following works in connection with the enlargement of Portobello higher grade school:—(1) Masonwork; (2) joinerwork; (3) smithwork; (4) slaterwork; (5) plasterwork; (6) plumberwork; (7) painterwork. Mr. Carfrae, architect, 3 Queen Street, Edinburgh.

FERRYHILL.—June 22.—For the erection of new public-house at Ferryhill, Durham. Mr. Thos. H. Murray, architect and surveyor, Consett.

FRIZINGHALL.—July 1.—For the erection of a sports pavilion at Frizinghall, Bradford. Messrs. Adkin & Hill, architects, 10, 11, 12 Prudential Buildings, Bradford.

GOOLE.—June 28.—For alterations, repairs, &c., required at the Old Goole Provided school. Applications by June 17 to Mr. Hy. Lindley, divisional clerk, Education Office, Goole.

GRAVESEND.—June 25.—For the enlargement of the post-office. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

GREAT BROUGHTON.—July 1.—For the erection of a house at Great Broughton, Cumberland. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

HALSTEAD.—June 24.—For the erection of a classroom and other alterations and additions at the Castle Hedingham Council school, Essex. Mr. Whitmore, architect, 73 Duke Street, Chelmsford.

HETTON-LE-HOLE.—June 26.—For the taking-down of a portion of a retaining wall opposite Wesleyan chapel, Hetton-le-Hole, Durham, excavating, and the construction of a cement concrete retaining wall with fence on top, for the Urban District Council. Mr. John Harding, surveyor, Township Office, Hetton-le-Hole.

HILL END.—June 25.—For the erection of additional works at the Herefordshire County lunatic asylum at Hill End, near St. Albans. Deposit 2*l.* Mr. George T. Hine, 35 Parliament Street, Westminster.

HUDDERSFIELD.—June 29.—For the erection of higher elementary school at Hillhouse. Deposit 1*l.* 1*s.* Mr. K. F. Campbell, M.I.C.E., borough engineer, 1 Peel Street.

HULL.—June 26.—For the erection of a junior school in Stepney Lane. Deposit 2*l.* 2*s.* Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

HOOTON.—July 1.—For the erection of four cottages near Hooton station, Cheshire, for the joint committee of the London and North-Western and Great Western Railway companies. Deposit 1*l.* 1*s.* The Joint Engineer at Woodside Station, Birkenhead.

HOUGHTON-LE-SPRING, &c.—July 2.—For new Council schools (sole tenders) at Houghton-le-Spring, Dean Bank (near Ferryhill) and Pelton, for the Durham County Council. For Houghton-le-Spring apply to Messrs. Milburn, 20

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Fawcett Street, Sunderland; for Dean Bank school, Mr. T. W. T. Richardson, 57 High Street, Stockton-on-Tees; for Pelton school, Mr. J. W. Hanson, 79 King Street, South Shields.

ILFORD.—June 25.—For the erection of a public library and hall, &c., at the junction of Kingswood Road and High Road, Seven Kings. Deposit 5*l.* 5*s.* Mr. Herbert Shaw, engineer and surveyor to the Council, Town Hall, Ilford, Essex.

IRELAND.—July 1.—For building a teacher's residence at Antrim. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

KING'S HEATH.—June 26.—For carrying-out alterations to the car sheds at tramway depôt. Deposit 2*l.* 2*s.* Mr. Ambrose W. Cross, A.M.I.C.E., engineer and surveyor, 23 Valentine Road, King's Heath, near Birmingham.

KINGSTON-ON-THAMES.—June 28.—For the erection of a telephone exchange. Deposit 1*l.* 1*s.* Mr. J. Rutherford, H.M. Office of Works, Storey's Gate, S.W.

LEEDS.—July 1.—For the following trades, viz. bricklayer and mason, carpenter and joiner, plumber and glazier, plasterer, concreter, painter, slater and ironfounder's work, required in the erection of a block of warehouse premises in Bishopsgate Street and Swinegate. Messrs. Thomas Winn & Sons, architects, 84 Albion Street, Leeds.

LINTHWAITE.—June 26.—For the erection of three dwelling-houses, Manchester Road, Linthwaite, Yorks. Mr. Joe Ainley, architect and surveyor, Chapel Street, Slaithwaite.

LIVERPOOL.—June 26.—For alterations to the entrance lodge at the workhouse, Smithdown Road. The Master at the Workhouse.

LONDON.—June 26.—For pointing and repairing works at the Northern (Convalescent) fever hospital, Winchmore Hill, N. Deposit 1*l.* Mr. W. T. Hatch, engineer-in-chief, Metropolitan Asylums Board, Embankment, London, E.C.

LONDON.—June 27.—For sundry paintingwork and repairs at the various schools, and for a small alteration at the Priory Council school, Acton. Messrs. E. C. P. & H. Monson, architects, 182 High Street, Acton.

LONDON.—July 4.—For the extension of "D" block at the workhouse, Garratt Lane, Wandsworth. Deposit 2*l.*

Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.

LONDON.—July 9.—For the erection of branch stores in High Road, Tottenham. Deposit 1*l.* 1*s.* Mr. H. Seymour Couchman, architect, 522 High Road, Tottenham.

LOWESTOFT.—June 24.—For the building of retort-house and coalyard wall for the Gas and Water Company. Deposit 2*l.* 2*s.* Messrs. F. & C. Hawksley, civil engineers, 30 Great George Street, Westminster, S.W.

LUTON.—June 24.—For the extension of the electricity station buildings, for the Town Council. Deposit 2*l.* 2*s.* Mr. S. F. L. Fox, borough engineer, Town Hall, Luton.

MANCHESTER.—June 25.—For setting-back wall in Wilmslow Road, Fallowfield. Deposit 2*l.* 2*s.* The City Surveyor's Office, Town Hall, Manchester.

MILNSBRIDGE.—July 1.—For the excavator, mason and bricklayer, carpenter and joiner, plumber and glazier, slater, plasterer, painter, concreter, ventilating and heating engineer's work required in the erection of men's club and institute. Mr. Joe Ainley, architect and surveyor, Chapel Street, Slaithwaite.

PARKSTONE.—June 29.—For additions to the Branksome and Upper Parkstone Unionist Club premises. Mr. Walter Andrew, architect, Parkstone, Dorset.

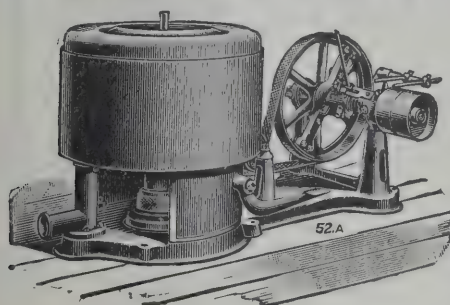
PORTSMOUTH.—July 1.—For fitting-up and furnishing the free library at the Municipal Institute in Park Road, and the conversion, removal and refixing of various old fittings. Deposit 3*l.* 3*s.* Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea.

RADFORD.—June 27.—For the erection of additional stables at the depôt at Radford, Nottingham. Deposit 1*l.* 1*s.* Mr. Arthur Brown, M.I.C.E., city engineer, Guildhall, Nottingham.

ST. ERVAN.—July 5.—For the erection of a Wesleyan chapel at St. Ervan Village, St. Issey, R.S.O., near Padstow, Cornwall. Mr. W. T. Martyn Mear, architect and surveyor, Rock, Wadebridge.

SANKEY.—July 13.—For the erection of a police station at Sankey, near Warrington. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

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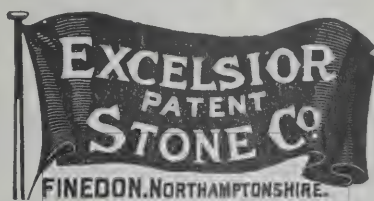
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SEAFORTH.—June 24.—For the erection of sanitary conveniences at Fort Road, Seaforth. Deposit 10s. 6d. Mr. F. Spencer Yates, A.M.I.C.E., surveyor, Town Hall, Waterloo.

SLAITHWAITE.—June 24.—For conversion of the Old Globe inn, Pole Moor, Yorks, into a branch store. Mr. J. Berry, architect and surveyor, 3 Market Place, Huddersfield.

STRATFORD-ON-AVON.—June 25.—For the erection of a villa residence in Rowley Crescent. Deposit 2l. 2s. Mr. E. G. Holtom, architect, 58 Henley Street, Stratford-on-Avon.

SUMMERCOURT.—June 26.—For additions and alterations to the Wesleyan chapel and school. Mr. Edward J. Ennor, architect, Newquay.

THORVERTON AND KINGFORD.—July 2.—For the following works, for the Devon County Council:—(1) Thorverton bridge, rebuilding in reinforced concrete on site adjoining the existing bridge, including new approaches; (2) building a bridge at Kingford, near Portsmouth Arms. The Office of the Council, at The Castle, Exeter.

UPPERMILL.—June 24.—For new drill hall, for the Saddleworth Detachment 2nd V.B. Duke of Wellington's West Riding Regiment. Mr. W. Cooper, architect, 4 Kirk-gate Buildings, Huddersfield.

WALES.—June 24.—For building Hafed inn, Clydach, near Brynmawr. Mr. T. Roderick, architect, Clifton Street, Aberdare.

WALES.—June 24.—For the erection of a house at Maindy Crescent, Ton. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—June 24.—For the erection of a parish hall at the rear of Christ Church, Swansea. Deposit 1l. 1s. Messrs. W. Cousins & Sons, architects and surveyors, 168 St. Helen's Road, Swansea.

WALES.—June 25.—For the erection of a house and workshop at Robert Street, Ynysybwl. The Surveyor to the Council, Town Hall, Mountain Ash.

WALES.—June 25.—For building a chancel, organ chamber and vestry to St. Cennyh Church, Llangennech. Deposit 2l. 2s. Mr. E. M. Bruce Vaughan, architect, Cardiff.

WALES.—June 27.—For the conversion of the present temporary wards into permanent structures, and for the erection of additional buildings in connection therewith, at the Monmouthshire Asylum, Abergavenny. Deposit 3l. 3s. Mr. E. A. Johnson, architect, Abergavenny.

WALES.—June 29.—For the erection of a farmhouse at Caedicws, Glynceiriog. Mr. Ed. Green-Davies, architect and surveyor, Plas-yn-Llan, Gobowen.

WORKINGTON.—June 26.—For alterations to premises in John Street and Jane Street. Messrs. W. G. Scott & Co., architects and surveyors, Workington.

FLOOR SPACE IN SCHOOLS.

MR. A. G. C. HARVEY, M.P. for Rochdale, has asked the President of the Board of Education if, before the next issue of the list of public elementary schools, he will take steps to secure the publication of revised and corrected figures of accommodation by eliminating from the measurements of floor space upon which accommodation is based such portions of the school buildings as are not available for effective teaching, and by taking into consideration the existence of a proper number of classrooms. Mr. M'Kenna replied:—The figures of accommodation appearing in the list of public elementary schools represent the accommodation recognised by the Board, and do not in every case coincide with the accommodation available for effective teaching. I fear the burden on the ratepayers that would be caused by the condemnation of schools and classrooms which ought not properly to be regarded as suitable for effective teaching renders such an immediate step impossible. The Board are endeavouring to secure in all schools that not less than 10 square feet of floor space shall be provided for each child, and to remove from the list unsuitable schools and classrooms where alternative accommodation is available, or, failing this, so soon as it can be secured. The difficulty of carrying out these necessary reforms with greater rapidity lies solely in the reluctance on the part of many local education authorities to provide the accommodation required for the children displaced.

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Huins & Son	608	0	0
Exors of J. STANLEY, Broom (accepted)	483	2	6

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Rowlingsons & Co.	£16,448	10	0
Shepherd & Sons	16,022	14	0
Underwood Bros.	15,556	5	0
Amy	15,547	15	0
Parry & Co.	15,519	4	6
Wimpey & Co.	15,122	10	0
Griffiths & Co.	15,075	0	0
Hemming	15,045	5	0
Mowlem & Co.	14,987	0	0
Kavanagh & Co.	14,865	17	6
Smith.	14,643	16	8
Millar's Karri and Jarrah Co.	14,590	10	0
Anderson	14,315	12	0
Fry Bros.	13,878	2	6
Acme Flooring and Paving Co.	13,699	12	8
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IMPROVED WOOD PAVEMENT Co. (accepted)	13,124	5	0

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For additions to Gravelly Hill Farm. Mr. BERNARD PERRINS, architect, Redditch.

Avery	£268	0	0
C. G. Huins & Sons	265	0	0
G. Huins & Son	265	0	0
Edkins & Son.	255	0	0
Newbould	249	10	0

BLACKBURN.

For main sewers and outfalls at Langho and Whalley End, for the Blackburn Rural District Council. Mr. F. W. DUCKWORTH, engineer, Blackburn.

	Langho.	Whalley End.
Firth & Co.	£1,847	£4,879
Cottle	1,400	3,580
Bury	1,394	3,516
Bentley & Co.	1,350	3,535
Edmondson & Wyatt	1,309	3,408
Macdonald	1,294	3,690
Jowett Bros.	1,292	3,430
Johnson & Son	1,258	3,376
Lewis & Sons	1,249	3,395
Toby	1,202	3,432
Pollitt & Co., Ltd.	1,186	3,170
Riding.	1,150	2,980
JENKINS & SON, Blackburn (accepted)	1,130	3,045

BOOKER.

For the erection of schoolroom and out-offices at Wesleyan chapel. Messrs. HOOPER & NASH, architects, High Wycombe.

Smith	£488	13	0
Flint	467	0	0
Gibson	437	0	0
Nash & Sons	426	0	0
Steevens & Son	415	0	0
HARRIS, High Wycombe (accepted)	389	0	0

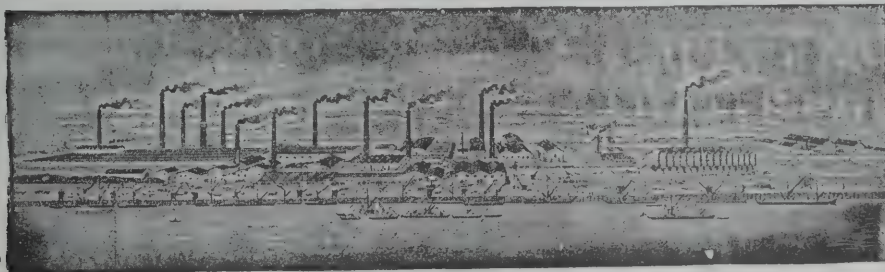
BRADLEY GREEN.

For alterations and additions to Primitive Methodist school. Mr. ELIJAH JONES, architect, Hanley.

Godwin	£1,184	14	0
Cooks	1,055	0	0
Moss	999	0	0
Cornes & Sons	990	0	0
Thomas & Son	975	0	0
Wackin	933	5	3
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Robinson	468 0 0
Barnes	461 14 5
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PLATT BROS., Shavington (<i>accepted</i>)	415 0 0

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Willmott	2,257 0 0
Fitch & Cox	2,210 0 0
Crisp & Jones	2,199 0 0
Galbraith Bros.	2,194 7 8
Westgate	2,136 0 0
F. & G. Foster	2,098 0 0

CHARD.

For the erection of wing to Oaklands, Chard. Messrs. SYMES & MADGE, architects, Chard.	
Bird & Pippard	£1,575 0 0
Munford	1,570 0 0
Spiller & Son	1,388 0 0
Parsons Bros. & Dunster	1,385 10 0
POOLE, Ilminster (<i>accepted</i>)	1,367 0 0
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For the erection of six cottages at Holyrood Street. Messrs. SYMES & MADGE, architects, Chard.	
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Spiller & Son	1,420 0 0
Poole	1,397 0 0
Parsons Bros. & Dunster	1,380 10 0
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Sidwick, Chard (<i>accepted</i>)	1,275 0 0
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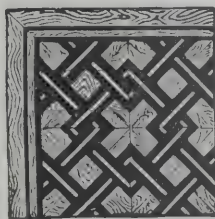
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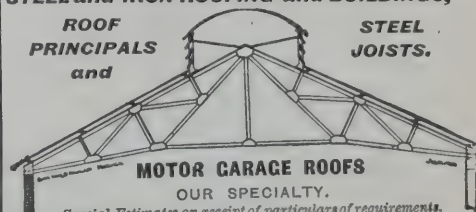
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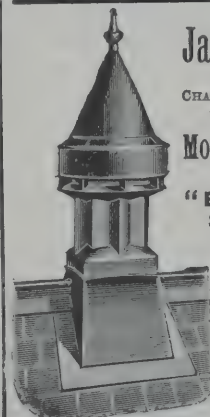
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Pratt & Sons	£3,070	7	9
Blow	2,821	0	0
Roberts & Co.	2,623	0	0
Groom & Richardson	2,493	0	0
Black & Son	2,400	0	0
Bowyer	2,397	0	0
Sabey & Sons	2,366	0	0
Christmas	2,347	0	0
Ford & Walton	2,299	0	0
Sharpe	2,280	0	0
Lawrence & Son	2,274	0	0
Brightman	2,193	0	0
SAUNDERS, Croydon (accepted)	2,150	0	0

For cleaning and painting at the White Oak school.

Markham	£2,093	0	0
Richards	1,425	19	2
Knight	1,140	0	0
Ellingham & Sons	1,069	4	3
Lonsdale	948	0	0
Wright	919	9	8
Vigor & Co.	914	0	0
Fenn	887	0	0
Wood Bros.	700	14	0
McCarthy (recommended)	696	0	0

For relaying drains at Eastern hospital. Mr. W. T. HATCH, chief engineer.

North British Plumbing Co.	£375	0	0
Hussey	197	0	0
Knight & Sons	190	0	0
Burrows	162	15	0
Grounds & Newton	140	0	0
Jennings	131	8	0
Porter	125	12	6
Woollaston Bros.	112	0	0
Roberts & Co., Earl's Court Road (recommended)	102	0	0
Soan	99	10	0

LONDON—continued.

For repairs to roads and tar paving at the White Oak school. Mr. W. T. HATCH, chief engineer.

Constable, Hart & Co.	£1,090	0	0
Knight	966	0	0
Trueman	930	0	0
Chittenden & Simmonds	769	6	0
Treeby & Co.	727	17	7
Wood & Sons	660	8	8
Woodham & Sons, Catford (recommended)	623	0	0

For electric lighting, &c., at the London County Council technical institute, Westminster.

Mercer, Rance & Co.	£1,050	10	0
Cozens	966	0	0
Barker & Co.	944	5	6
Aberdeen Electrical Engineering Co.	856	10	0
Pinching & Walton	761	0	0
Bryden & Sons (recommended)	687	0	0

For road works at High Street, Homerton, Marsh Hill, and at Sidney Road, for the Hackney Borough Council. Mr. NORMAN SCORGIE, borough engineer.

Mowlem & Co.	£1,465	0	0
Griffiths & Co.	1,442	14	11
Adams	1,414	11	7
Anderson	1,302	4	2
Bloomfield	1,288	9	9
PORTER, 2 Arthur Street, N.E. (accepted)	1,265	10	11

For the supply and delivery of locomotive crane to aid in removing from the new sand-pits which are now being constructed at the Crossness outfall the sand brought down by the southern outfall sewers.

Priestman Bros.	£854 or £969		
Stothert & Pitt	766	0	0
Smith & Sons, Rodley, Leeds (recommended)	668	0	0
Grafton & Co.	640	0	0
Isles, Ltd.	548	0	0
Coles	545	0	0

For the supply of the grab required for use with the crane.

Priestman Bros.	£155	0	0
The Thames Iron Works, Shipbuilding and Engineering Co., Greenwich (recommended)	130	0	0
Stothert & Pitt	92	0	0

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LONDON—continued.

For manufacture, delivery and laying of about 60 miles of high-tension electric cables, &c., required for electrification of portions of the tramways.

St. Helens Cable and Rubber Co.	£76,346	5	6
Johnson & Phillips	74,598	2	8
Henley's Telegraph Works	74,521	15	2
Glover & Co.	73,694	11	4
Callender's Cable and Construction Co.	73,577	1	2
British Insulated and Helsby Cables	72,406	3	0
Western Electric Co.	71,710	2	1
Siemens Bros. & Co., London (<i>recommended</i>)	70,563	9	7

For providing and fixing three boilers and hot-water apparatus at the Fountain Road site, Wandsworth.

Wontner-Smith, Gray & Co.	£925	0	0
J. & F. May	810	0	0
Cannon & Sons	753	16	0
Kinnell & Co.	750	0	0
Richmond & Co.	725	0	0
Brightside Foundry and Engineering Co.	709	0	0
C. Kite & Co. (<i>recommended</i>)	675	0	0

For reconstructing and extending the heating apparatus at the Ackmar Road school, Fulham.

Lancashire Heating Co.	£1,112	0	0
Turner & Co.	928	0	0
Boyd & Sons	875	0	0
Stevens & Sons	813	0	0
Cash & Co.	768	0	0
Wenham & Waters	763	0	0
Defries & Son	732	10	0
J. & F. May	725	0	0
Palowkar & Sons	697	0	0
Yetton & Co.	670	0	0
Knight & Sons	670	0	0
Wippell Bros. & Row.	664	10	0
G. & E. Bradley	651	0	0
Kite & Co.	650	0	0
Brightside Foundry and Engineering Co.	647	0	0
Cannon & Sons	633	18	0
BEESON & SONS, Rickmansworth (recom- mended)	625	0	0

LONDON—continued.

For painting at Tooting home and infirmary, Wandsworth Union.

	Infirmary.	Home.
Jelly	£1,400 0 0	£1,083 0 0
Holmes	705 0 0	460 0 0
Hill & Batten	675 10 0	525 0 0
Windall & Co.	617 0 0	—
Jewell	600 0 0	580 0 0
Rowley	462 19 5	443 11 7
Wright	433 15 0	398 10 0
Curd Bros.	428 0 0	426 17 0
Crabb & Son	382 0 0	415 0 0
Burns	—	326 7 0
FENN, Woolwich (<i>accepted</i>)	238 10 0	297 10 0

For alterations and repairs to St. Martin's-in-the-Fields parochial schools. Mr. R. T. WREATHALL, architect.

Stapleton & Sons	£1,532	0	0
Kendall	1,479	0	0
Patman & Fotheringham	1,470	0	0
Monk	1,410	0	0
Minter	1,390	0	0

MORTLAKE.

For extension of electricity works. Mr. G. BRUCE TOMES,
engineer.

Neil & Co.	£1,729	13	5
Ellis & Co.	1,669	3	0
Page & Son	1,596	0	0
Hughes & Co.	1,570	0	0
Abbott & Charlton	1,566	8	0
Minter	1,560	0	0
Abbott, Heinrich & Co.	1,507	17	6
Clayton	1,499	0	0
Lowe	1,446	0	0
Jarman, Daws & Co.	1,438	0	0
Martin, Wells & Co.	1,436	0	0
Hyde & Co.	1,404	0	0
Hunt & Sons	1,403	19	0
Soole & Son	1,400	0	0
Leather	1,320	0	0
SPENCER, SANTO & Co., Kensington (<i>accepted</i>)	1,300	0	0
Seaber	1,228	0	0

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TRAFFORD PARK

MILTON.

For the construction of sewers for Milton, Weston-super-Mare.

Pollard	£8,021	7	6
Best & Sons	7,003	15	6
Bell & Sons	6,617	9	9
Firth & Co.	6,410	0	0
Rutter	6,275	0	0
Mereweather & Sons	5,898	1	3
Forse & Sons	5,890	0	0
Pollard & Co.	5,886	5	6
Ireland	5,651	19	6
Coles & Son	5,592	0	0
A. G. Osenton	5,500	0	0
Trimm	5,457	0	0
Hill & Co.	5,455	5	2
Lovel	5,095	0	0
Nunn	4,902	0	0
Cooper & Co.	4,800	0	0
Mitchell & Son	4,660	12	0
Moss & Sons	4,556	0	0
F. Osenton	4,539	0	0
Smith & Co.	4,369	12	6
Riley	4,307	8	5
Macdonald	4,253	6	1
NEAL, Ltd., Plymouth (accepted)	4,154	13	1

NEW MALDEN.

For the erection of Council school. Messrs. A. W. JARVIS & F. A. RICHARDS, architects.

Schofield	£9,249	0	0
Tribe & Robinson	8,082	0	0
Mitchell Bros.	8,001	0	0
Marsland	7,607	0	0
Holloway	7,363	0	0
Kemp	7,228	0	0
Cummins & Son	7,150	0	0
Goddard	7,046	0	0
J. & M. Patrick	6,850	0	0
Martin, Wells & Co.	6,778	0	0
Smith & Sons	6,743	0	0
HAWKINS & Co. (accepted)	6,691	7	3

PENRITH.

For supplying about 410 tons of 4-inch and 3-inch pipes and connections; carting, laying and jointing pipes (about 11 miles); supplying and fixing valves and hydrants, &c.; building service reservoir, collecting tank, chamber and works at Head. Mr. GEORGE WATSON, engineer, Penrith.

Grisenthwaite	£7,311	0	11
Grainger Bros.	7,171	10	5
Thomson & Sons	6,143	18	6
Hill	5,970	14	1
Jowett Bros.	5,799	9	1
Brebner & Co.	5,692	0	0
Scott	5,598	7	6
Farrester	5,547	0	4
Carruthers	5,480	0	0
Jackson & Son, Penrith (provisionally accepted)	5,392	13	11
Crawford	5,242	8	11

REDDITCH.

For the erection of two houses, Birchfield Road, Redditch. Mr. B. PERRINS, architect, Redditch.

G. Huins & Son	£614	0	0
Holloway	530	0	0
C. G. Huins & Sons	528	15	0
Edkins & Son	526	0	0
Surman	526	0	0
Avery	524	10	0
Newbould	519	0	0
Rollins	495	0	0
YEOMANS, Redditch (accepted)	465	0	0

For the erection of house in Worcester Road. Mr. B. PERRINS, architect, Redditch.

Yeomans	£823	0	0
Edkins & Son	750	0	0
C. G. Huins & Sons	750	0	0
Newbould	747	0	0
G. Huins & Son	609	0	0
Surman	686	0	0
Rollins	673	0	0
Avery	662	0	0
HOLLOWAY, Redditch (accepted)	570	0	0

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REDDITCH—continued.

For the erection of house and stabling, Bromsgrove Road.	
Mr. B. PERRINS, architect, Redditch.	
Avery	£945 0 0
G. Huins & Son	910 0 0
Surman	899 0 0
NEWBOULD, Redditch (accepted)	890 0 0

For the erection of a house in South Street. Mr. B. PERRINS, architect.	
C. G. Huins & Sons	£450 0 0
Newbould	429 0 0
G. Huins & Son	415 0 0
SURMAN, Redditch (accepted)	390 0 0
Rollins	375 0 0

TERRINGTON ST. CLEMENT.

For the erection of shop, with house and premises and private dwelling-house. Messrs. WALKER & WALKER, architects, Wisbech.	
Flood	£696 0 0
Dye & Allen	660 0 0
Shanks	640 0 0
Read & Wildbur	623 10 0
Tash & Langley	613 10 0
Wilkinson	608 1 0
Collison	600 0 0
Rands & Son	592 17 0
Bone	579 17 6
BARNES & Co., King's Lynn (accepted)	564 0 0

SURBITON.

For street widening and improvement works at Oak Hill Grove and Oak Hill. Mr. H. T. MATHER, surveyor.	
Mowlem & Co.	£804 0 0
Limpus & Sons	693 0 0
Free & Sons	688 7 7
James & Co.	623 0 0
KAVANAGH & Co., Surbiton (accepted)	559 7 5

WEMBDON.

For laying stoneware and cast-iron pipe sewers, with engine-house. Mr. W. A. COLLINS, engineer, Bridgewater.	
Gleed Bros.	£2,119 6 11
Ambrose	1,893 0 4
Neal	1,730 0 0
Bryer	1,613 4 10
Pollard & Co.	1,570 11 6
Jestey & Baker	1,543 9 1
POLLARD, Bridgewater (accepted)	1,448 10 9

TRADE NOTES.


THE new Victoria Market Hall, Oldham, is nearing completion, and the Corporation have instructed Messrs. Joyce, Whitchurch, Salop, to supply a large clock showing the time upon three dials. The same firm are making a three-dial clock for Salford for the new offices of the Manchester and Salford Savings Bank, and another for Desborough for the Premier Cycle Co., Coventry.

MESSRS. W. POTTS & SONS, LTD., clock manufacturers, Leeds and Newcastle, have received instructions to make and fix a large clock with three external dials at Liverpool. They are also erecting one at Newcastle-on-Tyne with two large dials, and one at a church near Manchester with four illuminated dials, and one at Luffenham, Rutland, with large outside dial and striking hours. All the above are from the late Lord Grimthorpe's designs and plans.

MESSRS. OETZMANN & Co. have supplied the furniture for Sardou's "Divorçons" at the Duke of York's theatre, and it is in keeping with the period.

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THE LONDON AND LANCASHIRE INSURANCE COMPANY.

WE have the pleasure of announcing that under a provisional agreement which has just been signed the Standard Marine Insurance Company, Ltd., passes under the control of the London and Lancashire Fire Insurance Company as from the 30th inst. In consideration of the transfer, the London and Lancashire will pay to the shareholders of the Standard the sum of 2*l.* per share as goodwill, over and above the net assets of that company, after deduction of all ascertained liabilities. The payment will be made in London and Lancashire shares at 24*l.* per share. The Standard Marine will continue its operations as a separate company, but it will now, of course, have greater chances of expansion and development with the strong financial backing of the London and Lancashire. The Standard Marine was established in 1871, and has had a successful career. Its last published balance sheet shows that it has a net premium income of 100,899*l.*, a paid-up capital of 100,000*l.*, and reserve funds of 175,745*l.* The London and Lancashire's capital amounts to 2,280,000*l.* and its reserve funds to 1,554,068*l.* Hitherto it has confined its operations to fire and accident business, but by this acquisition of an important marine company it will now be placed in the front rank of companies transacting fire, marine and accident business in this country.

VARIETIES.

ARRANGEMENTS are being discussed for an electrical exposition at Niagara Falls in 1908.

WESTMINSTER city hall has sustained damage from the vibration caused by motor-bus traffic in the Charing Cross Road, the ceilings throughout the building having cracked.

THE Yardley Rural District Council last week approved a scheme for certain works of surface-water drainage. The clerk was directed to apply for sanction to borrow a sum of about 13,500*l.* for the execution of the scheme.

THE Berwick Sanitary Authority have adopted a motion to apply to the Local Government Board for power to borrow money for the purpose of carrying out a joint water scheme for the borough estimated to cost 18,000*l.*

THE tender of Messrs. Cook & Son, of Crawley, has been accepted for the new municipal buildings to be erected for the Godalming Town Council. There will be an increase in the amount of about 200*l.*, as extra work has been decided on.

THE York City Council at a recent meeting adopted the report of the sewerage committee, and it was decided to make application to the Local Government Board for sanction to borrow 49,191*l.* for sewage purification works at Naburn.

THE Haywards Heath Council have received 121 applications for the post of surveyor to the Council and inspector of nuisances. At a special meeting of the Council on Monday a committee was appointed to select six of the applicants for interview with the Council.

THE Dartford Rural District Council have received an estimate of the cost of the proposed sewer through the parishes of Eynsford, Farningham and Sutton-at-Hone. The total expense is estimated at 17,100*l.* Particulars are to be sent to the parish councils concerned, and a Local Government Board inquiry is to be held.

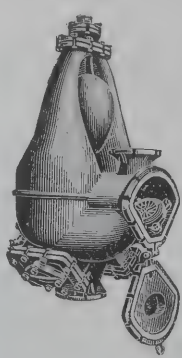
MR. E. W. DENNISON, who for twenty-seven years was connected with the firm of Clark, Bunnett & Co., has started in business with Mr. Steer and Mr. George Kett, and the firm will be carried on as Dennison, Kett & Co., makers of iron, steel and wood shutters, collapsible gates and lifts, at 11 Queen Victoria Street, E.C., and with works at 61 to 63 Lant Street, Borough.

MESSRS. GEO. TROLLOPE & SONS call our attention to the fact that several of our contemporaries in announcing the forthcoming sale of sculpture at Trentham Hall have given an incorrect date, and have asked us to call particular attention to the fact that the opening day of sale is Wednesday, July 17, and following days, commencing promptly at one o'clock each day.

THE issue of the *Pall Mall Magazine* for July contains a very interesting illustrated article from the pen of Mr. Ian D. Colvin on the "Abbey Church of Holyrood," and an article entitled "Strange Life on a London Waterway," illustrated by special photos taken by the author, Mr. William N. Beal. These two special articles, with the letterpress usually to be found, make up an exceptionally interesting number for the coming month.

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Dublin.—

Booth Bros., Upper Stephen Street.

Holland.—

Hausmann Bros., Wynstraat 46, Wijnhaven 37, Rotterdam.

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£30,000,000.

THE New Palace Steamers Company announce that their full service will begin on the 22nd inst., and on the 23rd the *Koh-i-Noor* will run from Tilbury to Southend, Margate, Ramsgate, Deal and Dover and back. Special trains will run from Fenchurch Street and St. Pancras to Tilbury in connection with the boat. The *Royal Sovereign* will run daily (except Fridays in June) to Southend, Margate and Ramsgate and back, leaving Old Swan pier, London Bridge, at 9 A.M.

AN extensive improvement is about to be carried out on the M'Quistenbridge on the Kilmarnock Road at Pollokshaws East, Glasgow. The structure is narrow, and when the tramway system was extended to Giffnock it was able to accommodate only a single line of rails. The bridge is to be widened, with granite parapets. The total cost is estimated at 6,872*l.* The successful contractors are Messrs. William Kennedy, Ltd., Partick, and the amount of their tender is 5,916*l.* 19*s.* 9*d.*

THE Prestwich Council have passed resolutions approving of the Clough sewage works extension scheme, and deciding that application be made to the Local Government Board for powers to borrow 10,730*l.* Application is also to be made for powers to borrow 8,200*l.* for the main outfall sewer from the George Street works to the Clough works. The Mersey and Irwell committee has been pressing Prestwich to improve its sewage arrangements.

AT a sitting of the Glasgow Dean of Guild Court on Friday lining was granted for a further extension of the Royal Infirmary in Warnock Street and Wishart Street. The new buildings will be four storeys in height, and will be used as a nurses' home, laundry and other offices. The cost is estimated at 37,400*l.* Lining was also granted for the erection of a New Jerusalem Church, with halls and offices, in Woodlands Road, at a cost of 3,700*l.*

THERE were twenty-five cases on the roll of the Edinburgh Dean of Guild Court on the 13th inst., and thirteen applications were either passed or remitted to the burgh engineer. Permission was given to the Commissioners of His Majesty's Works to extend the Law Courts at Parliament Square. These extensions make provision for a new court and for enlarging one of the present outer house courts, as well as for additions to the advocates' library,

and the providing of rooms for officials and for restaurant purposes.

THE Dublin Corporation have passed resolutions instructing the town clerk to take the necessary steps for the promotion of a Bill in the next session of Parliament to give effect to the recommendations dealing with the question of improvement in the housing of the workers of Dublin, and also to apply to the Local Government Board for their sanction to a further loan of 10,000*l.* to meet advances to borrowers under the provisions of the Small Dwellings Acquisition Act, 1899.

At the meeting of the London County Council on Tuesday, in reply to questions, Mr. E. White, chairman of the works committee, said there had been a strike of bricklayers at the sewer works which were being carried out at Hackney. The men had been receiving as much as 6*l.* and 7*l.* per week for underground work, and had refused to work under a rearrangement by which their earnings would have been reduced. Many men were willing to undertake the work but had been intimidated.

THE Aberdeen Town Council on Monday agreed to a recommendation of the finance committee whereby a donation of 15,000*l.* will be given to the Technical College. It was stated that the governors of Gordon's College would provide a site, and that the whole sum at present in view would amount to about 50,000*l.* The Education Department would give a grant equal to the amount raised locally, which means that a total of about 100,000*l.* or thereby would be available for the scheme.

THE Lord Mayor of Birmingham presided on Monday at a meeting of the general purposes committee. A discussion took place with reference to the new Workmen's Compensation Act, which comes into force on July 1. There had been a suggestion that a new department should be created to investigate any claims which the Corporation might have made against them. It was decided to take no action, at any rate for the next twelve months. In the meantime the various committees will consider and discharge their own liabilities.

THE construction of the new seaport of Bruges is now practically completed. The outer harbour is formed by the construction of a curved breakwater 7,337 feet in length,

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enclosing an area of about 272 acres. A series of locks and basins connects the outer harbour with the Bruges Ship Canal, which has a depth of $26\frac{1}{2}$ feet and a bottom width of 73 feet. The canal, $8\frac{1}{2}$ miles long, connects the town and harbour of Bruges with the sea. The cost of the work

THE Court of Appeal on Saturday, in the case of the Lancaster Rural District Council *v.* Fisher and Le Fane, allowed the defendants' appeal from a judgment of Mr. Justice Bigham in an action for damages for injury to a road near Lancaster by the defendants' traction engines during the laying of a water main as contractors on behalf of the Manchester Corporation. At the trial Mr. Justice Bigham gave judgment for the plaintiffs for 500*l.* and costs. Their lordships held that the judge was wrong in the view he took as to the limitation of the time during which proceedings could be taken by the plaintiffs. A cross-appeal by the plaintiffs on the question whether there was a contract to pay by the defendants what should be found to be due by the surveyor was dismissed.

THE Westminster City Council rejected a recommendation from the improvements committee to proceed with the widening of Chandos Street. The committee were of opinion that the most satisfactory scheme would be to widen the street to 45 feet from and including the Marquis of Granby at the corner of Chandos Street and Bedfordbury, to and including No. 44 Chandos Street. The estimated cost of this scheme was 40,000*l.* The London County Council has drawn the attention of the Westminster City Council to an opportunity for widening the Strand in connection with the rebuilding of the British Medical Association's premises at the corner of the Strand and Agar Street. The adoption of a suggested frontage would increase the width of the Strand at Agar Street to about 58 feet. The Westminster Council regards the improvement as desirable, and will give favourable consideration to the matter, with a view to contributing towards the cost when estimates and plans are before it.

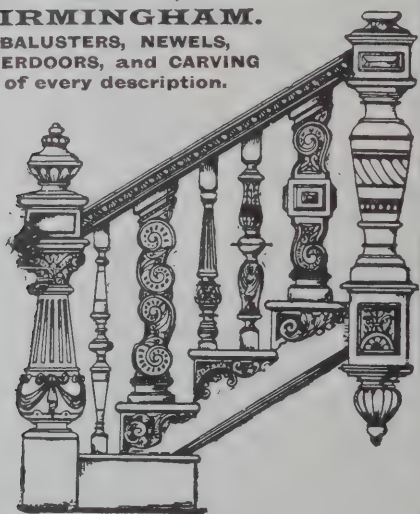
A NEW Baptist church, at Shepherd's Bush, was formally opened on Thursday, the 20th inst. upon the site of the temporary building erected many years ago in Shepherd's Bush Road. Owing to its situation the architectural treatment of the exterior has been largely confined to the west front, which is of striking and graceful design in red brick

and terra-cotta of a soft grey colour, having the appearance of a natural stone. The late Gothic character of the exterior has been preserved as far as possible in the interior of the church, which is designed to accommodate about 600 worshippers. The building also contains spacious school and classroom accommodation, vestries, &c. The terra-cotta work has been carried out by the Hathern Station Terra-Cotta Co., of Loughborough, heating and ventilation by Messrs. Wontner-Smith, Gray & Co., and the seating by the Bennet Furnishing Co. The plans, selected in competition, were prepared by Mr. Percival W. Hawkins, A.R.I.B.A., of Westminster, and Mr. C. Gray, of Shepherd's Bush, was the contractor.

ANCASTER HOUSE, Richmond, S.W., on the summit of Richmond Hill, adjoining the entrance to and overlooking the park, is to be demolished and residential flats *de luxe* are to be erected thereon, to be called Queen's Court, under the supervision of Messrs. Palgrave & Co., architects, who are engaged upon the design. The site is a well-known landmark immediately opposite the Star and Garter Hotel, and was formerly the hunting-box of the Duke of Ancaster, once a seat of the Darrel family and of the late Sir Francis Burdett, Bart. The buildings are to be erected in four separate and isolated blocks connected only by a colonnade, which will form part of the architectural scheme to the main floor. There will be a frontage to the park of about 400 feet, with a return frontage to Richmond Hill and Queen's Road of about 600 feet, of which it is intended to make full use in the plans, securing to the occupiers uninterrupted views of the beautiful park scenery, and from Richmond Hill over the picturesque and delightful panorama of the Thames Valley below. The elevations will be quiet and unobtrusive, the principal ornament being gauged and carved brickwork with relief of rough-cast and green shutters. The flats will consist of from six to eight rooms, and will be approached by grand entrance hall and electric lifts. The rooms are to be spacious and lofty, and several new features are to be introduced. The buildings are to be surrounded with ornamental gardens, and a motor garage will be provided for the use of tenants. The total cost of the four blocks is not to exceed 110,000*l.*, and the architects estimate the time for completion at two years and six months.

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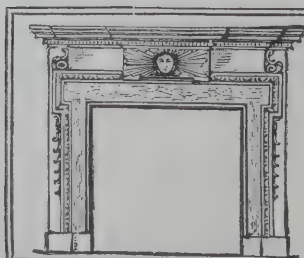
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CASES FOR BINDING THE ARCHITECT,

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THE new sewerage system and sewage-disposal works at Colwyn Bay were opened on Saturday last. An intercepting sewer has been built beneath the promenade from Colwyn to Rhos, and into it the sewage from all the main drains of the town flows. The intercepting sewer delivers the sewage into the pump well below the pumping station, whence it is elevated by a series of pumps driven by gas engines to a reservoir, whence commencing at the time of half water and terminating at the time of half ebb it is discharged into the sea over 2,060 feet from the face of the sea wall beyond Rhos Point. It is expected that the entire scheme will cost nearly 120,000*l.*, but the sewerage works contract has been carried out for less than the estimated 62,000*l.* The consulting engineers were Messrs. Pritchard, Green & Co., of Birmingham.

WE are informed that the Belle steamers daily service (Fridays excepted) to Felixstowe, Harwich, Ipswich, Southwold, Lowestoft, Gorleston and Yarmouth commenced on Saturday, June 15, leaving Fresh Wharf, London Bridge, at 9 A.M. weekdays and 9.15 Sundays. The daily sailings to Margate and Ramsgate will be resumed on Saturday, June 29, on which date the Husbands' Boat to Margate on Saturdays begins leaving Fresh Wharf at 2 o'clock, and calling at Tilbury only for passengers by 2.53 train from Fenchurch Street. The company this year are issuing their time-table in an extended form, having incorporated under the heading of "Where to Stay" a list of hotels, boarding and apartment houses, which will be sent post free on application.

WIRED GLASS.

A FEW years ago if Messrs. Pilkington presented an illustration of a man weighing 193 lbs. standing in the centre of a plate of glass a quarter-inch thick, the trestles being 2 feet apart, it would be considered that the feat occurred at a public entertainment and that there was a large amount of trickery employed. No less absurd in a business sense would be a representation of a similar plate which had to be subjected to a load of 433 lbs. before it was broken, and in that state could still support a load of 314 lbs. From the

time of its first manufacture glass has been proverbial for its brittleness, and it was supposed to exemplify weakness rather than strength. But the investigations concerning reinforced concrete have demonstrated that ferro-glass is an arrangement no less rational, and that the vast increase of power in one material is to be expected with glass which can amalgamate with metallic aid more readily than does cement. Fireproof buildings are a misnomer while so many weak points are presented in the form of windows. Wired glass gives security, and as it is made in several varieties it can become no obstacle to the admission of light. It has been tested by the Fire Prevention Committee, but although the glass was starred there were no holes in it. At the Woolwich explosion last February the part of the roof in which wired glass was used held firmly together and protected the machine beneath from serious damage. The ordinary sheet glass which was used in the Arsenal was shattered to pieces and fell to the ground. The result is that the glass is coming into favour not only with architects and engineers, but with contractors for glazing. Messrs. Mellows & Co. have used 300,000 feet of wired glass in the Westinghouse factory. Messrs. Helliwell & Co., the Standard Patent Glazing Co., Messrs. H. Hope & Sons, Messrs. Rendle & Co. and others have adopted it with advantage. The illustrated description which can be obtained contains lots of buildings in all parts of the country where the glass can be seen and an account of numerous severe tests to which it was subjected. The latest application is a screen for automobiles, which provides against accidents to passengers in case of collision.

MILAN INTERNATIONAL EXHIBITION, 1906.

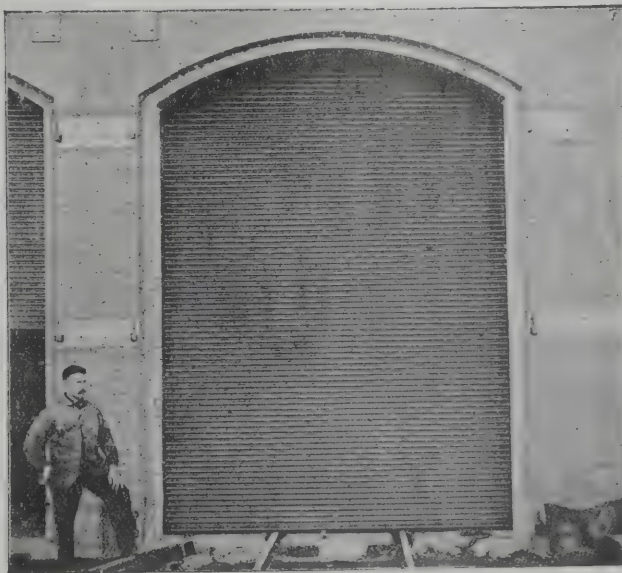
THE report of the British Commission of the Milan International Exhibition, 1906, to Sir Edward Grey, Secretary of State for Foreign Affairs, states that the awards bestowed on the British section could hardly have been more satisfactory, and afford the best possible proof of the general excellence and representative character of the exhibits, especially when their inferiority in numbers is considered. Mr. Arthur Serena, hon. executive commissioner, says:—"The British record is highly satisfactory. The exhibitors

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formed only 2.63 per cent. of the total, but they carried away 3.34 per cent. of the awards. The proportion of the awards throughout the exhibition was 0.81, France and Belgium obtaining respectively 0.69 and 0.74, and Great Britain 1.06; Germany alone obtained a higher figure (1.33). The results, in the case of Great Britain at least, were certainly not due to a preponderance of seats on the juries, as there were only 41 out of 1,317, or 3.11 per cent., whilst Germany had 107 out of the same total, or 8.12 per cent., a much heavier proportion. It would appear, however, that the success attained by Germany was chiefly due to the adoption by their Commission of a special attitude towards the International Jury which constituted a distinct, but, as it proved, a profitable innovation. They drew up lists of awards that each jury should, in the opinion of the Commission, bestow upon the exhibitors. These lists were circulated by the German representatives to the various juries, and the awards thus suggested were in the majority of cases bestowed. Returning to British exhibits, as it is undoubtedly in the higher awards that the relative superiority is most conspicuous, it may be accepted that the quality was wholly satisfactory. Of the Grands Prix one was awarded to every 10.84 Italian exhibitors, 4.49 Belgian, 4.81 French, 2.26 German and 3.23 English. One in 9.74 Italian exhibitors, 7.10 Belgian, 7.94 French, 4.06 German and 6.06 English was a recipient of a Diploma of Honour. Gold medals were bestowed on one in 4.75 Italians, 5.68 Belgians, 7.49 French, 3.48 Germans and 3.17 English. It would be difficult to point to equally good relative results at previous international exhibitions. The 340 awards bestowed upon British exhibitors do not by any means exhaust the list. In the special scholastic exhibition they obtained 16 awards; to collaborators were given 96 diplomas, while about 76 more have been awarded to members of the Commission, jurors and officials of the section. Altogether the awards reach a total of nearly 500. The verdict as to the British section must therefore be considered as one of general approval." The Commission record, among other votes of thanks, those passed to Lord Brassey, hon. president of the British Commission; to Sir Albert Rollit, president and chairman of the executive and juries' committees; and to Mr. Arthur Serena, hon. executive commissioner.

BRIGHTON AQUARIUM.

THE Aquarium committee have received a report from the borough surveyor with estimates for sundry repairs to the interior and exterior of the Aquarium buildings (exclusive of that portion of the terrace for a tenancy of which the Brighton Motor Boat Club are in negotiation) and for the restoration of the fernery, waterfall, &c., at the eastern end. The interior work chiefly consists of repairs to various tanks. The outside repairs include the painting of the western entrance, toll-house, clock tower, &c., and the iron fencing on the southern side, including the gates, putting new doors and frame, glazing and painting entrance to Aquarium from terrace, repairs to roofs, gutters, brickwork, window frames, &c., and the total estimated cost of these repairs is about 209l.

With reference to the proposed restoration of the fernery, which was situated at the eastern end of the present theatre, occupying the space now used for the stage, scenery dock and store-rooms, and was about 100 feet in depth, the report states that considerable alterations have at different times been made, large portions of the rockwork having been removed, as have also the cascade, the pools and other works. Two of the iron columns which supported the roof have been removed and brick piers substituted. The borough surveyor found the roof in very bad condition, and the greater portion will have to be reconstructed and the whole reglazed with obscured glass. New lead gutters and flashings will be required; the piers referred to will have to be removed and cast-iron columns fixed, and several openings will have to be closed up with brickwork. Over 2,000 cubic feet of rockwork will be required to make good that cut away. The pools and watercourses will have to be partly re-formed, and rustic work fences and plants provided. The engines which formerly pumped the water to supply the cascade and streams are in fair order and may be used. A good supply of water can be obtained from the well. The raised platform for the seating in the theatre will require to be removed, but so far as can be seen the tiled paving beneath is in good condition. He estimates the cost of this work at about 750l.

The committee are of opinion that the repairs are neces-

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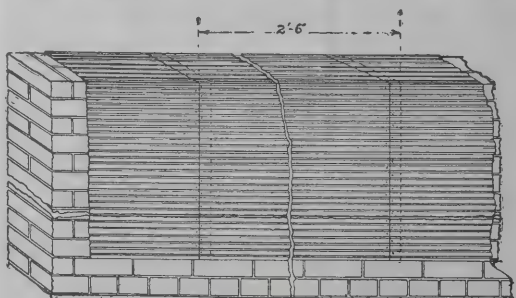
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For Index of Advertisers, see page x.

sary for the preservation of the premises, and that the restoration of the fernery and cascade would prove an undoubted attraction to the Aquarium. With the exception of the heating of the Aquarium, which may require attention at a future date, the expenditure now recommended is all that the committee consider is required to put the premises referred to in the surveyor's report in a satisfactory state of repair. They therefore recommend that the Council should authorise them to carry out the various works specified in the borough surveyor's report. It is proposed that the work should be carried out under the existing triennial contracts for painters and carpenters' work, under the supervision of the borough surveyor.

JAPANESE ARBORICULTURE.

THERE was a time, says the *New York Tribune*, when trees grew and blossomed and bore fruit as nature prescribed, and with little assistance from man. All that has been changed. The wizard of California makes trees bear almost any sort of fruit he pleases, and also prompts them to a truly American energy in the process of growing. Some trees under his manipulation will shoot up to full growth in about three years, so that we may, at this rate of progress in tree culture, soon be able to obtain the trees we want "while we wait," the waiting being done strictly on the American plan, which is never characterised by patience. Fakirs in India can make one see—or think he sees—a plant sprout, bud, blossom, leaf and fruit all in a few minutes, but the real plant miracles are wrought by Japanese, Chinese and American wizards in horticulture, who have learned some of nature's mysteries and turned them to their own ends. No nation in the world can compare with the Japanese in their development of odd shapes in evergreens. The Chinese have some wonderful old evergreens grown so that their roots form great arches under which people pass into temples, and they have trained trees into wonderful twisted shapes by braiding the young shoots, and have formed marvels in the way of roots that extend above the top-most branches of trees; but they have not achieved the remarkable results which have made Japanese landscape-gardeners rank with the great men of the empire, whose names are quoted as we would quote the name of some

artist of note. Of these Shinzaburo Suzuki carries on his mysterious art in this country, associated with Masazo Satow, who have just turned over to Mr. Vanderbilt, on his Adirondack estate, a complete Japanese garden at a cost of 30,000 dols. Mr. Suzuki has sent an expert Japanese carpenter to erect in the Japanese garden of Mr. Stokes, at Greenwich, Conn., a Japanese teahouse and summer-house, such as is to be found in every well-regulated Japanese garden, and which slides into sections in a manner as marvellous as everything else about a Japanese garden.

The strange formation of exposed roots is brought about, Mr. Suzuki says, by taking away from the roots each year from an inch to an inch and a half of earth, trimming off, at the same time, little feeding roots from the main ones. These exposed roots can be trained into any desired shape in this manner. Sometimes a root is grafted to appear like a double trunk, sometimes roots are grafted upon the main stem or branches, and hang down covered with foliage, odd specimens of root and branch combined in one. The bent and twisted stems and branches are held in place by means of small wires and a fibre which is the colour of bark, so that these never show among the branches. With the finger and thumb new shoots are constantly pinched off, only the main ones on the trunk being allowed to develop, and thus the shape of the tree is maintained. Grafting and budding give to the branches the required number of foliage twigs grown in the manner desired, and a tree will often be several times its height in the spread of its branches. In connection with constant pruning and pinching the trees to be dwarfed are planted in small pots and get just enough space to permit life, with none for natural growth. There is just sufficient moisture provided to attain the same end, and trees are treated in this manner for hundreds of years in Japan, descending from generation to generation, a precious possession in families, collections or temples. When the dwarf tree has been shaped in the desired style, it remains in this shape afterward, but the pinching of new shoots has to be kept up with the years. Rare old pines of slow growth have required from thirty to fifty years of training to make them what they are to-day—at an age of from two to four hundred years. The process, however, is not so

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slow with other growths—the maple, for instance, being easily dwarfed. These dwarfed maples form exquisite lawn decorations. They come in green and in light red varieties, with many forked, feathery leaves and irregular dome shapes of wonderful delicacy and charm. A combination of a green with a scarlet maple is popular, but it is noticeable that the Japanese do not so mingle them.

CASTING REGULATIONS FOR BRASS TRADE.

THE Home Secretary has issued the draft of new regulations proposed to be enforced in connection with the casting of brass, as follows:—

Part I.—Duties of occupiers:—(1) Pouring of brass shall not be carried on unless there be (a) an efficient exhaust draught for the removal of the fumes at or as near as possible to the point of origin; and (b) efficient arrangements to prevent the fumes from entering any room in the factory in which work is carried on; and (c) free openings to the outside air in the upper part of the room. (2) There shall be provided and maintained in a cleanly state and in good repair, for the use of all persons employed, a lavatory, under cover, with (1) a sufficient supply of clean towels, renewed daily, and of soap and nail brushes, and (2) with either—(a) a trough with a smooth impervious surface, fitted with a waste-pipe without plug, and of such length as to allow at least 2 feet for every five such persons, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than 2 feet; or (b) at least one lavatory-basin for every five such persons, fitted with a waste-pipe and plug or placed in a trough having a waste-pipe, and having either a constant supply of hot and cold water, or warm water, laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always on hand when required for use by persons employed. (3) No female shall be allowed to work in any process whatever in any room in which pouring of brass is carried on.

Part II.—Duties of persons employed:—(4) No person employed shall leave the premises or partake of food without carefully washing the hands. (5) No persons employed

shall carry on the pouring of brass without using the apparatus provided in pursuance of Regulation 1 (a).

Brass is defined as "any alloy of copper with zinc." In an accompanying circular it is stated that the new regulations have been prepared after careful inquiries, extending over a period of several years, into the condition of the industry and the working of the special rules. The inquiries have shown that the special rules do not adequately provide for the protection of the workers and that further precautions are necessary. The chief proposal is the requirement of efficient means to remove the fumes which arise in the process of pouring the brass. These fumes are the chief source of injury to health among those engaged in the casting shops. Great advance has been made in recent years in the direction of the local application of exhaust ventilation for the purpose of the removal of fumes, and it has been found that in other industries, where regulations similar to those now proposed for the brass trade are already in force, they have been productive of beneficial results. The Secretary of State understands that at least one form of apparatus is in use in some shops in the process of casting which successfully removes the injurious fumes, but that, as a rule, no means of the kind are provided in brass casting shops. He is satisfied that the requirements now proposed are necessary for protecting the health of the workers. If objections are taken to the regulations these will be the subject of full inquiry, and the report will be considered by the Secretary of State before the final regulations are made.

LONG GROVE ASYLUM.

ON Saturday last, the 15th inst., the new Long Grove Asylum, Epsom, erected by the London County Council, was opened for inspection. In 1889 the responsibility for providing asylum accommodation was transferred by the Local Government Act, 1888, from the county justices to the London County Council, and the asylums committee of that body—as the statutory authority—has had the serious responsibility of coping with the task of providing accommodation for the greatly increased number of lunatics. The number of lunatics in the county of London for whom the Council was responsible to find accommodation was on

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January 1, 1890, 10,104. On January 1 of this year the number had increased to 18,841. The increase has therefore been at the rate of over 500 a year.

The asylum now completed is the tenth for the county of London, and the sixth asylum erected by the London County Council. Early in the year 1903 the want of asylum accommodation became acute, owing to the loss of 300 beds at Colney Hatch asylum by the lamentable fire which occurred in January 1903, and in order to save time it was decided to utilise a plan which had been used for two former asylums at Bexley and Horton. The architect, Mr. George T. Hine, was, however, requested to make some important alterations and improvements in this design. By the utilisation of this plan the committee were enabled to get the sanction of the Lunacy Commissioners and the Home Secretary much more rapidly than if an entirely new design had been presented. On August 20, 1903, a contract was entered into with Messrs. Charles Wall, Ltd., for putting in the foundations. An exceptionally wet season ensued, which delayed the final completion of the foundations until November 1904. In October of the same year the tender of Messrs. Foster & Dicksee, of Rugby, for the superstructure of the entire buildings was accepted, and their contract allowed for 2½ years from December 15 in which to execute their contract, the date fixed for the completion being June 15, 1907, which, by a coincidence, is the date fixed for the inspection of the asylum. Messrs. Foster & Dicksee—although losing some three months in consequence of protracted negotiations for, and in the construction of, a branch railway from Ewell station—have used such expedition in the performance of their work that they completed the buildings nearly three months before the appointed time, the committee having possession of the main asylum on April 6 of this year.

The entire buildings are constructed to accommodate 2,020 patients. As has been said, the main asylum is designed on somewhat similar lines to those of Bexley and Horton, but with many modifications and improvements. In the first place, it accommodates 250 fewer patients, these being lodged in villas. Secondly, the entrance and official block is on the south side of the asylum instead of in its usual position on the north; this alteration being due to the southern position of the main road of approach, by which a

saving of a good half-mile is effected when approaching the building.

The patients' quarters comprise wards on each side for the different classes, viz. sick and infirm, acute and refractory, epileptics and chronic quiet and working patients—800 males and 800 females.

The wards are in continuous buildings on the pavilion principle, all intercommunicating, so that the medical officers on their rounds can pass from ward to ward quickly without having to retrace their steps by returning to the main corridors before entering another ward. There are, however, main corridors communicating with each block for general service, and through these patients will pass to the recreation-hall, workshops and laundry buildings. These corridors, unlike those in asylums generally, are merely covered ways, being open at the sides, and in consequence of this it is anticipated a more healthy condition will result and also a greater immunity from fire.

In the main asylum are the administrative departments, the offices for the staff and quarters for the medical officers and others, also a recreation-hall 120 feet by 60 feet, with well-equipped stage at one end, and adjoining this a club or recreation room for the attendants and nurses when off duty. The kitchen and kitchen offices are to the north of the hall, and beyond these are the general store and other rooms under the charge of the storekeeper.

On the women's side are the laundry buildings, comprising general officers' and foul washhouses and ironing-rooms, efficiently equipped. These and all other engineering work, comprising heating, hot-water supply, electric lighting and other electrical works, have been installed under the direction of Mr. Clifford Smith, the asylums committee's asylums engineer.

On the male side are the workshops, in which patients who are able to work are employed—tailors, shoemakers, upholsterers, also the carpenters and plumbers' workshops—and the engineers' shops and boiler-house, where steam is generated for heating, cooking, washing, &c. Electricity for lighting and power purposes is generated at the central station of the Horton estate, where the asylums' engineer has installed an electrical plant sufficient for lighting three of the existing asylums on this estate. Adjoining the boiler-house is a water tower 130 feet high, in which are

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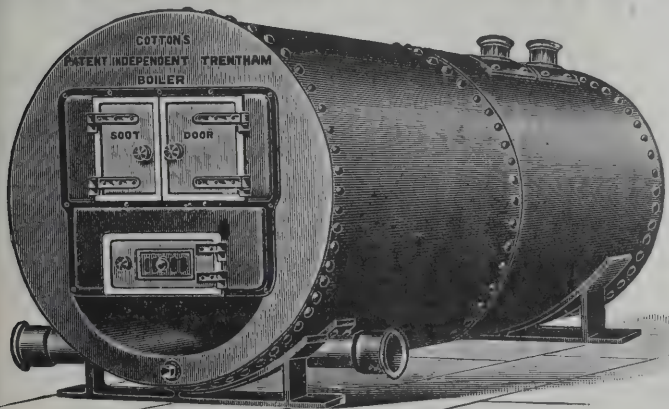
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tanks holding 80,000 gallons of water for domestic use and to serve as a reservoir in case of fire, the boiler chimney being incorporated in this tower.

In addition to the main asylum there are eight detached blocks or villas accommodating 400 patients; two of these for fifty patients each are designed as hospitals for the reception of new cases, where they can be medically treated and, if cured, discharged without entering the main asylum, or passed on into one of the convalescent homes, two of which are provided for twenty-five patients each, where they can be housed in a homelike way as a probationary step before being returned to their own homes. Two other villas accommodating sixty-five patients each are erected at some distance from the asylum, for workers, one near the farm buildings for men and the other near the laundry for women. Lastly, there are two one-storey villas, each accommodating sixty quiet chronic cases, some of whom on the male side will probably work on the land, and will thus have their home in the "country" near the scene of their labours. A small isolation hospital for infectious cases completes the accommodation provided for patients.

In addition to quarters for the staff on both sides there is a detached block or home for nurses, each of whom will have a separate sleeping room, and for whom as well as for the male attendants, comfortable mess, sitting and club-rooms are also provided. A detached residence for the medical superintendent is erected away from the asylum at one end of the estate, and a detached chapel of ecclesiastical design is erected on the south side abutting on Horton Lane.

Some old farm buildings on the estate have been restored and improved, and, in addition to these, new piggeries have been erected, with a farm bailiff's house, as well as suitable garden-houses, comprising forcing and greenhouses, potting-sheds and fruit stores. The grounds are being laid out and planted with all necessary roads, airing-courts for patients, enclosed with iron fencing, and a recreation ground to the east of the asylum buildings.

It will be interesting to know that the entire buildings, including all engineering work, cooking and laundry plant, lighting, telephones, &c., also the main roads on the asylum estate, and half cost of new road through the Horton estate, cost of main sewer from the asylums, &c., to Epsom sewage

farm, contribution to Epsom Urban District Council towards extension of sewage plant, airing-courts, lodges, gates and fencing, together with professional charges, will come well within the estimate authorised by the London County Council and approved by the Home Secretary, viz. 514,313 $\frac{1}{2}$., it being now estimated that 490,000 $\frac{1}{2}$ will cover the entire outlay. This will show an average cost of 243 $\frac{1}{2}$ per bed on the 2,020 beds provided, accounting for everything excepting land and equipment.

Mr. Thomas Hunter, L.C.C., who has been chairman of the building sub-committee from the beginning, was re-elected by the new Council.

The whole of the heating and ventilating arrangements and the system of hot-water supply have been carried out by Messrs. Strode & Co., engineers, of 48 Osnaburgh Street, London. Four Lancashire boilers, each 30 feet long by 8 feet diameter, supply the necessary steam for the heating and hot-water supply apparatus. For insuring a storage of dry steam, each boiler is provided with a special steam drum 15 feet long by 3 feet diameter. The steam is generated at about 120 lbs. pressure, but for heating purposes this is reduced to about $\frac{1}{2}$ lb. pressure, the heating being worked on the atmospheric system. This system has many advantages for large buildings of this character. A positive circulation of steam vapour is maintained throughout the whole of the apparatus, all water of condensation being returned to the boiler feed tank. The radiating surfaces are rendered thoroughly effective, there being no trouble with confined air or water accumulations, and the whole system works noiselessly, with a minimum amount of attention and maximum economy. The total amount of radiator surface installed is about 30,000 square feet, and about 18 miles of piping have been fitted varying in size up to 10 inches diameter.

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FRIDAY, JUNE 28, 1907.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRELAND.—July 1.—The Kingstown Urban District Council invite competitive drawings for houses for the very poor. The first premium will be 100l. and the second 20l. The selected plans to become the sole property of the Council, and no further remuneration shall be paid to the architect should the Council decide to carry out the works themselves. Particulars may be obtained on a deposit of 1s. with Mr. M. A. Manning, town clerk, Kingstown, Ireland.

IRELAND.—July 2.—The Kilkenny Corporation invite competitive designs for a Carnegie free library, to cost not more than 1,800l. All particulars from Mr. E. O'Connell, town clerk, City Hall, Kilkenny.

IRELAND.—July 20.—The County of Cork Joint Hospital Board invite competitive plans for a sanatorium for consumptives with accommodation for seventy patients. A prize of 100l. will be paid for the plans which the Board may adopt, provided that said plans are sanctioned by the Local Government Board, and said plans shall become the absolute property of the Board. Intending competitors will receive a map of the site and other information on sending P.O. for 10s. to Mr. E. J. Murphy, secretary of the County of Cork Joint Hospital Board, Court House, Cork.

WEYMOUTH.—July 30.—The Weymouth Town Council invite designs for a pavilion to be erected on the north side of the pier. One hundred guineas will be awarded for the selected design, such design to become the property of the Council. Mr. H. A. Huxtable, town clerk, Municipal Offices, Weymouth.

CONTRACTS OPEN.

BASINGSTOKE.—July 8.—For the erection of a Council school at Basingstoke, Hants. Deposit 2l. 2s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BARROW-IN-FURNESS.—July 1.—For the erection of a bacon-curing house near Buccleuch Street. Mr. Henry T. Fowler, architect, 6 Cornwallis Street, Barrow-in-Furness.

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BEDLINGTON.—July 8.—For the reconstruction of Red Row bridge, near Bedlington station, Northumberland. Mr. J. E. Johnston, surveyor, Bedlington.

BIRDWELL.—July 3.—For the whole or any portion of the works required in the erection of two houses on Sheffield Road, Birdwell. Mr. Arthur Whitaker, architect, Worsbrough Bridge.

BRECON.—July 5.—For alterations and improvements to the Guildhall. Borough Surveyor, Castle Street, Brecon.

BRIDGEND.—June 29.—For the erection of three houses at Cowbridge Road, Bridgend. Messrs. George F. Lambert & Son, architects, Bridgend.

BRIGHOUSE.—July 5.—For the erection of a warehouse (three storeys and basement), offices, &c. Messrs. Sharp & Waller, architects and surveyors, 32 Bradford Road, Brighouse.

CARLISLE.—For the whole or any part of the works required in the erection of an infants' school for 400 children in Norman Street. Messrs. Oliver & Dodgshun, architects, Lowther Street, Carlisle.

CARLISLE.—July 16.—For making improvements to prisoners' waiting-rooms, Crown Courts. Mr. Geo. Dale Oliver, county architect, Carlisle.

CATCLIFFE.—June 29.—For repairs and alterations at the Catcliffe school, Woodhouse, Yorks. Mr. S. Abson, divisional clerk, Education Offices, Woodhouse.

COVENTRY.—July 8.—Schemes and tenders for the works required to be executed and materials supplied in the erection of a dust destructor, boiler plant, &c., on a site at Bishopgate Green, Foleshill Road, Coventry. Deposit 5/6. Mr. J. E. Swindlehurst, M.I.C.E., St. Mary's Hall, Coventry.

CREWE.—July 20.—For secondary school for 350 pupils to be erected in Ruskin Road. Deposit 1/6. Mr. H. Beswick, county architect, Newgate Street, Chester.

DONINGTON.—July 10.—For additional classrooms, cloak-rooms, &c., at the Cowley's Grammar school, Donington, Spalding. Deposit 2/6. Mr. Jas. Rowell, architect, Church Lane, Boston.

FRIZINGHALL.—July 1.—For the erection of a sports pavilion at Frizinghall, Bradford. Messrs. Adkin & Hill, architects, 10, 11, 12 Prudential Buildings, Bradford.

GLASGOW.—July 4.—For the reconstruction of a portion of the police and fire station buildings at Allison Street and Craigie Street, Crosshill. The Office of Public Works, City Chambers, 64 Cochrane Street.

GOOLE.—June 28.—For alterations, repairs, &c., required at the Old Goole Provided school. Applications by June 17 to Mr. Hy. Lindley, divisional clerk, Education Office, Goole.

GREAT BROUGHTON.—July 1.—For the erection of a house at Great Broughton, Cumberland. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

HOOTON.—July 1.—For the erection of four cottages near Hooton station, Cheshire, for the joint committee of the London and North-Western and Great Western Railway companies. Deposit 1/6. The Joint Engineer at Woodside Station, Birkenhead.

HOUGHTON-LE-SPRING, &c.—July 2.—For new Council schools (sole tenders) at Houghton-le-Spring, Dean Bank (near Ferryhill) and Pelton, for the Durham County Council. For Houghton-le-Spring apply to Messrs. Milburn, 20 Fawcett Street, Sunderland; for Dean Bank school, Mr. T. W. T. Richardson, 57 High Street, Stockton-on-Tees; for Pelton school, Mr. J. W. Hanson, 79 King Street, South Shields.

HUCKNALL HUTHWAITE.—July 2.—For the erection of two or four houses close to the new factory. Mr. E. W. Bostock, architect and surveyor, Huthwaite, near Mansfield.

HUDDERSFIELD.—June 29.—For the erection of higher elementary school at Hillhouse. Deposit 1/6. Mr. K. F. Campbell, M.I.C.E., borough engineer, 1 Peel Street.

IRELAND.—July 1.—For building a teacher's residence at Antrim. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

KINGSTON-ON-THAMES.—June 28.—For the erection of a telephone exchange. Deposit 1/6. Mr. J. Rutherford, H.M. Office of Works, Storey's Gate, S.W.

LEEDS.—July 1.—For the following trades, viz. bricklayer and mason, carpenter and joiner, plumber and glazier, plasterer, concreter, painter, slater and ironfounder's work, required in the erection of a block of warehouse premises in Bishopsgate Street and Swinegate. Messrs. Thomas Winn & Sons, architects, 84 Albion Street, Leeds.

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LEEDS.—July 18.—For the construction of a cemetery chapel, boundary-wall and other works at the New Fawstone burial-ground at Meagill Lane. Mr. Charles G. Hensell, M.I.C.E., Municipal Buildings, Leeds.

LEWES.—July 9.—For alterations to the laundry at the union workhouse, Chailey. Deposit 1*l*. Mr. E. H. Fuller, architect, 19 High Street, Lewes.

LIVERPOOL.—July 1.—For the reconstruction and strengthening of dormitory floor and roof in connection with the Kirkdale Home, Westminster Road. The Parish Surveyor, Parish Offices, Brownlow Hill, Liverpool.

LONDON.—July 2.—For the widening of bridge over the London and North-Western Railway in the Harrow Road, Harlesden, Willesden, N.W. Deposit 2*l* 2*s*. Mr. O. Claude Robson, engineer to the Council, Public Offices, Dyne Road, Kilburn, N.W.

LONDON.—July 2.—For builders' work in connection with erection of a weighbridge at the school, Elder Road, West Norwood, S.E. Deposit 2*l*. Mr. W. Thurnall, clerk, Brook Street, Kennington Road, S.E.

LONDON.—July 3.—For the erection of a nurses' home and alterations at the workhouse in Harrow Road, W. Deposit 5*l* 5*s*. Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

LONDON.—July 4.—For the extension of "D" block at the workhouse, Garratt Lane, Wandsworth. Deposit 2*l*. Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.

LONDON.—July 8.—The Tottenham education committee invite tenders for summer repairs to the various schools in their district. Separate tenders are invited for repairs to playgrounds. Deposit 1*l* 1*s*. Mr. W. H. Prescott, surveyor to the committee, Council Offices, Tottenham.

LONDON.—July 9.—For the erection of branch stores in High Road, Tottenham. Deposit 1*l* 1*s*. Mr. H. Seymour Couchman, architect, 522 High Road, Tottenham.

LONDON.—July 9.—For building additional storeys to reception block, &c., of the Bromley asylum of the Poplar and Stepney Sick Asylum district. Deposit 5*l*. Messrs. J. & W. Clarkson, architects, 136 High Street, Poplar, E.

LONDON.—July 23.—For the erection of the superstructure of additional buildings at Colney Hatch asylum, New Southgate, N. Deposit 5*l*. The Clerk of the Asylums Committee, London County Council, 6 Waterloo Place, London, S.W.

MARCH.—July 4.—For the erection of sanitary outbuildings at (1) March South District infants' school and (2) Benwick school. The County Surveyor's Office, Ely.

MILFORD HAVEN.—June 30.—For the erection of a dwelling-house in Great North Road. Mr. A. S. Chugg, architect and surveyor, 14 Waterloo Road, Milford Haven.

MILNSBRIDGE.—July 1.—For the excavator, mason and bricklayer, carpenter and joiner, plumber and glazier, slater, plasterer, painter, concreter, ventilating and heating engineer's work required in the erection of men's club and institute. Mr. Joe Ainley, architect and surveyor, Chapel Street, Slaithwaite.

NEWBOTTLE ST. MATTHEW.—July 2.—For alterations at Newbottle St. Matthew's Council school (Paddock Stile), Durham. The County Education Committee's Architect, Shire Hall, Durham.

NEWTON RIGG.—July 2.—For the erection and completion of a classroom at Newton Rigg farm. Mr. Geo. Dale Oliver, county architect, Carlisle.

PARKSTONE.—June 29.—For additions to the Branksome and Upper Parkstone Unionist Club premises. Mr. Walter Andrew, architect, Parkstone, Dorset.

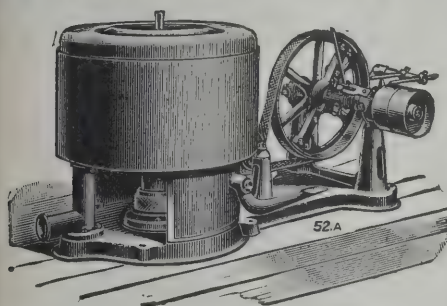
PLYMOUTH.—July 2.—For painter, carpenter and mason's work required to be done at certain of the scattered homes. Mr. W. Adams, clerk, 13 Princess Square, Plymouth.

PLYMOUTH.—July 2.—For the installation of electric lighting at the new workhouse infirmary buildings. Messrs. Thornely & Rooke, architects, 11 The Crescent, Plymouth.

PORTSMOUTH.—July 1.—For fitting-up and furnishing the free library at the Municipal Institute in Park Road, and the conversion, removal and refixing of various old fittings. Deposit 3*l* 3*s*. Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea.

PORTSMOUTH.—July 3.—For the erection of a new engine-house, with annexe and other works, on a site adjoining the existing electric-lighting station in Gunwharf

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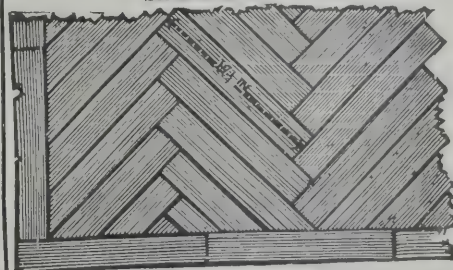
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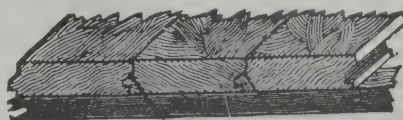
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ROCHESTER.—July 9.—For the erection of a seamen's institute, High Street. Deposit 1*l*. 1*s*. Messrs. Drake & Boucher, architects, 115 High Street, Rochester.

ST. AUSTELL.—July 3.—For the erection of a Bible Christian chapel at Gover Valley, St. Austell, Cornwall. Mr. John Mutton, architect, Charlestown.

ST. ERVAN.—July 5.—For the erection of a Wesleyan chapel at St. Ervan Village, St. Issey, R.S.O., near Padstow, Cornwall. Mr. W. T. Martyn Mear, architect and surveyor, Rock, Wadebridge.

SANKEY.—July 13.—For the erection of a police station at Sankey, near Warrington. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

SCOTLAND.—June 29.—For (1) mason, carpenter, slater and plasterer's work of new dwelling-house at Goukstyle, Finzean, Aboyne; (2) mason, carpenter and slater's work of small office houses at Wester Clune, Finzean. Mr. George Cocker, at the Home Farm of Finzean, Aboyne, Aberdeen.

SCOTLAND.—July 3.—For mason and brick, joiner, plumber, plasterer and slater works in connection with additions to the infant school, Kincardine-on-Forth. Messrs. Kerr & M'Culloch, architects, 30 Mar Street.

SEDFIELD.—July 8.—For the erection of ten cottages at the Durham County asylum. Mr. William Crozier, county architect, Shire Hall.

SHEFFIELD.—July 1.—For lavatory accommodation, city treasurer's office, town hall, and urinal in the pay-yard, Cheney Row. Deposit 10*s*. Mr. Chas. F. Wike, city surveyor, Town Hall, Sheffield.

SHERFORD.—July 1.—For new window at Sherford Church, Barnstaple. The Rev. C. Finkel, Stokenham Vicarage, Kingsbridge, South Devon.

SWANAGE.—July 10.—For alterations and additions to parish church. Messrs. Clifton & Robinson, architects, Northbrook, Swanage.

THORVERTON AND KINGFORD.—July 2.—For the following works, for the Devon County Council:—(1) Thorverton

bridge, rebuilding in reinforced concrete on site adjoining the existing bridge, including new approaches; (2) building a bridge at Kingford, near Portsmouth Arms. The Office of the Council, at The Castle, Exeter.

WALES.—June 29.—For the erection of a farmhouse at Caedwics, Glynceiriog. Mr. Ed. Green-Davies, architect and surveyor, Plas-yn-Llan, Gobowen.

WALES.—June 29.—For alterations and additions to the Powell Tillery Workmen's Institute, Abertillery, Mon. Mr. F. R. Bates, architect, Westgate Chambers, Newport.

WALES.—July 6.—For the erection of fire station, Tony-pandy. Deposit 1*l*. 1*s*. Mr. W. J. Jones, engineer and surveyor, Council Offices, Pentre, Rhondda.

WALES.—July 8.—For repairing, papering and painting the Greyhound inn and Britannia inn, Tredegar. Mr. T. Roderick, architect, Ashbrook, Clifton Street, Aberdare.

WALES.—July 8.—For altering, renovating and building new schoolroom at Ebenezer Welsh Calvinistic Methodist chapel, Cwmbach. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

WALES.—July 23.—For building boundary walls, &c., at the truant school, Quaker's Yard. Mr. C. M. Davies, 112 High Street, Merthyr.

WARRINGTON.—July 16.—For the erection of buildings for boiler plant extension. Deposit 1*l*. 1*s*. Mr. F. V. L. Mathias, borough electrical and tramways engineer, Howley, Warrington.

WESTON-RHYN.—For the erection of a village institute at Weston-Rhyn, near Preesgweene, Salop. Deposit 2*l*. 2*s*. Messrs. Douglas & Minshull, architects, 6 Abbey Square, Chester.

YEADON.—For the erection of a villa residence at Yeadon. Mr. Harold Chippindale, architect, Guiseley, near Leeds.

As a result of the negotiations between the Liverpool Master Builders' Association and the United Operative Plumbers' Association the matters in dispute in Liverpool have been satisfactorily arranged, and work was resumed on Monday last.

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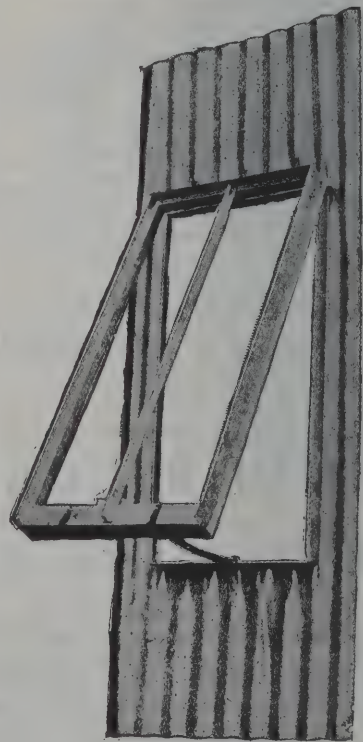
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Mongey, thirteen cottages at 131*l.* 18*s.* 2*d.* each.

ALNWICK.

For extension of National schools. Mr. J. W. DOUGLAS, architect.

R. & G. Brown £1,197 0 0
CARSE & SON, Amble (*accepted*) 1,140 0 0

BLANDFORD.

For construction of 784 yards of carriage road at Milton Abbey. Mr. H. F. STEPHENS, surveyor, Tonbridge.

Kavanagh & Co. £1,252 0 0
Allen 1,113 4 6
Douglas 832 0 0
Brown & Hiscott 829 19 1
Grounds & Newton 779 0 0
Porter 735 0 0
Brixy 697 12 0
Trueman 684 0 0
Ambrose 657 11 9
Wort & Way 590 19 10

BOURNE.

For the erection of classrooms and arranging heating at Star Lane Council school. Mr. W. B. PURSER, county surveyor, Grantham.

Stephens, Bastow & Co. £1,516 0 0
Wall 1,414 17 0
Gelsthorpe & Sons 1,400 0 0
Hockley & Co. 1,315 0 0
WRIGHT, Bourne (*accepted*) 1,270 0 0

BRIXHAM.

For alterations to store, &c.

Drew £540 0 0
Narracott 490 0 0
Hazelwood Bros. 453 0 0
Hayman 450 5 0
SILLEY, Brixham (*accepted*) 384 10 0

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For providing, laying and jointing of about 800 yards of 18-inch, 15-inch and 12-inch stoneware socket pipes, and about 3,580 yards of 6-inch and 4-inch agricultural drain pipes at sewage farm. Messrs. WILLCOX & RAIKES, engineers, Birmingham.

Vale & Sons £929 10 0
Turner 912 12 6
Jackson 812 11 6
Norris 723 3 8
OSMAN, Southampton (*accepted*) 603 0 0

COVENTRY.

For the erection of shop and stores, Barras Green. Messrs. HARRISON & HATTRELL, architects, Coventry.

Wootton £675 0 0
Harris 654 10 0
Gray 650 0 0
Kelley & Sons 640 13 1
Worwood, Coventry (*accepted*) 642 0 0

CROSBY.

For the erection of an elementary school. Messrs. SCORER & GAMBLE, architects, Lincoln.

Usher £6,715 0 0
Stamp 6,675 0 0
Sprakes & Sons 6,600 0 0
Parker & Son 6,425 0 0
Cuthbert 6,218 11 0
Elmes 6,130 13 0
Moss & Sons 6,095 0 0
Wright 6,000 0 0
THOMPSON, Scunthorpe (*accepted*) 5,967 0 0

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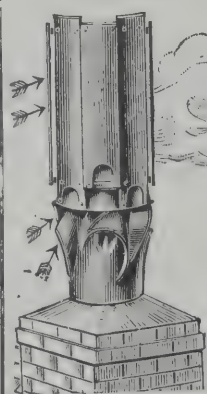
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HAINAULT FOREST.

For adaptation of farm buildings at Hainault Forest for refreshment and other park purposes.

Verry	£1,825	0	0
Walter	1,500	0	0
Markham & Markham	1,349	0	0
Horswill	1,240	0	0
Davis	1,155	2	0
Newell & Lusty	1,141	0	0
Dowsing & Davis	1,085	0	0
Jackson & Co.	1,069	0	0
Sharphington	1,049	0	0
Allen Bros.	1,015	0	0
WESTGATE, Romford (accepted)	898	0	0

HARLOW.

For laying about 3,000 feet of 8-inch and 9-inch sewer with necessary manholes, &c. Mr. H. TOOLEY, architect.

Read	£735	0	0
Adams	648	0	0
Winch	491	15	0
Wilson, Border & Co.	489	12	2
Porter	439	0	0
W. & C. FRENCH, Buckhurst Hill (accepted)	439	0	0

HARTLEPOOL.

For construction of a lifeboat house and slipways. Mr. W. T. DOUGLASS, architect, Westminster, S.W.

Howe & Co.	£2,017	8	7
Fasey & Son	1,901	17	6
Lauder & Co.	1,821	0	0
Twedde	1,790	0	0
MARSHALL, Hartlepool (accepted)	1,730	0	0

HOLYHEAD.

For the erection of chapel and schoolroom at London Road.

Jones & Son	£3,750	0	0
William & Son	3,460	0	0
R. & J. Williams	3,393	0	0
Thomas	3,350	0	0
JONES, Llanwnda (accepted)	3,040	0	0

HORBURY.

For settling tanks at the sewage works. Mr. A. E. RADCLIFFE, engineer, Horbury.

Flower Bros.	£492	11	6
Prince	466	18	0
Wilson Bros.	448	13	2
Hutchinson	369	9	0
Crowe & Sons.	388	15	1
HAMPSHIRE, Horbury (accepted)	334	12	7

LEICESTER.

For painting at general infirmary.

Sharp	£875	14	0
Colman	866	6	6
Snaith & Co.	846	10	0
Major	768	12	0
Walker & Son	665	0	0
King & Co.	641	0	0
JOHNSON & SON, Leicester (accepted)	596	18	0

LONDON.

For heating and ventilation of library at junction of Old and New Kent Road.

Wood Bros.	£253	10	0
J. & F. May	236	0	0
Boaz & Co.	233	0	0
Tilley Bros.	219	7	6
Berry & Sons.	218	0	0
Cannon & Hefford	215	0	0
Hayward Bros. & Eckstein	212	12	9
Stott & Co.	209	0	0
Strode & Co.	209	0	0
Lucas & Son	207	0	0
Stubbs, Son & Hall	204	9	6
Brightside Foundry Co.	199	10	0
Keith & Blackman	190	0	0
Hulett & Co.	189	15	0
Pemberton, Arber & Co.	189	13	11
Bradley	183	0	0
Kinnell & Co.	180	0	0
Vaughan & Cook	177	0	0
Stephenson & Co.	175	0	0
Comyn Ching & Co.	165	10	0
CANNON & SONS, London Road, S.E. (accepted)	150	10	0

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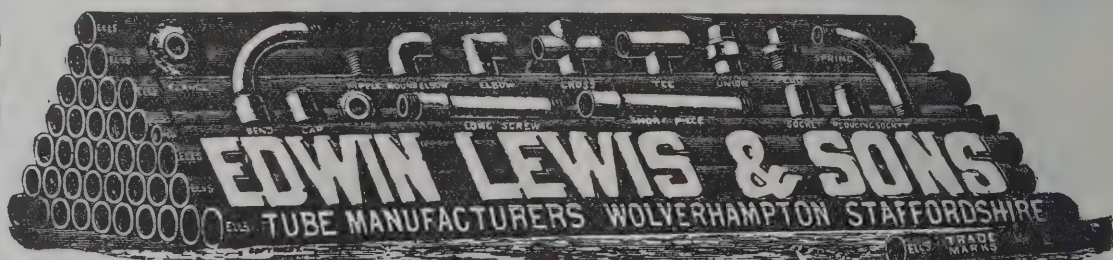
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LONDON—continued.

For electric wiring and lighting of library at junction of Old and New Kent Road. Mr. C. BATLEY, architect, Town Hall.

Winn	£301	0	0
Smeeton & Page	284	2	6
Vaughan & Cook	276	0	0
Boaz & Co.	276	0	0
Hoskins & Co.	274	10	0
Slatter	271	16	6
Pemberton, Arber & Co.	263	1	0
Grant & Taylor	245	11	0
Weston & Sons	244	10	0
Cozens	242	5	0
Tilley Bros.	242	4	0
Strode & Co.	239	0	0
Godfrey	238	12	0
Wootton & Co.	236	0	0
Hulett & Co.	232	10	0
Stubbs, Son & Hall	226	15	6
Reliance Electrical Co.	222	15	0
Allam & Co.	218	10	0
Frizell, Bros. & Louis	192	15	0
Waring & Withers	191	5	0
CANNON & SONS, London Road, S.E. (accepted)	240	11	0

For hot-water pipework at workhouse, Homerton.

Boaz & Co.	£620	0	0
Cannon & Sons	597	10	0
Browning & Co.	560	0	0
Potter & Sons	548	10	0
Griffin Ironworks Co.	555	0	0
Harding & Son	518	0	0
Aiton & Co.	494	0	0
Cannon & Hefford	489	0	0
May	483	0	0
Smith & Co.	473	0	0
Spencer	470	0	0
Busby & Co.	449	0	0
Tilley Bros.	431	5	6
Dawson & Co.	410	0	0
BRIGHTSIDE FOUNDRY AND ENGINEERING CO., Sheffield (accepted)	410	0	0
Wood Bros.	289	15	0

LONDON—continued.

For the erection of office and workshops at the Imperial Institute, South Kensington.

Allen & Sons	£1,800	0	0
Moss	1,550	0	0
Wallis	1,490	0	0
Bowyer	1,485	0	0
Lea	1,459	0	0
Minter	1,439	0	0
Higgs	1,435	0	0
Mowlem & Co.	1,417	0	0
Newell & Lusty	1,417	0	0
McLaughlin & Harvey	1,410	0	0
King & Son	1,398	0	0
Lawrance & Sons	1,396	0	0
Martin, Wells & Co.	1,393	0	0
Foster	1,388	0	0
Waring-White Building Co.	1,381	0	0
Pattinson & Sons	1,350	0	0
Jarman, Daws & Co.	1,329	0	0
Dorey & Co.	1,327	0	0
Leslie & Co.	1,318	0	0
Patrick	1,315	0	0
Mills	1,308	0	0
Ward & Fletcher	1,299	0	0
Hood	1,289	0	0
Nightingale	1,285	0	0
Barker & Co.	1,293	0	0
Wisdom Bros.	1,269	0	0
Clayton	1,254	0	0
HOLLIDAY & GREENWOOD (accepted)	1,233	0	0
Hyde & Co.	1,130	0	0

For external painting, repairs and alterations to the mansion at Golders Hill, N.W.

Allison & Foksett	£210	0	0
Wiltshire	208	10	0
Burford & Sons	195	0	0
Notton & Co.	175	0	0
Drake & Son	153	14	0
HARDING & SON, 75 Arodene Road (recommended)	153	9	0

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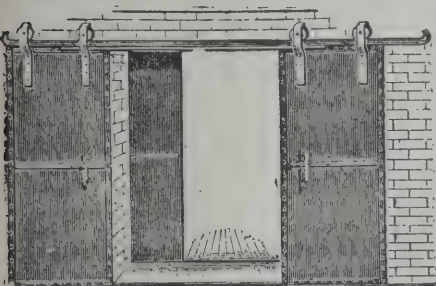
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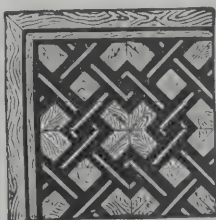


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Davis, Ltd.	961	0	0
Woods & Co.	873	10	0
Wade	831	0	0
Hammond & Co.	780	10	0
Compton Bros.	691	0	0
McCarthy	691	0	0
Foxley.	680	0	0
Marks & Bland	589	0	0
Troy & Co.	578	0	0
Crabb & Son	538	0	0
Levick & Co.	527	10	0
McArthur & Co.	490	10	0
Sabey & Son	483	0	0
Fenn	479	10	0
Barr	466	0	0
WRIGHT, Brixton Hill (accepted)	450	0	0

For the erection of laundry in Grove Road, Clapham Park. Messrs. BRIANT & SON, surveyors.

Patman & Fotheringham	£1,171	0	0
Mattock & Parsons	1,169	0	0
Hoare & Son	1,155	0	0
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Midmer	1,090	0	0
RICE & SONS (accepted)	1,089	0	0

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St. Helens Cable and Rubber Co.	£60,750	10	0
Glover & Co.	59,468	16	7
British Insulated and Helsby Cables	57,267	11	5
Callender's Cable and Construction Co.	56,666	10	0
Siemens Bros. & Co.	56,645	10	0
Johnson & Phillips	56,573	15	4
Union Cable Co.	56,397	9	9
Henley's Telegraph Works	56,356	13	4
Western Electric Co., North Woolwich (recommended)	55,200	11	10

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For cleaning, painting and repairs at Poor Law offices, nurses' home and infirmary, Brook Street, S.E.

Faulkner & Sons	£382	Infirmary.
Brading	381	£897
Somerford & Sons	362	707
Fenn	319	646
Mills	284	582
Anglo-American Cleaning and Decorating Co.	243	927
Bragg & Sons	247	557
Loasby & Salmon	209	827
Richards	183	652
GRIFFITHS & SONS (accepted)	171	459

For the erection of new front premises for Boardmans, of Stratford, E. Messrs. GEO. BAINES & SON, architects, 5 Clement's Inn, Strand, London, W.C.

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MORLAND & SON (accepted) 2,920 0 0

NARBOROUGH.

For the erection of isolation hospital at asylum. Messrs. EVERARD, SON & PICK, architects, Leicester.

Stephens, Bastow & Co.	£3,454	0	0
Holliday & Greenwood	3,440	0	0
Marshall	3,258	0	0
Chapman	2,934	0	0
Foulds	2,924	4	0
Griffiths	2,900	0	0
Haskard, Rudkin & Beck	2,804	0	0
Herbert & Sons	2,869	10	0
Evans	2,800	0	0
Hickman	2,799	0	0
Kellett & Son	2,790	0	0
Fox	2,745	0	0
Johnson & Son	2,744	0	0
Moss & Sons	2,700	0	0
DREVER, Kettering (accepted)	2,693	0	0

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For the erection of three dwelling-houses.

Scott	£960	0	0
LLOYD & Co., Milford Haven (<i>accepted</i>)	870	0	0

REDDITCH.

For the erection of factory. Mr. B. PERRINS, architect, Redditch.

Edkins & Son	£1,950	0	0
Rollins	1,800	0	0
Surman	1,725	0	0
Newbould	1,722	0	0
Yeomans	1,710	0	0
Avery	1,680	0	0
Huins & Sons	1,676	0	0
Holloway	1,646	10	0
HUINS & SON (<i>accepted</i>)	1,620	0	0

SOUTHAMPTON.

For the construction of wharf front of Hennebique ferro-concrete, to reclaim spoil at East Quay.

Bevis	£1,650	0	0
Playfair & Toole	1,634	0	0
Page & Co.	1,500	0	0
Neal, Ltd.	1,280	0	0
GRACE, Southampton (<i>accepted</i>)	1,195	0	0

STEYNING.

For alterations to the Children's Home.

Duke	£3,388	0	0
Barnes	3,296	0	0
Young	3,260	0	0
Penfold	3,177	0	0
Field	3,149	0	0
Lynn & Son	3,140	0	0
Curd	3,056	0	0
Saunders Bros.	2,996	0	0
Longley	2,948	0	0
Bostel Bros.	2,935	0	0
Parsons	2,859	0	0
Brown & Sons	2,816	0	0
Willett	2,810	0	0
Evans	2,749	0	0

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For the erection of Council school, Longlands.

Laue	£5,850	0	0
Loasby & Salmon	5,050	0	0
Parmenter	4,815	0	0
F. & G. Foster	4,566	0	0
Page & Son	4,548	0	0
Wiles & Son	4,545	0	0
Webster & Son	4,425	0	0
Lonsdale	4,394	0	0
Lowe	4,383	0	0
Moss & Co.	4,365	0	0
Podger & Sons	4,350	0	0
Tong	4,325	0	0
Leng	4,324	0	0
Jones & Andrews	4,300	0	0
Pollock	4,250	0	0
Blay	4,217	0	0
Knight	4,200	0	0
Crossley & Sons	4,170	0	0
Everitt	4,145	0	0
Gunning & Sons	4,135	0	0
Davidson	4,122	0	0
Seager	4,104	0	0
Parsons	4,077	0	0
Hyde & Co.	4,063	0	0
Wallis & Son	4,038	0	0
Cook & Sons	3,965	0	0
SKINNER, Chatham (<i>accepted</i>)	3,822	0	0

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For erecting lavatories, &c., and redrainage of workhouse buildings. Messrs. CHATTERS & SMITHSON, architects, Cheltenham.

Howman & Co.	£490	0	0
East	485	0	0
HARTWELL & SONS, Bourton-on-the Water (<i>accepted</i>)	469	0	0

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NEAVE & SON, Kensal Rise (accepted)	400	422	330

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Proctor & Son, Plumstead (recommended)	855	12	2
Woollaston Bros.	840	0	0
McCarthy	683	0	0

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AMONGST the many alterations made in the revision of the British standard specification we are glad to note that it is made compulsory for Portland cement to be in packages bearing the name of the manufacturer. This has long appeared to us very desirable in view of the cheap importations from abroad. Portland cement is now so largely used in building construction, owing to the development of fireproof flooring and reinforced concrete, that it is absolutely essential that the very best materials should be used, and this additional safeguard of cement being supplied in the makers' sacks is very welcome.

TRADE NOTES.

ROSE GREEN schools, St. George's, Bristol, have been ventilated on the "Boyle" natural system, under the direction of Messrs. Herbert Jones & Sons, architects, Bristol.

THE Clyde Structural Ironworks Co. have secured the contract for the erection of all the buildings in connection with a new shipbuilding yard in Austria.

THE British Flooring Company have secured the contract for the parquet floors, &c., at the new chapel, St. Nicholas parish church, Great Yarmouth. Messrs. Olley & Haward, architects.

MESSRS. PHILLIPS & SON, safe manufacturers, of Speedwell Works, Sherborne Street, Birmingham, write us that they have opened offices at Dacre House, Victoria Street, Westminster, where their London representative, Mr. John Corner, will be pleased to show anyone their safes and strong-room doors; also that their latest patent channel bolt, as an effective means of securing the doors of strong rooms, will be on view at these offices.

WE would call the attention of builders' merchants and ironmongers generally to the advertisement in our columns this week of the Harris Cycle Co., Coventry. They are a firm of long standing who have one of the finest cycle catalogues it has been our pleasure to peruse. In it are given some most interesting views of the ancient city of Coventry, among them being the far-famed St. Michael's Church. No visitor who visits Warwickshire to see Shakespeare's birthplace at Stratford-on-Avon goes away without crossing over to Coventry to see this fine old church. There are other features in connection with this catalogue which are indeed novel, and we do not doubt but that this firm are equally as diligent in making a cycle which for sound and long wear will do every purchaser justice as they are diligent in compiling their catalogue.

MESSRS. MARSDEN TILES, LTD., are at the present time supplying and fixing the whole of the tiles for the walls and floors for the Cheddleton asylum extensions, the quantity of tiles required amounting to something like 4,000 to 5,000 square yards. This firm, which is one of the oldest established tile manufacturing firms in the country, is now in the position to carry out successfully large tiling contracts, not only because of their excellent facilities as to manufacture, but also owing to their extensive range of designs suitable for all classes of architectural work. For domestic architecture they make a specialty of tiles and briquettes suitable for fireplaces and inglenooks, which are supplied in bright and also non-reflective glazes in all colours.

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ILLUSTRATIONS.

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MESSRS. DEBENHAM & FREEBODY'S PREMISES, WIGMORE STREET, W.

HOUSE AT BEZING, BASSES PYRENEES, FRANCE.

CATHEDRAL SERIES.—CARLISLE: VIEW ACROSS TRANSEPTS FROM SOUTH.

VARIETIES.

THE West Riding education committee have decided to erect new schools at Kinsley and Tinsley, each to accommodate 300 children and to cost 3,600*l*.

THE Chancery Division of the Irish Courts have approved of the plans of Mr. W. A. Scott and Mr. T. F. Macnamara for the orphanage which is to be erected at Bundoran. The committee have been authorised to advertise for contractors.

THE directors of the new Law Accident Insurance Society, Ltd., will be the same as those of the old company, viz. Messrs. Richard Pennington, J. S. Beale, Sam Bircham, E. H. Ellis-Danvers, W. Melmoth Walters, Romer Williams, with the addition of Mr. F. W. P. Rutter as managing director.

THE contract for the structural steel buildings for the Clarence Steelworks now being erected on the Manchester Ship Canal has been awarded to Gilbert Little & Co., Ltd., of Bradford.

THE copper system of lightning-conductors in some of the Government buildings, Calcutta, is being replaced by galvanised iron wire and terminals, owing to the copper being so frequently stolen.

AN illustrated guide to "London's Rural Retreats and Holiday Resorts" has been issued by the Great Central Railway Co. It is well adapted to serve its purpose, for the information is given without diffuseness, and the views are abundant. Lists of hotels, lodgings, &c., are supplied.

THE firm of Messrs. Marshall, Fleming & Jack, engineers and crane-builders, Motherwell, was dissolved on June 12, 1907. The business will be carried on by Mr. John Marshall and Mr. John Fleming, under the name of Messrs. Marshall, Fleming & Co., Mr. Jack retiring.

THE tramways committee of the Halifax Corporation have resolved to drop all powers of extension, amounting to about 170,000*l*. estimated outlay. Among the schemes abandoned are proposed extensions to Elland Cragg Vale, Wainshelf, Rishworth and Holywell Green.

THE Bexhill Town Council have accepted the plans for the extension of the town hall which were prepared by Mr. Henry Ward, the carrying out of which was estimated to cost 2,750*l*. The scheme provides for the addition of education and sanitary departments, with improved accommodation for existing departments.

THE tramway committee of Edinburgh Town Council, who have had before them tenders for the track and slot rails of the new Gilmore Place line of tramways, recommend the acceptance of the estimate of Messrs. Dick Kerr & Co., Ltd., for both contracts, the one amounting to 6,101*l*. and the other to 5,543*l*, or together 11,644*l*.

THE directors of the London and Lancashire Fire Insurance Company have appointed Mr. Thomas Brown to the post of local manager of their Newcastle branch, in succession to the late Mr. Samuel Butler. Mr. Brown has been in the service of the company for twenty-seven years, and for the last four years has acted as assistant local manager at its Leeds branch.

THE London County Council is negotiating with the boroughs of Fulham and Chelsea with a view to the reconstruction of Stanley bridge, over the West London Extension Railway at King's Road. The proposal also includes the widening of the approaches to the bridge to a width of 60 feet, and the estimated cost is 22,450*l*, of which the central authority is prepared to contribute two-thirds.

THE Austrian consul at Cairo, who has observed the very large demand for cement, says it is due to the enormous quantity of building which is now going on all over Egypt. The bulk of the cement trade is in British hands; we send Egypt nearly 70,000 tons a year, or four times as much as two years ago. Belgium and France also find Egypt a good

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customer, but the famous Portland cement is in greatest demand.

At the Local Government Board inquiry held at East Ham on June 14, the inspector, in referring to the cost of kerbing and channelling, remarked that the cost seemed to him rather high, and added that at Brighton it was 2s. 3d. per foot while at East Ham it was 6s. 6d. Mr. Campbell, the East Ham borough engineer, has since received a note from the inspector, in which he says that he was mistaken in his observation. At East Ham the cost quoted by him should have been "per yard," and not "per foot," and thus the work would be carried out cheaper by that authority than by Brighton.

THE Norwich Town Council have received the sanction of the Local Government Board to the borrowing of 39,471*l.* for the erection of pumping plant at Trowse pumping station, for new rising main from Trowse to Whitlingham Farm, and for the construction of tanks and works for the treatment and distribution of sewage and other contingent works. The sewerage committee have been instructed to take all necessary steps to carry out the scheme and to proceed with the works, reporting from time to time to the Council.

The property committee of the Hull Corporation decided on the 21st inst. to proceed with the second portion of the town hall extension. One member objected to the recommendation of the sub-committee which had reported upon the matter. He stated that the first portion of the work, with the cost of the land, represented 60,000*l.*, whereas the original estimate was only 33,000*l.*, and the furnishing would cost an additional 5,000*l.* The question will be discussed at the meeting of the City Council.

THE Hanley Town Council have received the sanction of the Local Government Board for borrowing 1,850*l.* for sludge-pressing plant at the sewage-disposal works. With regard to the application for a further sum of 24,700*l.* in respect of sewage disposal, the Board are advised that at least 9 acres of filters would be required at the present time without making any provision for an increase. In those circumstances the Board stated they were not prepared to sanction any further loans until the Council had undertaken that the whole of the 9 acres of filters provided

for in the scheme would be completed without delay. I was on Tuesday resolved that the whole of the 9 acres of filters be put in hand at once.

At Tokenhouse Yard Messrs. Chancellor & Sons offered for sale the large Star and Garter Hotel, on Richmond Hill. The land and buildings, it was stated, had cost nearly 130,000*l.* from first to last, but only one bid of 20,000*l.* was forthcoming, though that, as Mr. Chancellor explained in withdrawing the hotel, was not far off the reserve of the vendors, who, desirous of effecting a sale, were willing to knock off the first figure of the estimated capital cost.

At the last meeting of the Holborn (London) Board of Guardians the Clerk reported that he had received twenty tenders for the repainting of the exterior wood and iron-work of the casual wards according to specifications. The highest tender amounted to 187*l.* and the lowest to 29*l.* 17s. There was another at 38*l.* 17s. and another at 45*l.* A member pointed out that some time since the lowest tender was accepted for the painting of the administrative offices. No one thought it could be done properly at the amount, but it was done to the satisfaction of all interested in the work. The lowest tender was eventually accepted.

THE Town Council of Kilmarnock had under consideration last week a proposal to extend the waterworks at an estimated cost of 25,000*l.* A letter was read from the Secretary for Scotland to the effect that the expenditure should be redeemed in thirty years. The loans on the existing works are spread over sixty years. Several members held that this was an attempt to throttle municipalisation. By ten votes to nine the Council agreed to make a strong representation to the Scottish office to have the period extended.

An inquiry was opened in the Belfast city hall on the 19th inst. by Mr. A. D. Price, engineering inspector of the Local Government Board, in connection with the application of the Belfast Corporation for the following loans:—Extension of the electric-lighting system, 75,000*l.*; erection of cottages for attendants and providing for improvements at Purdysburn fever hospital, 10,000*l.*; acquisition of additional land, water supply, drainage, electric lighting, &c., at the district lunatic asylum, Purdysburn, 8,000*l.*; constructing a bridge over the Lagan at Stranmillis, 3,000*l.*; constructing underground lavatory at Donegall Square, 2,000*l.*

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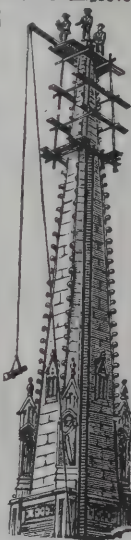
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THE Poplar Metropolitan Borough Council has adopted the report of the public health committee recommending that registered plumbers only be, as far as practicable, employed on plumbingwork executed for the Council or under its regulations. The report set out that the registration of plumbers after examination was a guarantee of efficiency, and in view of the fact that defective plumbingwork was usually detected only when serious results had ensued the public health committee was of opinion that the employment of registered plumbers should be decided upon.

STATISTICS from the Far Western part of the Dominion of Canada, according to the *Liverpool Courier*, show astounding prosperity. The Government has received the figures relating to building operations from thirty-seven towns, exclusive of Winnipeg, and these show that buildings actually in process of erection in these towns amount in value to 4,500,000*l.* In Edmonton, the capital of the province of Alberta, buildings to the value of 1,200,000*l.* are being erected, and the whole district is represented as being in a most thriving condition. It is stated that but for the present high prices of lumber the volume of work would be a third greater than it is.

THE Portsmouth Town Council have resolved "That, having regard to the increase in the number of places of public amusement in the borough, the watch committee consider the desirability of the Council as the Urban Sanitary Authority appointing some person to act under section 36, sub-section 3, of the Public Health Act Amendment Act, 1890, and see that the means of ingress and egress to places of public resort are from time to time kept free and unobstructed, and that if the watch committee report in favour of such appointment they recommend some person for appointment by the Council."

THE question of providing suitable accommodation at the Salford town hall has again been discussed by the town halls and markets committee of the Corporation. At a recent meeting a proposal in favour of proceeding with the erection of an annexe to the present building in Bexley Square was defeated. Most of the members of the committee spoke in favour of the building of a new town hall, and regarded the erection of an annexe at a proposed

expenditure of 20,000*l.* as "a temporary and costly expedient." The meeting was adjourned for a month. The Council rejected recently a proposal to build a new town hall at a cost of something like 200,000*l.*

AGAINST the active opposition of the Associated Manufacturers' committee, the joint committee of Parliament which is considering the Metropolitan Water Board (Charges) Bill have decided in favour of the scale of charges put forward by the promoters:—25,000 gallons per quarter and not exceeding 50,000, 1*s.* per 1,000; 50,000 and not exceeding 100,000, 10*d.*; exceeding 100,000 and not exceeding 200,000, 9½*d.*; exceeding 200,000 and not exceeding 500,000, 9*d.*; exceeding 500,000 and not exceeding 1,000,000, 8½*d.*; exceeding 1,000,000, 8*d.* The clause also provides that the Board shall not be liable to supply more than 500,000 gallons a day, or less than 25,000 gallons a quarter.

At a meeting of Croydon Town Council a discussion took place on the recommendation of the housing committee that they be empowered to bring up plans for the erection of more municipal cottages at Woodside, where the Corporation have eighty-seven cottages already. A deputation, representing twenty-five societies, waited on the Council to support the committee, and they alleged that workmen could not get sanitary houses at suitable rents. On the other hand, a councillor gave figures to show that there are 2,500 empty houses in Croydon, 1,000 of them being rented at 1*s.* and under. The committee's recommendation was rejected by thirty-six for to fifteen against.

THE Cambridge Town Council have joined the University in a request to the Local Government Board for an inquiry into the Cambridge water supply, and at a special meeting on Saturday the County Council decided to make a similar request. The water is drawn from the chalk and green sand in the valley lying to the east of Cambridge. Over this area the villages of Cherry Hinton and Fulbourn have spread themselves, and as most of the houses are supplied with cesspools there is a good deal of apprehension on the part of scientists at the University lest the water supply should become polluted. There has been nothing to justify this apprehension up to the present, the most stringent analysis having shown the water to be pure.

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COLONEL CROMPTON, C.B., presided, on the 12th inst., at the concluding sitting of the Conference of Road Engineers, held at the Institution of Civil Engineers. The most important discussion was on the question of bridges. Two resolutions were proposed by Mr. H. Howard Humphreys, and ultimately passed in the following form:—"That, in the opinion of this Conference, additional powers should be given to county councils to enable them to call upon the owners of all bridges (other than county, district, or hundred bridges) carrying public roads to maintain the same in a proper condition, or, in default, to do the work themselves, recovering the cost in a summary manner;" and "That standards of loading and strength should be prescribed by the Board of Trade for all new railway, canal and drainage over bridges, and that no new bridge be allowed to be erected of a less width between the parapets than the total width of the road at that point." A resolution was adopted in favour of road and local authorities being able to fix the widths of all roads and to lay down proper building lines.

THE London County Council have consented to the erection of a building in Byward Street at less than the prescribed distance from the centre of the roadway of Seething Lane, as submitted by Mr. R. M. Roe, on behalf of Sir J. G. Tollemache Sinclair, such consent being subject to the following conditions:—"That the building be commenced within six months and completed within eighteen months from May 13, 1907; that the construction of the building be satisfactory to the district surveyor; that no bay window or other projection whatever be erected or made in advance of the building; that before the commencement of the erection of the building the whole of the land coloured blue on the said plans be dedicated to and left open for the use of the public, and that no pier, pilaster, or other projection be placed on such land; that no vault, arch, cellar or other construction be made in or under the said land coloured blue on the said plans without the previous consent in writing of the local authority, and that the building be erected and retained without any addition thereto and in exact accordance with the application for the consent, and with the plans and particulars which accompanied such application."

At Scarborough Mr. H. Shelford Bidwell, M.I.C.E., conducted inquiries on the 20th inst. into applications of the Town Council to borrow (1) 750*l.* for the construction of a new road through Columbus Ravine. (2) 2,350*l.* for the purchase of a site in Seamer Road for new Council schools; and (3) a further sum of 25,000*l.* in connection with the construction of the marine drive and sea wall round the base of Castle Hill. The town clerk related the history of the latter scheme. The work was authorised by the Scarborough Improvement Act 1899, which sanctioned the borrowing of 70,000*l.* In 1896 the Corporation accepted the tender of Messrs. B. Cooke & Co., of Battersea, of 69,270*l.* The work was commenced in June 1897, and it was to be completed in two years, but unforeseen difficulties occurred and the work had lasted five times as long. The borrowing powers sanctioned up to January 1905, were 82,700*l.*, and if the present amount asked for were sanctioned, the total outlay would have been 107,700*l.* on the drive and sea wall, in addition to 17,000*l.* for the approach road from the south, making a total of 124,700*l.*, instead of the 80,000*l.* originally asked for. The town clerk stated that there was an undertaking for the completion of the work by May 31, 1905, and the contractor was under penalties of 50*l.* a week since then if the Corporation proceeded in that matter.

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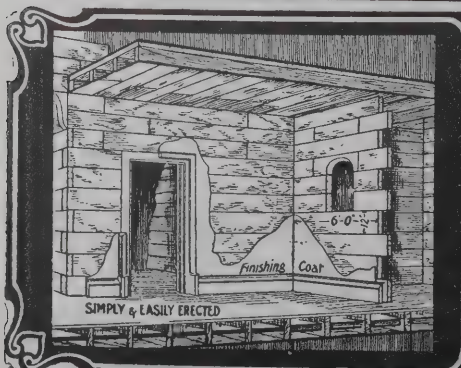
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SALFORD PUBLIC BATHS.

THE county borough of Salford has adopted a scheme for public baths which was prepared in competition by Messrs. Mangnall & Littlewoods, of Manchester. The proposed baths are intended to supply Seedley, Weaste and Hope wards, and will contain three large plunge baths, men's first and second class and one for women. There is also provided a large number of slipper baths; nine first-class men's, three first-class women's, twelve second-class men's, and six second-class women's with the necessary waiting-rooms attached. Vapour baths will be provided to the first-class parts. Every effort has been made by the architects to bring the baths up to date in all particulars. The first-class bath, which it is proposed to use for gala performances, has a large gallery, and is situated in an excellent position for affording exits and entrances. An arrangement has been made whereby the ladies, in addition to the men's first and second class, have each their own separate vestibule halls, out of which each class enter to their own respective slipper and plunge baths. With one or two minor exceptions, all parts of the baths used by the public are on the ground floor, and the parts of the baths used by the staff are in the basement. The working parts of a bath are a most important matter, having due regard to the provision of hot and cold water for baths and cleaning purposes to all the slipper, plunge and foot baths. Lavatories, &c., and a large boiler-house, pump-room and laundry have been provided for this purpose.

The elevations have been designed in the Renaissance style, and would be faced with buff terra-cotta and red Accrington bricks.

The estimated cost of the complete scheme is about 24,000*l*.

TAXES ON CATALOGUES.

THE Government of the Commonwealth of Australia have decided to establish facilities which will enable the taxes on catalogues, price-lists, show-cards and other advertising matter, intended for Australia, to be prepaid. On and after July 1 next manufacturers and others will be able to obtain from the Commonwealth offices, 72 Victoria Street, London, S.W., halfpenny, penny and threepenny duty-paid adhesive

stamps. The Australian colonies have one common tariff under which such printed matter is charged with a duty at the rate of 3*d*. per lb., but the duty is waived on all packages sent through the post which do not exceed 4 lbs. in weight. Hitherto this duty has had to be remitted by postal or money order to the Postmaster-General of the State to which the package was addressed, otherwise it would be collected as a surcharge, a proceeding that has caused a great amount of irritation and annoyance, besides loss of trade. The South African colonies are considering, and will probably adopt, similar arrangements.

NEW CATALOGUES.

THE competition between town and country is suggested by a description of the lifts manufactured by Messrs. Austin & Co., of Newcastle-on-Tyne. They contain varieties which are well adapted for industrial purposes, and which, judging by the lists appended, are extensively employed in the North of England. The catalogue suggests the power employed—whether hydraulic, belt-power, hand-power or electric-power. They also produce electric passenger-lifts, each with a controlling switch adapted to those who may prefer quick or slow speeds. A patent push-button controller is introduced, and there can also be electric locks by which all possibility of accident is removed. Over-loading is likewise made impossible as well as over-winding. The lifts uphold the reputation of Newcastle for machinery.

IN the catalogue of the Congo roofing of the Barrett Manufacturing Co. the descriptions are not illustrated, but are exemplified by samples of different kinds of the material which are of sufficient size to allow of testing. Instructions are also given for applying the material, which is a simple operation. It is claimed that the material is acid, steam and alkali proof, storm-resisting, rain-defying, and not affected by atmosphere or climatic changes. The base is a strong woollen felt with which a special composition is thoroughly incorporated by means of steel rollers. The surface is well adapted for the use contemplated. It has been employed in hot climates as well as in temperate, and it resists atmospheric influences successfully.

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WATER-SUPPLY OF COUNTRY HOUSES.

THIS question has become of increasing importance, and in the case of many an old mansion and country house it is a very serious one. Indeed, one of the first interrogatories of a prospective buyer relates to the certainty and adequacy of the water-supply. Now that an ample supply for baths is an unquestioned necessity the urgency is heightened. It is satisfactory to be assured it can be met by a moderate expenditure, the interest on which may be set against the water rate of a town house. Messrs. Merryweather & Sons have been busy of late in dealing with such cases. The improvement in the construction of the oil-engine has rendered it a machine for estate use which can be trusted, and when fixed in conjunction with a "Hatfield" pump it forms an ideal water-raising plant. Messrs. Merryweather have recently fitted on an estate near Bridgnorth two of these pumps driven by one engine, one pump providing water from a spring for domestic service and the other from a lake for gardeners' use. The demands of the garden should in no case be neglected, and when there are dry summers they become insistent. Messrs. Merryweather have issued a small treatise dealing with the most recent methods for providing and raising water and purifying it where necessary.

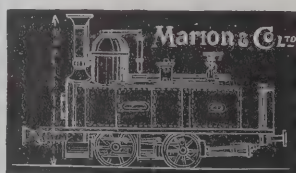
PUBLIC WORKS IN CHINA.

IN a report on the trade of Shanghai by Mr. Archibald Rose, of H.M. Consular Service, it is stated that one of the events of the year 1906 in the commercial life of the port has been the commencement of the conservancy works on the river Huangpu, the short stretch of water lying between the actual port and the main branch of the river Yangtse. For many years grave anxiety has been felt on account of the gradual silting up of the channel, and the question was placed officially before the Chinese Government in the Peace Protocol of 1902. The river is blocked by the outer bar at Woosung, which has been hailed by generations of Chinese as a heaven-sent barrier against the invasion of the

outer world, and every device of official opposition has been brought forward to prevent the establishment of effective conservancy works. After much discussion, however, the Government was brought to a realisation of the seriousness of the position, and by the Conservancy Convention of 1905 Mr. de Rijke was deputed as superintending engineer to remove the outer and inner bars and to deepen the channel for a stretch of 15 miles. Work has now actually commenced, and normal lines have been designed by the engineer with the object of narrowing the banks, directing the current into one broad stream, and thus enabling the river to accomplish its own work in deepening the channel and keeping the bars from silting up. By the terms of the Convention all work is to be submitted to public tender, and estimates have already been called in for the building of a jetty across the outer bar and the dredging of the main channel. The expense of the conservancy has been undertaken entirely by the Chinese Government, which has promised a yearly grant of 460,000 taels (about 70,000*l.*).

BUILDING MATERIALS IN CANADA.

AT the opening of the building season for 1907 several problems of more than passing significance have to be faced, says the *Canadian Architect*. The season is already late, and building operations are in many districts almost a month behind. In the cities this backward state of affairs is not so pronounced, although even in Toronto building construction is not what it would have been had more favourable weather prevailed. However, this is by no means a serious matter. The scarcity of material, particularly of lumber, presents a difficulty whose ultimate effect on the building industry for 1907 is problematical. Pine is scarcer than ever before in the building industry of Canada, and, at the prices which are being asked for it, builders are not in any anxiety to purchase. During this season several new departures in the way of substituting hitherto less popular woods than pine for structural purposes may be looked for. For the coarser grades of pine, spruce is being substituted,

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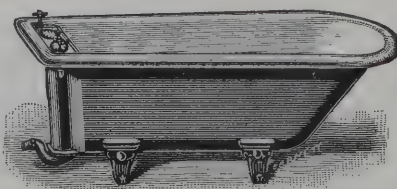
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and for flooring it will probably become ere long a popular wood. The time has passed when unlimited quantities of all classes of lumber caused contractors to look with disfavour on anything but pine for house construction. Now, it is a question of what is available. Hemlock, a few years ago almost despised for anything but the very roughest construction, is now at a premium, and the supply for the present season is very limited. The problem of securing suitable material for inside finish is also a pressing one, and before the present season closes, pine, which hitherto has been the staple finish, will have been replaced by cheaper substitutes, in smaller dwelling-houses at least. Lath and shingles are in much the same condition. Pine lath is no longer in great demand; spruce is rapidly taking its place. The shingle market at the present moment presents an aspect which is more than puzzling. There are practically no shingles in Ontario lumber yards, and inquiries for them are coming in constantly from the smaller dealers to the city yards. The Western railroads have been merely dribbling shingles eastward for months past, and as Ontario manufactures comparatively few shingles and no considerable quantity can be expected from Eastern Canada, owing to the strong call for the New Brunswick shingle from the Eastern States, the situation appears serious indeed. At the present moment there are orders with British Columbia dealers for 1,200 cars of shingles, and an average of only three cars a day is being shipped. Substitutes may, of course, be obtained. There is slate, much more expensive, to be sure, and various kinds of metallic roofing, but these have not yet come into general popularity.

The stringency in the lumber market will inevitably turn men's attention to other materials which may advantageously be substituted for lumber. Among the first of these, of course, is concrete. The price of Portland cement, which advanced about 50 cents a barrel last summer, has up to the present remained stationary, but prices throughout the country vary, and in some instances the advance over last year is 50 per cent. This is due to the tremendous demand. To meet it new mills are being set up, and a number of established concerns are doubling and trebling their capacity.

With the increased use of cement must also be con-

sidered the growing demand for crushed stone. In Toronto alone the consumption of crushed stone for 1905 was 68,000 tons, and for 1906 103,000 tons. It is expected that this year 130,000 tons will be a conservative estimate of the consumption. Last year the price was 1.20 dol. per ton, and this year 1.25 dol.

The use of galvanised iron is increasing enormously each year, Canada's consumption for last year being 12½ per cent. over that of 1905. The value of Canada's importations is at least a million and a quarter dollars at point of shipment, which would be equal to more than a million and a half delivered in Canada. The price of iron has advanced during the last year on an average of about 10 per cent., which does not more than cover the actual advance in the price of steel billets from which sheets are rolled. The price of galvanised sheets used for cornices, gutters, pipes, &c., remains about the same as last year. Tinplates used for fireproofing purposes such as covering doors, lining elevator shafts, &c., are about the same as last year. Copper sheets, of which material there is not so much used as formerly, are much higher than last year, the increase in price being about 50 per cent. Roofing felt advanced 12½ per cent. this year owing to the scarcity of wool rags, out of which felt is made. These rags are now being used for manufacturing of tweeds, &c., to a greater extent than ever before, thus forcing up the price. Dry felt at the mills has gone up in the last year about 25 per cent., but roofing pitch remains about the same. Slate is about 5 per cent. lower than last year. Asbestos, which has come into general use since the Chicago fire, is lower than last year by about 5 per cent. Paints and oils show a slight stiffening in price over last year. White lead and turpentine are the most interesting items to the painter just at present. The latter has been steadily rising year by year, and substitute after substitute has been put forth only to be rejected.

TAR FOR ROADWAYS.

A PAPER on "The Use of Tar for Roadways," by Mr. H. P. Maybury (Maidstone), was read at the meeting at Dublin of the Institution of Gas Engineers. It stated that since the passing of the Motor Car Act, 1903, the question

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of the satisfactory maintenance of the main roads in the country had become a serious one. In a comparatively few years a revolution in the use of the national highways had taken place, and much greater progress had been made in three years in getting "Back to the roads" than had taken place in ten times that period in the "Back to the land" proposition. Perhaps since its freedom from legislative restrictions, no industry in modern times had made such headway as that of motor manufacture. Giving evidence before the Royal Commission on Motor Cars in October 1905 Mr. T. F. Woodfine, the secretary of the Society of Motor Manufacturers and Traders, stated that, up to that date, no less a sum than 6,000,000*l.* had been invested as capital in undertakings for motor-car construction. The same gentleman stated that the then wages bill of such undertakings represented 1,189,730*l.* per annum. At this moment, in the county of London alone, upwards of 25,000 motor cars had been registered. In the county of Kent in the year ended March 31, 1906, no less than 1,151 cars were registered, and during the year ended March 31 last, a further 643; the total number registered at the end of the last financial year in Kent being 3,099. Other counties, particularly those in the home district, showed increases in about the same ratio. With this great augmentation of an entirely new kind of traffic, it was no wonder that the roads in many instances had been found unsuitable, and that a great public outcry had been raised against the high speeds attained, and the dust nuisance occasioned thereby. That the roads should at all have supported this enormous additional traffic redounded to the credit, in no small degree, of the local governing bodies and their officers. As had been pointed out, 25,000 cars were registered with the London County Council. These cars travelled over the main roads maintained by the rural ratepayer, while the fees for registration went into the coffers of the London County Council, and the same unfair incidence obtained in all the great centres of population. There was reason for hope, having regard to his remarks in the recent Budget speech, that the Chancellor of the Exchequer had the whole matter of local taxation under consideration, and that at an early date a scheme would be propounded which should be more equitable, and that the cost of road improvement and dust abatement would be more

directly put upon the users of the road. Motorists as a body would not object to increased license duty if the funds derived therefrom were utilised for road improvement purposes. With additional Imperial aid the local governing authorities and their technical advisers would be found equal to making dustless roads, and in pursuance of this the author was of opinion gas manufacturers would materially benefit. Since 1903 many experiments had been made and numerous chemical compounds had been used with more or less satisfactory results, but it was now generally conceded that nothing was so effective as coal tar. The Royal Automobile Club, in conjunction with the Motor Union, recently offered prizes for the best machine for applying tar to the roads, and also for the best tar preparations. The author had the honour of being asked to join the committee appointed to adjudicate in this matter, and it was extremely gratifying to him to find the premier gas company of Great Britain among the competitors submitting preparations, while one of their officers—Mr. Reeson—exhibited a machine for its distribution. It was common knowledge now that the use of tar for road purposes was far removed from the experimental stage. For many years it had been the recognised treatment of some of the most important roads in Paris. Tar treatment had been a failure in some instances, but it had always been due to the non-observance of scientific and climatic conditions. In most of the home counties tar spreading operations were now being undertaken upon an extensive scale, notably in Essex, Surrey and Kent, the writer having instructions to treat some 200 miles of the most important roads from London to the coast. The cost of this treatment would be borne in equal shares by the districts desiring it and the County Council. Although the subject of road construction and maintenance was far removed from those generally dealt with and interesting to the members of the Institution of Gas Engineers, still, as a modern practice seemed to point to an increased demand for such an important by-product as tar, with the co-operation of managers of works and the surveyors of highways it was not unlikely that in the near future not only would the roads be made more congenial, but that also the credit side of the gas engineers' ledgers would be appreciably improved, due to the increased demand for this by-product.

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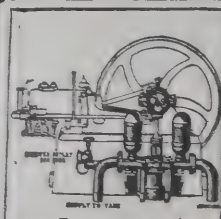
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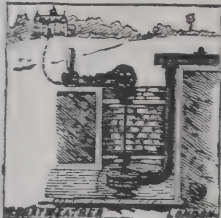
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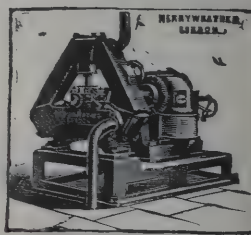
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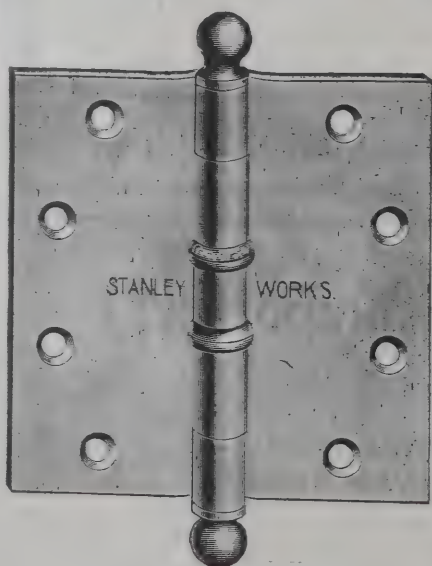
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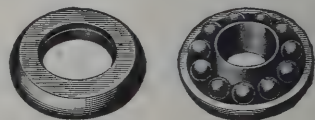
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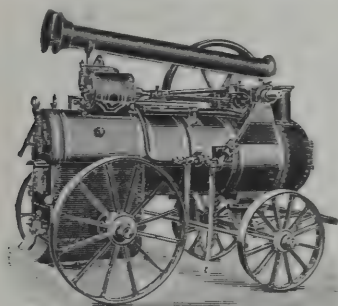
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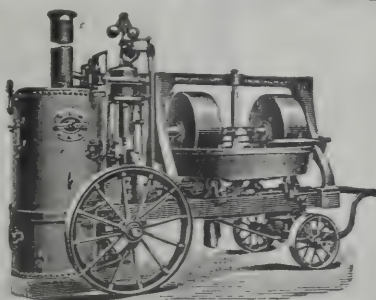
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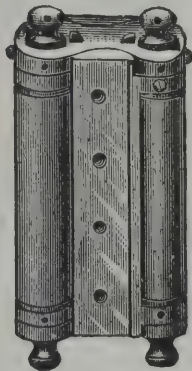
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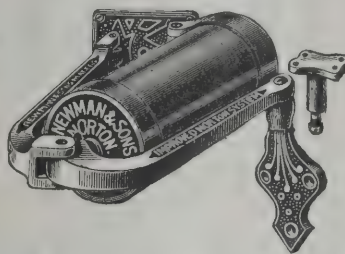
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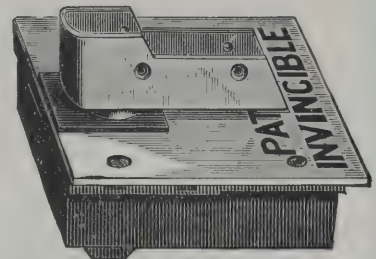
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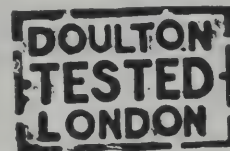
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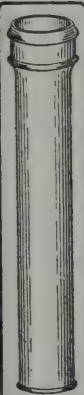
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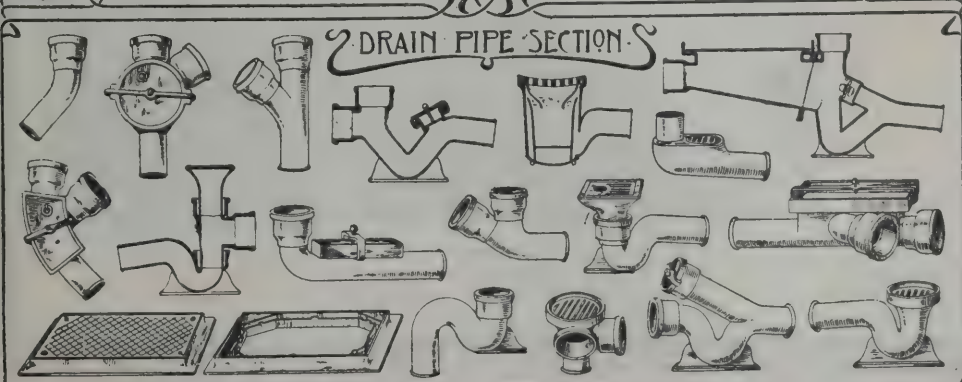
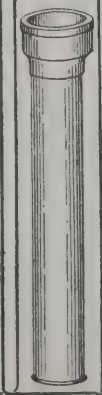
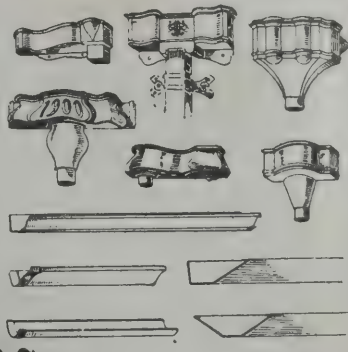
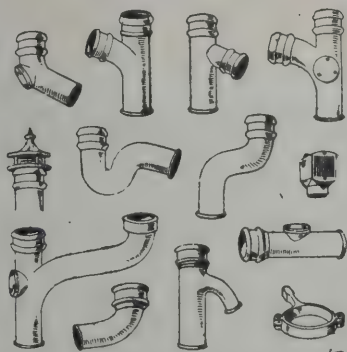
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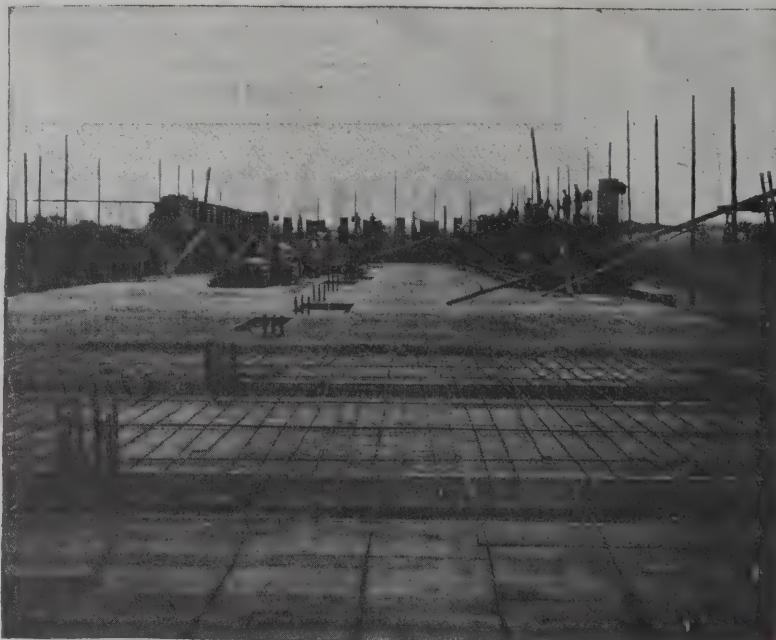
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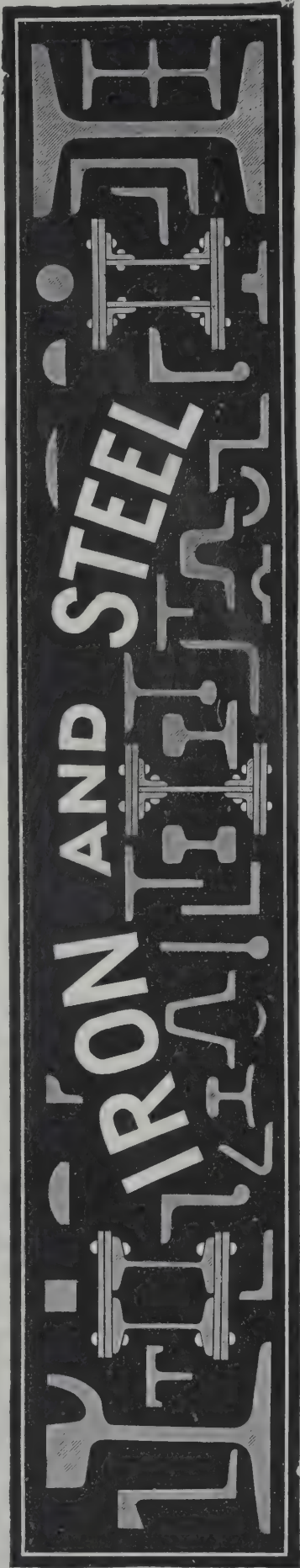
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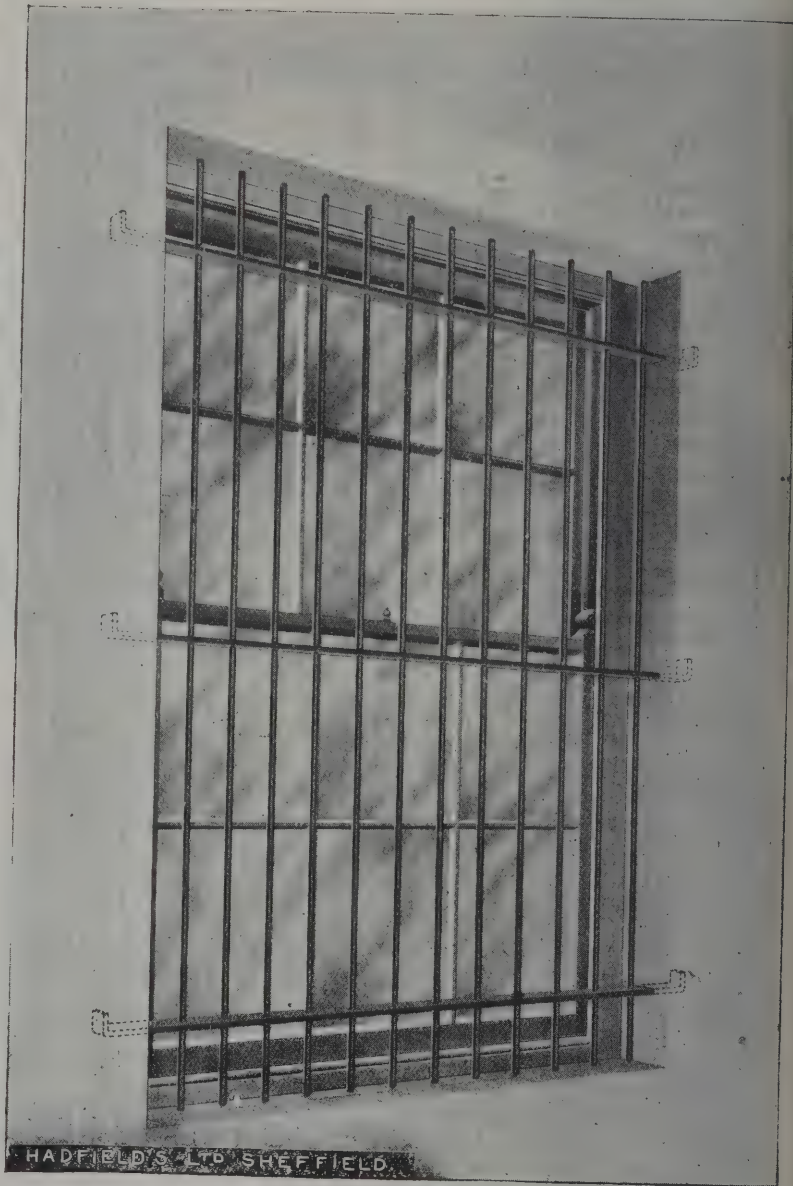
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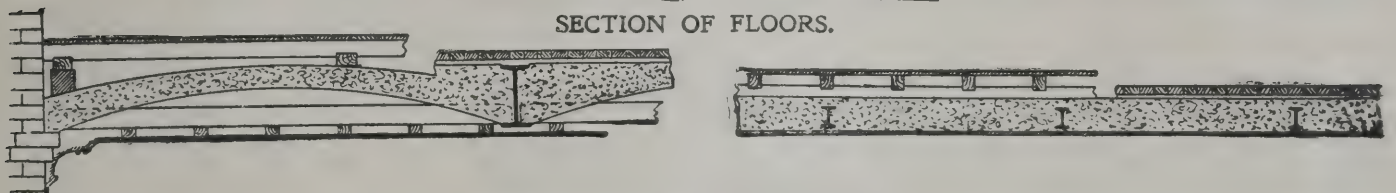
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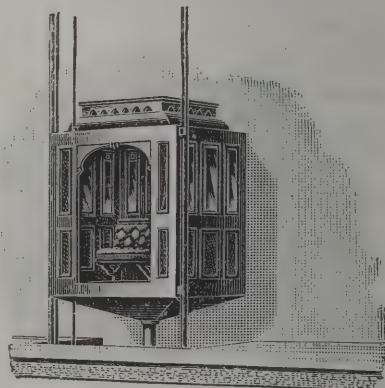
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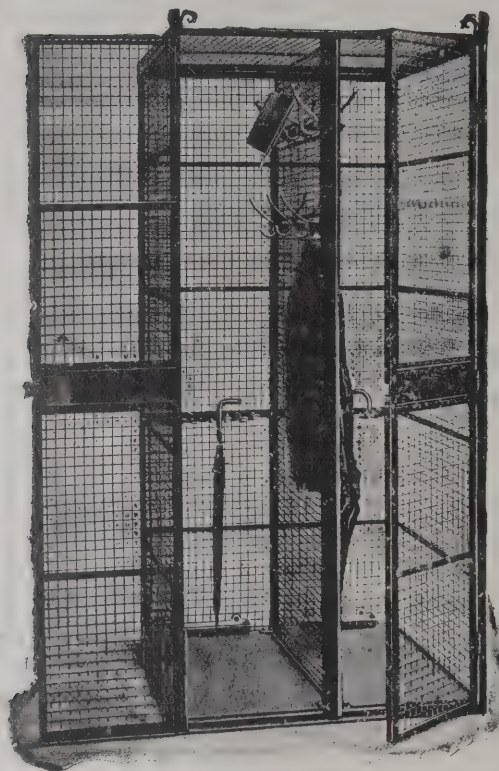


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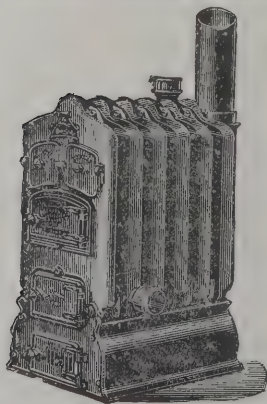
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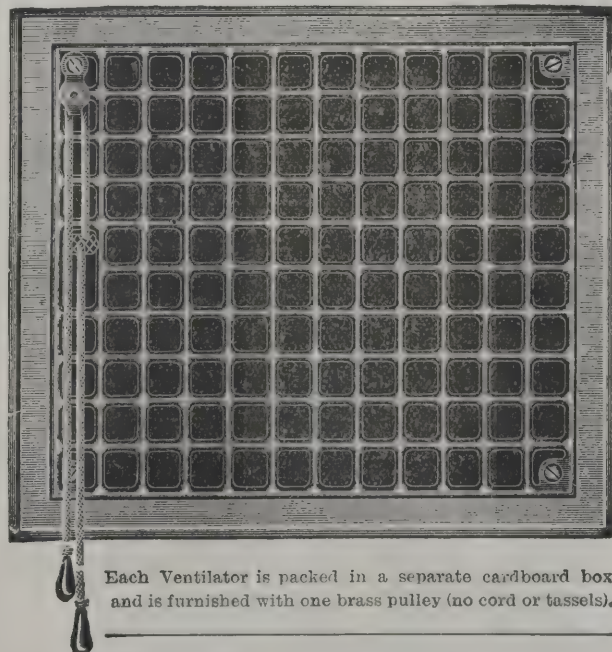
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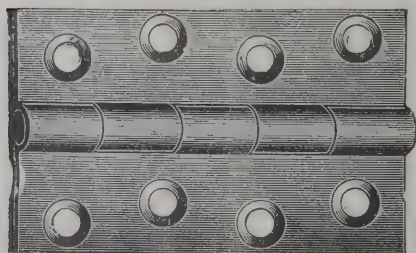
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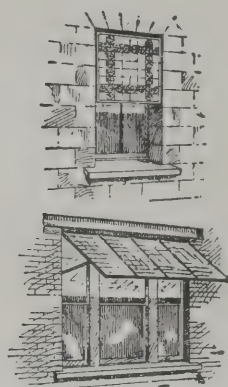
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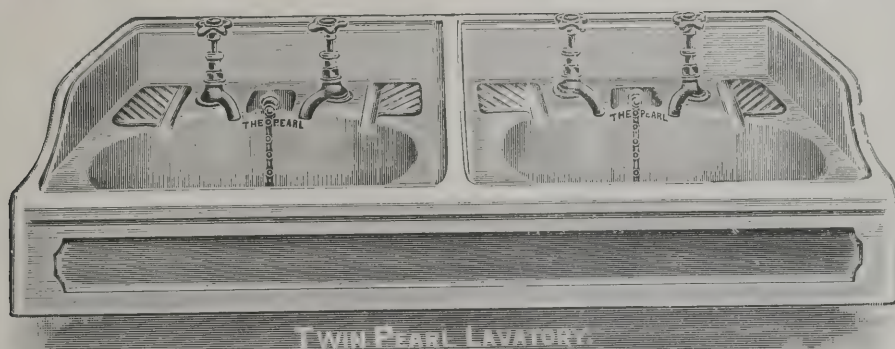
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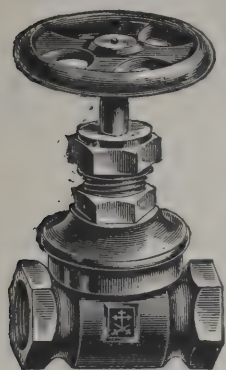
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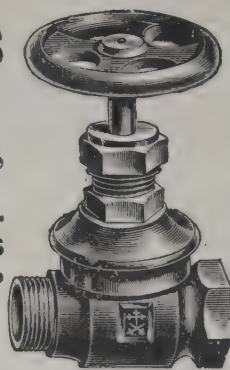


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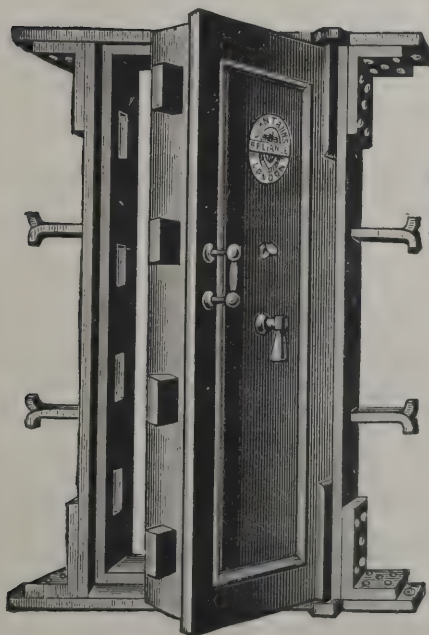
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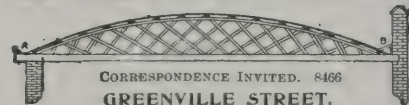
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Oldest and leading County Newspaper, comprising 8 pages (64 long columns). Price 1d. Established May 2, 1720.

Circulates extensively throughout the town and county and in the adjoining counties of Bedford, Buckingham, Huntingdon, Leicester, Lincoln, Oxford, Warwick, Cambridge, &c. Published Fridays at 4.0, 5.20, and 6.45 p.m. Price per news post, 1s. 8d. per quarter prepaid; 2s. booked.

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Oldest and Leading Daily in Northampton and District, comprising 4 pages (24 long columns). Price ½d. Established February 9, 1880.

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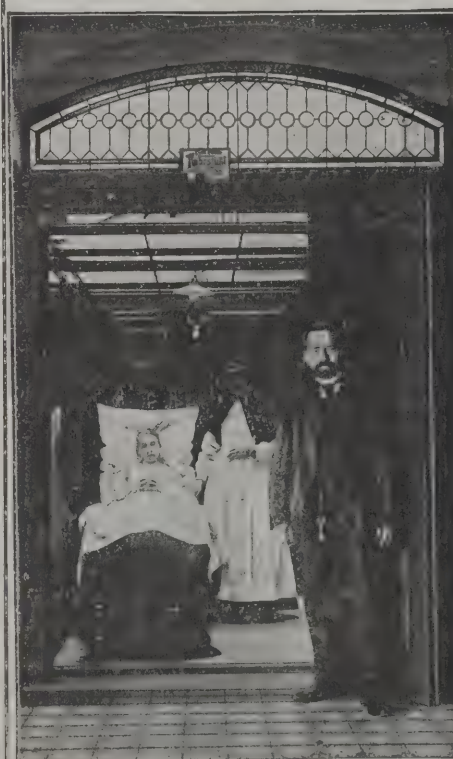
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PHOTOGRAPHS.—Birthday and Season Cards from negatives by RALPH DARLINGTON, F.R.G.S., of Scenery, Ruins, &c., in Norway, Sweden, Denmark, Russia, France, Germany, Italy, Greece, Asia Minor, and Egypt, 1s., 1s. 6d., 2s., 2s. 6d. List post free of DARLINGTON & Co., Llangollen.

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CARL FLOHR,
73a Queen Victoria St., London, E.C.

For Index of Advertisers, see page x.

SALES BY AUCTION.

By Order of the City Lands Committee of the Corporation of the City of London.—The Site of the Old Sessions House, Old Bailey.

MESSRS. JONES, LANG & CO. are instructed to LET BY AUCTION, on Building Lease, for 90 years, at the Mart, Tokenhouse Yard, E.C., on Monday, July 23, 1907, at Two o'clock, in Three Lots, the very valuable SITE, now occupied by the Old Sessions House, Old Bailey, a few doors from Ludgate Hill, in the City of London: the property has the very important frontage of about 150 feet and a depth of about 100 feet, with a total ground area of about 17,585 feet, and is well adapted for the erection of extensive Blocks of Offices or Warehouses.

Particulars, with plan and conditions of letting, can be had of the Comptroller, Guildhall: the City Surveyor, Guildhall, E.C.; or of the Auctioneers, 3 King Street, Cheapside, London. Branch Offices: 27 Chancery Lane, and 25 Leadenhall Street, E.C. Telephone, 830 Central.

No. 59 Fleet Street and 2 Pleydell Street, City of London.—An important Freehold Property to be Let by Auction on Building Lease for 90 years.

MESSRS. JONES, LANG & CO. are instructed to LET BY AUCTION, at the Mart, Tokenhouse Yard, E.C., on Monday, July 23, 1907, at Two o'clock, the very valuable BUILDING SITE, now occupied by Messuages, known as Nos. 59 Fleet Street and 2 Pleydell Street, having a frontage of about 16 feet to the former, 18 feet to the latter, and a total ground area of about 1,075 feet super, forming an admirable opportunity for the erection of a modern Block of Shops with offices.

Particulars, with plan and conditions of letting, can be had of Messrs. Pedley, May & Fletcher, solicitors, 25 Bush Lane, E.C.; and of the Auctioneers, 3 King Street, Cheapside, London, E.C. Branch Offices: 27 Chancery Lane and 25 Leadenhall Street. Telephone, 830 Central.

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TRENTHAM HALL.

Stoke-upon-Trent, Staffordshire.

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NOTICE OF SALE BY AUCTION on the Premises of the whole of the valuable SCULPTURES in marble and bronze (ancient and modern) in the gardens and hall, amongst which are rare museum examples of the best periods of Early Grecian, Græco-Roman and Early Imperial times.

The statues, fountains, vases, &c., are exceptionally interesting, and comprise examples of great rarity and value. Also a collection of pictures by or attributed to

Wm. Alston. H. Howard. J. M. Nattier.
T. W. Hooschaert. C. C. Holland. Thos. Phillips, R.A.
A. S. Coello. John Jackson, R.A. Kneiberg.
De Witt. George Jones, R.A. Sir A. Vandyck.
Michael Dahl. Sir G. Kneller. Varley.
Charles Deane. C. Ketch. R. Wilson, R.A.
Holbein. Sir Peter Lely. Rich. Westall.
N. Hilliard.

And others. A few Engravings, together with a considerable quantity of Furniture, including console tables with valuable marble tops, cabinets, tables, two fine Early English dessert services, quantity of coppers, &c.

MESSRS. TROLLOPE have received instructions to SELL the above by AUCTION, on the Premises, on Wednesday, July 17, 1907, and following days, commencing at One o'clock precisely each day. May be viewed on Monday and Tuesday preceding the Sale.

Catalogues of the Furniture can be obtained free, or complete illustrated catalogues of the Sculptures and Pictures, price 6d. each, from Messrs. Trollope, 14 Mount Street, Grosvenor Square, W.; Hobart Place, Eaton Square, S.W.; West Halkin Street, Belgrave Square, S.W.; and 5 Victoria Street, Westminster, London.

By order of the Executors of C. J. Edney, deceased.

BLOOMSBURY.—FREEHOLD.—The valuable BUILDING SITE known as No. 25 Devonshire Street, and 33a Queen Square, having a frontage of 44 feet and a return frontage of about 100 feet, giving a superficial area of about 4,400 feet, forming an important site for the erection of an institution, flats, garage or business premises. Possession on completion.

MESSRS. MOSS & JAMESON will OFFER the above by AUCTION, at the Mart, on Monday, July 8, 1907, at Two o'clock.

Particulars and plan of Messrs. Chamberlain & Co., Solicitors, 1 Stone Buildings, W.C.; and the Auctioneers, 77 Chancery Lane, W.C.

TENDERS.

TO CONTRACTORS.

THE Standing Joint Committee of the Lancashire County Council invite TENDERS for the Erection of a new Police Station at Sankey, near Warrington.

The plans may be seen and bills of quantities obtained by payment of a deposit of 25 (which will be returned upon receipt of a bona-fide tender), at the office of the Architect.

The Committee do not bind themselves to accept the lowest or any tender.

Tenders are to be sealed and endorsed and are to be forwarded on or before the morning of July 13, 1907, to

HENRY LITTLE, County Architect,

16 Ribblesdale Place, Preston.

BOROUGH OF BRECON.

THE Corporation of Brecon invite TENDERS

for Alterations and Improvements to the Guild Hall.

Plans and specifications may be seen at the office of the Borough Surveyor, Castle Street, Brecon.

Tenders, marked "Guild Hall," must be delivered at my office on or before July 5 next.

The lowest or any tender will not necessarily be accepted.

G. HYATT WILLIAMS,

Town Clerk.

Town Clerk's Office, Guild Hall, Brecon:

June 11, 1907.

DURHAM COUNTY ASYLUM, SEDGEFIELD.

THE Visiting Committee are desirous of

receiving TENDERS for the Erection of Ten Cottages.

Plans and conditions of contract may be seen, and bills of quantities obtained, after Wednesday, the 26th inst., at the office of Mr. William Crozier, A.M.I.C.E., County Architect, Shire Hall, Durham, to whom sealed tenders are to be delivered not later than 10 A.M. on Monday, July 8, endorsed "Tender for Cottages."

The Visiting Committee do not bind themselves to accept the lowest or any tender.

A. O. SMITH,

Clerk to the Visiting Committee.

Durham: June 20, 1907.

TENDERS.

LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT RAILWAYS.

THE Joint Committee of the London and North-Western and Great Western Railway Companies are prepared to receive TENDERS for the Erection of Four Cottages near Hooton Station, Cheshire.

Plans and specification and deed of contract may be seen and forms of tender obtained at the office of the Joint Engineer at Woodside Station, Birkenhead, on and after June 17.

Bills of quantities will be supplied by the Joint Engineer on payment of One Guinea, which will be refunded on receipt of a bona-fide tender.

Tenders, addressed to the undersigned, and marked outside "Tender for Cottages at Hooton," will be received on or before Monday, July 1.

The Committee do not bind themselves to accept the lowest or any tender.

A. E. BOLTER,

Secretary to Joint Committee.

Paddington Station, London:

June 13, 1907.

URBAN DISTRICT OF BLACKROCK.

To Builders, &c.

THE Urban District Council of Blackrock are

prepared to receive TENDERS for some Structural Alterations in the Assembly Room, Town Hall, Blackrock.

Plans and specifications can be seen and full particulars obtained at the Town Hall, Blackrock. Materials must be, as far as possible, of Irish manufacture.

The contractor to pay the standard rate of wages, and to observe the usual hours of labour in operation in the district.

Tenders, which are to be on the prescribed forms, must be lodged with me on or before Four o'clock P.M. July 2 next.

Contractors when tendering to give the names of two solvent sureties willing, if required, to join in a bond of £100 for the proper execution of the work.

The Council will not be bound to accept the lowest or any tender.

By Order,

E. FINLAY HERON,

Town Clerk.

Town Hall, Blackrock, co. Dublin:

June 20, 1907.

COUNTY COUNCIL OF DURHAM.

New Council Schools at Houghton-le-Spring, Dean Bank (near Ferryhill), and Pelton.

SOLE TENDERS are invited for the Erection of the above Schools. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained as follows:—

For Houghton-le-Spring School.—At the office of Messrs. W. & T. R. Milburn, 29 Fawcett Street, Sunderland.

For Dean Bank School.—At the office of Mr. T. W. T. Richardson, 57 High Street, Stockton-on-Tees.

For Pelton School.—At the office of Mr. J. W. Hanson, 79 King Street, South Shields.

Sealed tenders, endorsed "Houghton-le-Spring, Dean Bank, or Pelton Council School Tender," are to be sent to the undersigned on or before Tuesday, July 2, 1907.

The Council do not bind themselves to accept the lowest or any tender.

A. J. DAWSON,

Clerk to the Education Committee.

Shire Hall, Durham: June 12, 1907.

CORPORATION OF GLASGOW.

To Masons and Joiners.

THE Corporation invite OFFERS for the Reconstruction of a Portion of the Police and Fire Station Buildings at Allison Street and Craigie Street, Crosshill.

Specifications and forms of offer may be had on application at the Office of Public Works, City Chambers, 64 Cochrane Street.

Sealed offers, marked outside "Offer for Reconstruction of Police, &c., Buildings," must be lodged with the Subscriber on or before Thursday, July 4 proximo.

The lowest or any offer may not be accepted.

A. W. MYLES, Town Clerk.

City Chambers, Glasgow:

June 20, 1907.

TO BUILDERS.

THOSE desirous of TENDERING for the

Erection of a proposed Village Institute at Weston-Rhyn, near Preesgwynne, Salop, can see the plans at the office of the Architects, Messrs. Douglas & Minshull, 6 Abbey Square, Chester, from whom bills of quantities can be obtained on payment of Two Guineas, to be refunded on receipt of a bona-fide tender.

The lowest or any tender not necessarily accepted.

TO CONTRACTORS.

Cumberland Education Committee.

New Secondary Schools at Carlisle and Brampton.

TENDERS are invited for the Whole of the Works required in the Erection and Completion of a New Mixed Secondary School at Brampton and a New Girls' Secondary School at Carlisle, in accordance with plans and specifications prepared by Messrs. Grayson & Ould, architects, 31 James Street, Liverpool.

Copies of bills of quantities can be obtained for Brampton School on and after June 24, and for Carlisle School on Saturday, July 6, upon application at the Architects' Offices—price One Guinea for Brampton School and Two Guineas for Carlisle School, which will be returned upon receipt of a bona-fide tender. Plans and specifications may be seen at the same address, as well as at the County Education Offices, The Courts, Carlisle.

The lowest or any tender not necessarily accepted.

No part of the work may be sub-let without the consent in writing of the Architects.

Sealed tenders, endorsed with the name of the school, must be received by the undersigned not later than the First Post on Saturday, July 13, 1907.

By Order of the Education Committee,

C. COURTENAY HODGSON, Secretary.

The Courts, Carlisle: June 20, 1907.

HAVANT JOINT HOSPITAL DISTRICT BOARD.

To Builders, Painters and Others.

THE Board invite TENDERS for—

(1) The Erection of a Temporary Hospital in the Grounds of the Royal Free Hospital, Havant.

(2) Painting, &c., the inside and outside of the Administrative Block, Offices, &c.

Plans and specifications can be seen at my office between 10 A.M. and 4 P.M. any day (except Saturdays), and sealed tenders, endorsed "Tender for Temporary Hospital" and "Tender for Painting," must be delivered at my office by 1 P.M. on Thursday, July 4 next.

The Board do not bind themselves to accept the highest, lowest or any tender.

By Order,

E. E. LONGCROFT Clerk.

Havant: June 22, 1907.

TENDERS.

TO PAINTERS AND OTHERS.

THE Guardians of the Poor of the Parish of Paddington invite TENDERS for Painting and other works at their Infirmary in the Harrow Road.

A copy of the specification and form of tender may be obtained at the offices of the Architect, Mr. E. Howley Smith, Mowbray House, 14 Norfolk Street, Strand, W.C., on payment of a deposit of One Pound (by cheque), which will be returned to persons sending in a bona-fide tender and returning the specification.

The Contractor will be required to pay to the workmen employed by him not less than the rate of wages from time to time mutually agreed upon by the Central Association Master Builders of London and the representatives of the unions of the various branches of the building trade.

Sealed tenders, endorsed "Tender for Painting the Infirmary," must be delivered at the offices of the Guardians before Five o'clock on Tuesday, July 16.

The Guardians do not pledge themselves to accept the lowest or any tender.

By Order,

HENRY F. AVELING,

Clerk to the Guardians.

Guardians' Offices, 313-319 Harrow Road, W.: June 5, 1907.

POPULAR AND STEPNEY SICK ASYLUM DISTRICT

Tender for Alterations and Additions to Reception Block and Nurses' Home at the Bromley Asylum.

THE Managers of the above-named District

are prepared to receive TENDERS for proposed Works, Building Additional Storeys to Reception Block, &c., of the Bromley Asylum of the Popular and Stepney Sick Asylum District, in accordance with drawings and specifications prepared by their Architects, Messrs. J. & W. Clarkson, 136 High Street, Poplar, E.

The drawings and conditions of contract may be seen at the offices of the Architects, as above, on and after Monday, the 24th inst., and a copy of the bills of quantities and form of tender obtained upon payment to the Architects of a deposit of £5, which amount will be returned upon receipt of a bona-fide tender.

Tenders sealed and endorsed "Tender for Alterations to Reception Block," addressed to me at the Asylum, Devon Road, Bromley-by-Bow, E., must be delivered to me, by hand or registered post, not later than 4 P.M. on Tuesday, July 2, 1907.

Persons tendering will be required to name two sureties each of whom must be willing to be bound in half the amount of the contract for the proper fulfilment of the same.

Parties tendering will be required to declare that they pay the rate of wages and observe the hours of labour that they are generally recognised by the trade unions and considered fair in the trade.

The Managers are to have the power to accept any tender within two months of July 9, 1907, and they are not bound to accept the lowest or any tender.

By Order,

WALTER R. FOSKETT,

Clerk to the Managers.

Devon's Road, Bromley-by-Bow, London, E.: June 17, 1907.

ABERTILLERY URBAN DISTRICT COUNCIL.

EDUCATION COMMITTEE.

To Builders and Contractors.

TENDERS are invited for the Erection of a

Council School for Boys at Laundry Road for the Abertillery Education Committee.

Drawings and specification may be inspected at the office of N. Gasenius Lewis, Esq., F.R.I.A.S., Architect, Abertillery, on or after June 24, 1907.

Bills of quantities supplied by the Architect on deposit of Two Guineas, which will be returned on receipt of a bona-fide tender.

The contract agreement will contain clauses indemnifying the Committee against claims for damage caused in carrying out the works and under the Workmen's Compensation Acts and a clause binding the Contractor to pay union rates of wages.

The Committee do not bind themselves to accept the lowest or any tender.

Tenders, endorsed "Laundry Road School," to be in my hands not later than Twelve o'clock noon on Thursday, July 4, 1907.

By Order,

N. J. LLEWELLYN, Secretary.

COMPETITION.

KILKENNY CORPORATION.

To Architects.

COMPETITIVE Designs, Specification and

Bill of Quantities are invited for the Erection of a Carnegie Free Library by the Kilkenny Corporation. Cost of building not to exceed £1,800. Designs to be sent to me not later than Tuesday, July 2, 1907.

The successful competitor, provided his designs are approved of by Mr. Carnegie, will be appointed architect for the work of erection of the library. All designs to be sent in under a "non-de-plume."

Any further information can be obtained from me.

EDWARD O'CONNELL, Town Clerk.

City Hall, Kilkenny.

FOR SALE.

"THE ARTS."—This lovely Frieze on the Albert Memorial printed in a beautiful art green and handsomely framed in old gold moulding, and consisting of 4 pieces 37 inches long by 13 inches deep, FOR SALE. Price £3.—Remit to Publisher, Room No. 6, Imperial Buildings, Ludgate Circus, London, E.C.

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